

TRADE CREATION AND DIVERSION EFFECTS OF THE EUROPEAN UNION

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Abstract

This paper examines the impact of the 4th and 5th extensions in European Union (EU) on the trade flows of member and non-member countries. Specifically, the paper tests whether the 4th and 5th extensions in the EU cause trade diversion or trade creation. Moreover, the paper examines whether the trade creation and trade diversion effects of these extensions are similar across the extensions and across the new members joining in these two extensions. Applying the correctly-specified fixed effect gravity model on the data of imports and exports of the EU countries for the period 1988-2008, we found that, in most of commodity groups, the EU boosts trade among member countries at the cost of lowering the trade with non-member countries. However, the increase in trade with member countries is higher than the decrease in the trade with non-member countries. Moreover, we found that trade creation and trade diversion effects vary across the extensions in the EU, across the commodity groups and across the members joining the EU in 4th and 5th extensions.

JEL Classification: F1, F5, F6, F15.

Key Words: Economic Integration, Trade Creation, Trade Diversion.

I. Introduction

Regionalism has re-emerged as one of the key developments in international trade relations. A total of 511 Regional Trade Agreements (RTAs) have been notified to World Trade Organization (WTO) as of January, 2012, out of which 319 RTA are in force. The mushroom growth of RTAs in the world and an unprecedented increase in the share of global trade taking place among the members of these RTAs catch the attention of researchers and economists to test the effects of RTAs on trade flows. Several studies have explored the theoretical and empirical relationship between economic integration and trade flows to seek the answers of questions such as how an RTA affects the trade flows of members and non-member countries? What are the channels through which an RTA affects the trade? Viner (1950), Lipsey (1957), Bhagwati (1971), Gehrels (1956), Riezman (1979) and Kowalczyk (2000) have discussed the theoretical framework about trade creation,

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trade diversion and the welfare effects of an RTA. They have developed the conditions through which we can examine whether an RTA diverts or creates trade. Empirical investigations of RTAs and trade flows include the studies of Sayan (1998), Keuschnigg, et al. (1996), Radelet (1997), Goto and Hamada (1999), Watcher (2005), Nguyen and Ezaki (2005), Sarker and Jayasinghe (2007), Georges (2008), Lee, et al. (2008), Lambert and McKoy (2009), Datta and Kouliavtsev (2009,) and Vollrath, et al. (2009). These studies document mixed results on the effects of RTA on trade flows. Some studies conclude that an RTA creates trade, whereas, the other studies provide evidence that an RTA diverts international trade. The inconclusive findings on the effects of an RTA on trade flows motivate us to carry out this analysis.

There are two main objectives of this paper. First, the paper aims to analyze the trade creation and diversion effects of an RTA considering all the commodity groups one by one. Second, it examines whether a new member of an existing RTA creates or diverts trade. The motivation behind the first objective is that the most of the existing studies explore the impact of RTAs on trade flows with reference to a single commodity or a single sector while few other studies use aggregate trade flows. However, an analysis based on a single sector will not show the complete picture to understand the impact of RTAs on trade flows. Generalization of conclusions about the effects of an RTA on trade flows, on the basis of single commodity or sector analysis, may lead to the wrong policy implications. Thus, in this paper, we estimate the trade creation and trade diversion effects of the European Union (EU) considering all the ten major commodity groups classified by the Standard International Trade Classification (SITC). Our second objective is to analyze the effects of the 4th and 5th extensions of the EU on the trade flows. We use a correctly-specified gravity model developed by Kandogan (2005) to measure the effect of the EU on trade flows for a panel of 27 EU member countries.

Our results show that extensions of the EU have a positive impact on international trade and increase trade among members. In particular, we found that the EU's extension in 1995 increased the exports to member countries and decreased exports to non-member countries. However, the EU's extension in 2004 increased export to members without decreasing the exports to non-members. Furthermore, our results show that the EU extensions occurring in 1995 and in 2004 increased exports to members countries without decreasing exports to non-members in four out of ten commodity groups. However, both the extensions of the EU increased imports from member countries and decreased imports from non-member countries.

The rest of the paper is organized as follows. Section II presents background and a brief history of economic integration in the Europe. Section III presents the literature review. The econometric methodology and data are discussed in Section IV. Section V discusses the empirical results. Section VI presents some conclusions.

II. The background and a brief History of Economic Integration in Europe

The EU is the world's biggest trader and account for about 40 per cent of the world trade. The most important factors that played a key role in increasing trade between the European countries, and in restoring the financial position of the European economies were the establishment of the Organization for European Cooperation (OEEC) in 1948 and the European Payment Union (EPU) in 1950. The members of OEEC and EPU not only agreed to remove all the discriminatory trade measures and but also agreed to reduce the trade barriers by 25 per cent of their original values. As a result, the intra-Europe trade boomed and the volume of intra-Europe trade in 1958 reached at a level that was more than double the volume of intra-Europe trade in 1950 [Baldwin and Wyplosz (2009)]. The tremendous growth in the trade between the OEEC countries provided an opportunity to the member nations to accumulate substantial dollar reserves necessary to regain their financial stability.

In spite of the fact that OEEC had succeeded in reviving the economies of member countries, some members felt that OEEC was not enough for the deeper integration necessary to avoid future wars and for a stable restoration of the economic strength. Thus, six members of the OEEC, Belgium, France, Germany, Italy, Luxembourg and Netherlands moved forward and established the European Coal and Steel Community (ECSC) in 1952 and gave their coal and steel sectors that were considered as a backbone of the industrial economy, under a supranational authority. Important decisions like pricing, production and trade for these two critical sectors were given in the hands of this supranational authority.

Then, in 1957, these six countries signed two treaties in Rome and established European Economic Community (EEC) and European Atomic Energy Community (EAEC) and moved forward to a broader economic integration. Later, the institutions of the ECSC and EEC and EAEC were merged into the European Communities (EC) in 1965. Instead of coming from the members' national parliaments, the European Union Parliament was elected directly in the 1979 for the first time. The Rome Treaty was a far reaching document for the integration of the Europe because in this treaty the six nations not only had agreed to remove all tariffs and quotas on intra-EEC trade but also agreed to adopt a common external tariff on the imports from non-member countries. In addition, they agreed on free mobility of the labor, capital market integration, free trade in services and on a wide range of common policies. According to the Rome Treaty, they promised to remove all quotas and tariffs on intra-EEC trade in three stages and each stage was consisted of four years. The EEC members set a common external tariff using simple arithmetic average of their pre-EEC tariffs. By this formula Italy and France had to lower their tariff, Belgium, Luxembourg and Netherlands had to raise their tariff, whereas the common external tariff of Germany almost remained the same. As a result the unprecedented economic growth and prosperity started in these economies leading to an immense growth in intra-EEC trade.

The first enlargement in EEC took place in 1973 in which Denmark, Ireland and the United Kingdom joined the EEC. Later, Greece joined the EEC in 1981 in the second enlargement of the EEC followed by Portugal and Spain who joined the EEC in 1986 in the third expansion of the EEC. In the fourth enlargement of the EU, Austria, Finland and Sweden joined the EU in 1995. The Euro zone was created by replacing the national currencies with EURO notes and coins of 12 member states in 2002. Another big extension in membership of EU took place in 2004 when ten eastern and central European countries gained the membership of EU. The new members were Cyprus, Czech Republic, Estonia, Latvia, Lithuania, Hungary, Malta, Poland, Slovenia and Slovakia. Later in January 2007 Romania and Bulgaria joined the EU. Croatia, Macedonia and Turkey are on the waitinglist to join the EU.

Variations in the economic sizes and in economic resources of member countries may have different trade creation and trade diversion effects when they join the EU. Thus, in this chapter we look into how the 4th and 5th extensions in the EU affected the trade flows of affiliates. How did the 4th and 5th extensions in the EU alter the trade patterns of non-member countries? Have these extensions in the EU membership led to trade creation or to trade diversion? We consider only the 4th and 5th extension of the EU in this paper due to two reasons. First, thirteen new members have joined the EU in these two extensions. Second, a comprehensive commodity group level data of imports and exports is available from 1988 and onward which covers these two extensions comprehensively.

III. Literature Review

The theoretical framework for economic integration analysis is linked with the seminal paper of Viner (1950). Viner (1950) explains the trade creation, trade diversion and the welfare effects of a customs union. He argues that if trade creation is higher than trade diversion, then the union will raise the welfare and if trade diversion is higher than trade creation then it will reduce the welfare of the member states.

Lipsey (1957) states that Viner (1950) has assumed fixed consumption as a sufficient condition for trade-diverting custom union. Lipsey (1957) allowed substitution in consumption and demonstrated that a custom union increases welfare when trade diversion is higher than the trade creation. Bhagwati (1971) interprets Viner's theory under the assumption of production variability within the general equilibrium model. He points out that in the absence of substitution in consumption the sufficient condition to make custom union welfare reducing is not the fixed consumption but fixed level of imports. Gehrels (1956) argues that if we consider only the production effects then Viner's analysis underestimates the benefits of a custom union to the member countries and gives biased results.

Riezman (1979) incorporates terms of trade effects into customs union analysis and reveals that pre-agreement small mutual trade among members is a sufficient

condition to get benefit from a customs union. Kowalczyk (2000) also uses terms of trade and volume of trade to explain trade creation and trade diversion effects of the trading block. He supports the findings of Riezman (1979) and Lipsey (1957).

Baier and Bergstrand (2004) state that the net welfare gain/loss of the two countries in an FTA depends on trade creation and the trade diversion of the members countries and has categorized three economic determinants of the trade creation and trade diversion. Cooper (2006) divides the existing empirical findings into three groups. The first group consists of studies that oppose the integration and consider regional integration as a stumbling block to global trade liberalization. For instance, Fredrik (2006), Clausing (2001), Cuyvers (1997), Leet, et al. (2008), Datta and Kouliavtsev (2009) and Vollrath, et al. (2009) who report trade diversion in their analysis of the impact of regional integration on trade flows. The second group includes studies that support economic integration and considers it as a building block to global trade liberalization. For example, Sayan (1998), Keuschnigg, et al. (1996), Radelet (1997), Goto and Hamada (1999), Watcher (2005), Nguyen and Ezaki (2005), Fredrik (2006), Sarker and Jayasinghe (2007), Georges (2008), Lambert and McKoy (2009) and Vollrath, et al. (2009) have found that regional trade agreements increase trade among the members of the block. The third group encircles the papers that generally oppose the block formation because they believe that the impact of trade liberalization on labor in import-sensitive sectors and on environment is not good instead of presenting the trade diversion effects of an association to oppose the establishment of the union. For example, Lindsey (2004) demonstrates that multinational corporations shift jobs to the countries where wages are lowest and environmental regulations are not strict. Honeck (2004) shows that 19 per cent of job loss in manufacturing sector of Ohio State was due to the NAFTA-led increase in imports to Ohio.

The effects of economic integration vary from block to block, depending on the period of investigation, the commodities and countries involved. Soloaga and Alan (2001) found no indication that regionalism boosts intra-block trade. Their findings also indicate that the EU and European Free Trade Association (EFTA) result in diversion in the case of non-fuel trade. Balassa (1967) demonstrates that the European Common Market (ECM) promotes intra-block trade in the cases of non-durable consumption and manufactured goods. In the case of machinery and transport equipment, ECM boosts trade with the rest of the world. Kandogan (2005) shows that majority of the Europe's liberalization agreements have been welfare improving for all the partners involved, in all sectors, particularly, in human and physical capital-intensive sectors. Similarly, Baier and Bergstrand (2007) also have presented the evidence that free trade agreements increase trade among the members.

Moreover, Baldwin and Venables (1995) state that regional integration agreements seem to have generated welfare gains for the member countries but possibly negative spillovers on to the non-member countries. Clarete, et al. (2003) estimate

the effects of regionalism on trade flows in Asia and show that 9 out of 11 preferential trade agreements (PTAs) divert trade. In their analysis, it turns out that only two PTAs increase trade among members without affecting trade with the rest of the world. Similarly, Carrere (2006) analyses seven different regional trade agreements and found that in general, these regional trade agreements increase trade among members and reduce trade with the rest of the world, suggesting the evidence of trade diversion. In a similar vein, Lambert and McKoy (2009) examine the impact of preferential trade associations on food and agricultural trade. Their findings demonstrate that preferential trade association formation is helpful in increasing the trade among members as well as with non-members in both agricultural and food trade.

Cooper (2006) and Clarete, et al. (2003) argue that economic integration creates a bigger market for the producers of member nations and generates more opportunities for them to export their products, ultimately leading to more business and employment. Similarly, Wacziarg (1999) reports that by increasing the size of the market and competition, trade openness policies provide an opportunity to the trading nations to reap the expected benefits of increasing return to scale. However, the benefits of the trade openness among the members of a custom union will be lower than the trade openness at global level because the market size of a custom union in which a member country can supply its products will be smaller than the size of global market.

The existing literature presents the mixed results on the effects of economic integration on trade flows. Some studies document regional economic integration generates trade among the members without affecting the trade with non-members, whereas, some other papers present that economic integration leads to trade diversion. Most of the studies cover a single sector agriculture or manufacturing sector in their analysis. However, comprehensive studies covering all sectors of the economy and all the commodity groups to evaluate the impact of regional trade agreements on trade flows, particularly with reference to the new members joining the existing trade agreements are scarce in the literature. The earlier studies analyze the impact of extensions in the trade agreements on overall trade flows or on sector level imports and exports. In this paper, we analyze the impact of the 4th and 5th extensions of the European Union (EU) on the imports and exports of all commodity groups classified by the Standard International Trade Classification (SITC) and for each new member joining the EU in these two extensions.

IV. Empirical Model and Methodology

1. Empirical Model

We use correctly-specified fixed effect gravity model used by Kandogan (2005) to estimate the effects of extension in the EU on the trade flows. Along with time, importer, exporter, bilateral fixed effects, we also control for commodity-group

fixed effects. This will capture commodity group-specific time invariant characteristics, which affect trade flows of the commodities pertaining to that particular group. The model is given below.

$$M_{ijts} = \lambda_t + \alpha_i + \gamma_j + \delta_{ij} + \theta_s + \beta_1 Y_{it} + \beta_2 Y_{jt} + \beta_3 d_{ij} + \beta_4 \Delta e_{ijt} + \beta_5 R_{it} + \beta_6 R_{jt} + \beta_7 SIM_{ijt} + \beta_8 RF_{ijt} + \beta_9 COL_{ij} + \beta_{10} CL_{ij} + \beta_{11} CB_{ij} + \varepsilon_{ijt} \quad (1)$$

wheret, I, j, s and ij denote year, importer, exporter, commodity group, and bilateral interaction fixed effects, respectively. Y_{it} is real GDP of the importing country. Y_{jt} is real GDP of the exporting country Δe_{ijt} represents the bilateral real exchange rate, M_{ijts} is real imports of commodity group “s” of country i from country j at time t . d_{ij} is the geographical distance between importing and exporting countries. R_i and R_j are foreign exchange reserves of importing and exporting countries respectively.

SIM is a similarity index. Following the Kandogan (2005) we calculate the SIM index

$$SIM = \ln \left[1 - \left[\frac{Y_{it}}{Y_{it} + Y_{jt}} \right]^2 - \left[\frac{Y_{jt}}{Y_{it} + Y_{jt}} \right]^2 \right] \quad (2)$$

RF_{ij} denotes the relative factor endowment, which measures the distance between trading partners in terms of their relative factor endowments. RF_{ij} is calculated as.

$$RF_{ij} = \left| \ln \left(\frac{K_{it}}{L_{it}} \right) - \ln \left(\frac{K_{jt}}{L_{jt}} \right) \right| \quad (3)$$

where K_{it} and L_{it} shows the capital stock and labor force of the importer country at time t , respectively. K_{jt} and L_{jt} show the capital stock and labor force of the exporter country at time t , respectively. When country i and country j have the same factor endowment then RF_{ij} takes the value zero, and RF increases as the difference between the relative factor endowments of country i and j increases. In order to calculate capital stock required to calculate RF_{ij} , we follow Kandogan (2005) and use perpetual inventory method given below.

$$K_{it} = 5 (GFCE_{it} + GFCE_{i,t-1}) \quad (4)$$

$$K_{it} = 0.9 K_{i,t-1} + GFCE_{it} \quad (5)$$

where $GFCE_{it}$ is the gross fixed capital formation in country i at time t . We assume that the capital stock depreciates at a constant rate of 10 per cent. COL, CL and CB are the dummy variables and capture the effects of previous colonial relationship, common language, and common border between the trading partners, respectively. Finally, ε_{ijt} is the error term. All the variables we use in the empirical model except COL, CL and CB are real variables and in log form.

2. Trade Creation and Trade Diversion

Following Kandogan(2005), to measure trade creation (TC), trade diversion (TD) and net trade (Net), we estimate the empirical model given in the empirical model section before and after the extension in the EU and estimate the regression errors, ε_{ijt} for each model. We then calculate the average errors $\bar{\varepsilon}_{ijt}$ for member countries and for the non-member countries for the model before the extension and after the extension. Next, we take the difference of the average errors after the extension and before the extension for the trade creation. Mathematically, we can write this process as follows.

$$TC = \bar{\varepsilon}_{ijt} \text{ after the extension for member} - \bar{\varepsilon}_{ijt} \text{ before the extension for member} \quad (6)$$

where, $TC > 0$ shows that trade has improved among members after the extension. In simple word $TC > 0$ shows trade creation. For trade diversion we take the difference of the average errors after the extension and before the extension for non-member countries. Mathematically, we can write this process as under in Equation (7).

$$TD = \bar{\varepsilon}_{ijt} \text{ after the extension for non-member} - \bar{\varepsilon}_{ijt} \text{ before the extension for non-member} \quad (7)$$

$TD < 0$ shows that trade of member countries with non-member countries has decreased. In simple word $TD < 0$ shows trade diversion. To measure the net impact of the extension, we take the difference of the TC and TD. Mathematically, we can write this process as follows.

$$\text{Net} = TC - TD \quad (8)$$

We repeat this process to measure trade creation and trade diversion for each commodity group and for each new member of the EU. We estimate the parameters of the model proposed in Equation (1) by applying the Ordinary Least Square (OLS) technique on panel data for 27 EU member countries.

3. Data and Sample Size

Data used in this paper are taken from three different sources and cover the period from 1988 to 2008 for EU 27 countries. Our sample includes a country as a member of the EU 27 from the year it has joined the EU. Before joining the EU this particular country is considered as non-member and not included in the EU 27 countries. The list of trading partners of the EU 27 countries is given in Table A-8 in the Appendix. We take into account all developed, developing and poor countries as the trading partners in our analysis because the developed countries accounts for about 90 per cent of the EU trade. From the remaining 10 per cent of the EU trade nearly 40 per cent of EU trade is with the poor countries to whom EU have signed preferential trade agreements under the Generalized System of Preference (SGSP)

and Everything But Arms (EBA) which grants them zero tariff access to the EU markets. Bilateral imports (M) and bilateral exports (X) of the 27 EU member countries have been taken from the United Nations Commodity Trade Statistics Database; UN COMTRADE 2009. Data on GDP, foreign exchange reserves, labor force, gross fixed capital formation, and exchange rates are extracted from World Development Indicator (WDI) 2009. Data on geographical distance between the trading partners, past colonial relationship, common language, and common border are taken from *Centre d'Etudes Prospectives et d'Informations Internationales* (CEPII) online. Imports, exports, GDP, foreign exchange reserves, gross domestic capital formation and exchange rates have been deflated by the CPI of the respective country. Moreover, imports, exports, GDP, foreign exchange reserves, gross domestic capital formation, exchange rates, labor force, and the distance between the importer and exporter country are in log form.

V. Empirical Results

Table 1 shows the results for overall imports. The results reveal that EU imports are highly sensitive to the GDP of the member countries. In simple words GDP of importing country is a significant determinant of its imports. It shows that demand side plays an important role in the EU imports. The results presented in Columns 2 and 3 show that a one per cent rise in GDP of importer country leads to more than one per cent rise in its imports. However, the results presented in Column 3 of the table show that a one per cent increase in GDP leads to a less than one per cent increase in imports. This finding is consistent with the findings of Kandogan (2005), who found the similar results. However, Table 1 shows that exporter country GDP has a positive but insignificant impact on the EU's imports. The GDP of the trading partners of the EU does not play any significant role in explaining the EU's exports. Another factor that plays a significant role in explaining the imports of the EU is the real exchange rate. Columns 2, 3 and 4 in Table 1 show that when domestic currency depreciates the imported goods become relatively cheaper leading to decrease in their demand. These results are consistent with the existing literature. For instance, Kandogan (2005) and Vollrath, et al. (2009) reported that the depreciation of the domestic currency results in lowering the volume of the imports of a country.

Furthermore, Table 1 shows that foreign currency reserves of both importer and exporter country significantly determine the volume of the EU's imports. Kandogan (2005) also reports the similar results. Table 1 also shows that the coefficients of the COL, CL, and CB are positive and significant. This implies that EU countries import more from the countries with whom they have past colonial relationships, share a common language, and have a common border. Actually, these factors reduce the cost of imports which results in reducing the prices of the imported goods from the trading partners with whom EU countries share a common language, have past colo-

nial relationship and have common border. Kandogan (2005) also reports the positive impact of these variables on imports and exports of the EU. However, we could not find a significant impact of similarity of importers' and exporters' economies (SIM), and the impact of relative factor endowment (RF) on EU's imports.

The negative and highly significant coefficient for the distance implies that transportation cost impedes the EU's trade with countries that are far way. Our results are consistent with the findings of Vollrath et al. (2009) and Kandogan(2005). Our results also show that neighboring countries will trade more as compared to the far-flung countries. Clarete, et al. (2003) report the similar results.

Table A-2 and Tables A-7 and A-6 in the Appendix show commodity group level results after and before the 4th and 5th extensions in the EU taking place in 1995 and in 2004, respectively. These tables show that importer country GDP sig-

TABLE 1
Total Import of the EU from 1988 to 2008

	Dependent Variable: Log (Imports)		
	Before 4th Extension	Before 5th Extension	With 4th and 5th Extension
Y_i	1.880***	1.270***	0.616***
	-0.24	-0.136	-0.103
Y_i	0.133	0.082	0.108
	-0.161	-0.078	-0.088
d_{ii}	-1.260***	-1.457***	-1.549***
	-0.094	-0.079	-0.086
SIM	-0.104	-0.04	-0.023
	-0.108	-0.059	-0.06
e_{ii}	-0.077***	-0.111***	-0.133***
	-0.021	-0.02	-0.021
R_i	0.302***	0.475***	0.475***
	-0.038	-0.031	-0.033
R_i	0.144***	0.163***	0.177***
	-0.025	-0.034	-0.038
RF	-0.085	-0.02	-0.006
	-0.075	-0.041	-0.04
COL	0.682***	0.561***	0.561***
	-0.11	-0.122	-0.132
CL	0.471***	0.563***	0.597***
	-0.102	-0.097	-0.108
CB	0.397**	0.555***	0.574***
	-0.16	-0.122	-0.128
N	41824	129811	165901
r_{2-o}	0.597	0.577	0.563

Robust Standard Errors in parentheses, Standard Errors are clustered by Partner Time, Reporter, Partner and Sector fixed effects are controlled * p < 0:1, ** p < 0:05, *** p < 0:01.

nificantly explains the variations in the imports of different commodity groups. Overall, these tables show that commodity group level results are similar to the results for the total imports reported in Table 1. These results hold for entire group of commodities and for before EU's extension in 1995 and in 2004 and for the entire sample period which ranges from 1988 to 2008. This implies that EU's demand for the imports for all the commodity groups has increased with the rise in the income. However, the income elasticities of imports of different commodities groups vary across the commodity groups and over time. For example, Table A-2 shows that income elasticities of demand for imports of Minerals Fuels, Lubricants and related Material, Miscellaneous manufactured article and Commodities and Transactions not classified elsewhere in the SITC are greater than one.

These results are consistent with the existing literature. For example, our finding that a rise in the imports of the Mineral Fuels, Lubricants and related material is due to the increase in the EU countries GDPs, is consistent with the reports of World Energy Technology Outlook (WETO) which states that EU countries meet 60 per cent of their demand for oil and gas from domestic sources.

For all other commodity groups, the income elasticity of demand for import is less than one, which implies that a one per cent rise in the GDP of importing countries leads to less than one per cent increase in imports of commodities included in these commodity groups. Similarly, Tables A-7 and A-6 in the Appendix also report a positive relation between the imports of different commodity groups and the GDP of the importer countries. Kandogan (2005) also reports the similar results.

However, we could not find a significant impact of the exporter countries' GDP on most of the commodity group level imports of the EU countries. Only in the case of Food and Live Animal, Mineral Fuels, Lubricants and related material, Animal and Vegetable Oils, Fats and Waxes, Machinery and Transport Equipments, Miscellaneous manufactured articles and Commodities and transactions not classified elsewhere in the SITC, we find a significant impact of the exporter countries GDP. These results support the findings of Clarete, et al. (2003), Kandogan (2005), Vollrath, et al. (2009) and the supply side preposition that the higher the GDP of a country, the higher will be its exports. This also indicates that the EU countries are diverting their resources from the production of ordinary or low value products to towards the production of more sophisticated and high value manufactured goods as their GDP rise.

In addition, the results show that the impact of the exporter country GDP on the EU imports of the Beverages and Tobacco, Crude Materials, Inedible except Fuel, Chemical and related products, n.e.s, and Food and Live Animal is negative. However, the coefficient of the exporter country GDP is insignificant for the commodity groups. This implies that in these commodity groups EU countries may have gained self-sufficiency. The negative income elasticity of exports for food and live animal may be due to Common Agricultural Policy (CAP) of European countries which makes difficult for agriculture related product of non-EU countries to access the market of EU countries.

Furthermore, the results show that the distance between the importer and exporter country, the real exchange rate, foreign currency reserves of the importer significantly explain the commodity group level imports of the EU. The negative distance elasticity of imports shows that as the distance between importer and exporter increases their trade relations contract but some studies says that EU countries prefer to import from relatively nearer countries. The negative exchange rate elasticity of imports implies that as the domestic currency depreciates imports of the commodities included in these commodity groups decreases. The positive coefficient of the foreign exchange reserves of the importer and exporter implies that increases in foreign exchange reserves increase the EU countries imports by providing stability to their domestic currencies.

We find positive impacts of the past colonial relationship of importer and exporter, common language, and common border on commodity group level imports of the EU countries. The results show that EU countries import more from the countries with whom they have past colonial ties, share a common language and have a common border.

Now we discuss the results for the trade creation and trade diversion effects of the two extensions in the EU, which took place in the 1995 and in 2004. We also discuss the results regarding the trade creation and trade diversion effects of the new members joining the EU in 1995 and in 2004. The results reported in Table 2 show that both the extensions in EU membership have resulted in increasing trade between the EU members. However, this increase in the trade among the member is at the cost of the decrease in the trade with non-member countries. Overall, these two extensions in the EU have resulted increasing the trade of the EU countries. The increase in trade among the members of the EU is more than the decrease in the trade with non-member countries. Thus, in net, these two extensions have increased the trade of the EU countries. Table 2 also shows that the EU's extension which took place in 2004 created more trade among members of the EU as compared to the EU's extension which took place in 1995. However, the decrease in imports from the non-member countries due to the extension in the membership of the EU is relatively more in the extension which occurred in 2004 as compared to the extension which took place in 1995. These results make sense because in 1995 only new three countries joined the EU whereas in 2004 ten new countries became the part of the EU, in turn; the overall total GDP of the EU has increased relatively more after the 5th extensions than the increase in increase in overall total GDP of the EU after the 5th extensions. This rise in the GDP of the EU has is playing its role in increasing the intra-EU trade flows because our findings indicate that an increase GDP of a country significantly increases its trade volume.

Furthermore, 3rd, 4th and 5th columns of Table 2 show that the extensions of EU in 1995 and in 2004 along with the increasing imports from the member countries decrease imports from the non-member countries, for eight out of ten commodity groups. However, these extensions in the EU, membership increases imports

from member countries more than the decrease in imports from the non-member countries. This implies that in general, extensions in the EU have resulted in improving the net trade of the EU countries. Specifically, the extension of the EU taking place in 1995 increases the imports of two commodity groups, Minerals Fuels, Lubricants and related materials and Machinery and Transport Equipments, from member and non-member countries and for all other commodity groups this extension of the EU increases the imports from member countries but decreases the imports from non-member countries.

However, the extension of the EU, which took place in 2004, increases the imports from both member and non-member countries for only one commodity group named Machinery and Transport Equipments and for all other commodity groups, the extension of the EU which took place in 2004 increased imports from member countries at the cost of imports for non-member countries. Our results indicate that both the ex-

TABLE 2
Overall Trade Creation and Trade Diversion Effects
of 4th and 5th Extension in the EU, for Total
and Commodity-Group Level Import

Imports	Extension	TD	TC	Net
Total	4th	-0.0262	0.1185	0.1447
Total	5th	-0.0322	0.1504	0.1826
S3-0	4th	-0.0394	0.2064	0.2458
	5th	-0.0454	0.2492	0.2945
S3-1	4th	-0.0796	0.2373	0.3169
	5th	-0.1069	0.2662	0.3731
S3-2	4th	-0.0288	0.0885	0.1173
	5th	-0.0525	0.128	0.1805
S3-3	4th	0.001	0.0061	0.0052
	5th	-0.0061	0.0236	0.0298
S3-4	4th	-0.0687	0.0835	0.1522
	5th	-0.102	0.1256	0.2276
S3-5	4th	-0.0139	0.0834	0.0973
	5th	-0.0266	0.1124	0.1389
S3-6	4th	-0.0041	0.0462	0.0503
	5th	-0.0148	0.0739	0.0886
S3-7	4th	0.0056	0.1101	0.1045
	5th	0.0213	0.16	0.1386
S3-8	4th	-0.0077	0.0417	0.0494
	5th	-0.0069	0.0553	0.0621
S3-9	4th	-0.0334	0.2047	0.2381
	5th	-0.0461	0.4397	0.4859

See, Section IV.3 for definitions of TD, TC and Net.

See, Appendix, Table A-1, for SITC codes.

tensions of the EU enhance trade with members and non-members in Machinery and Transport Equipments and led to trade diversion in all other commodity groups. Thus, Table 2 shows that the extension in EU has resulted trade creation and trade diversion as well not only for overall imports but at commodity level imports as well.

Our results confirm the findings of Commission of the European Communities (2009) that Machinery and Transport Equipments is the key sector of the EU with 27 per cent of world automotive production and 30 per cent global market share automotive product trade. Our results are consistent with the findings of European Commission for Enterprise and Industry (2010) that the Machinery and Transport Equipments is the key sectors contributing to excellent performance of the EU. Our results are consistent with the findings of Balassa (1967). Our finding that the extensions in the EU membership increase the trade among members significantly is consistent with the findings of Baier and Bergstrand (2007). Our finding that extensions in the EU diverts trade from non-members to member countries in most of the commodity groups implies that EU countries have become less dependent on the rest of the world in most of the commodity groups. Similar results have been reported by Zahniser, et al. (2002) for MERCOSUR and NAFTA.

Now we discuss our findings regarding trade creation and trade diversion effects of the new members joining the EU in 1995 and in 2004. Table 3 shows how much trade has been created and how much trade has been diverted by the new members joining the EU in 1995 and in 2004. This table shows that of the new members joining the EU in the 4th extension only Finland increased its imports from members without affecting its imports from non-members. The remaining two new members, Austria and Sweden, increased their imports from member countries but decreased their imports from non-member countries. Thus, in the light results reported in Table 3 we can say that Austria and Sweden caused the trade diversion but Finland leads to trade creation. However, in net terms, all the countries joining the EU in the 4th extension of the EU increased their trade.

Table 3 also shows that 4 out of the 10 members joining the EU in the 5th extension increased their imports from member countries and also increased their imports from non-member countries. These new members, who increased imports from members as well as from non-member countries are, Estonia, Latvia, Poland and Slovakia. These four countries results in trade creation. All other members joining the EU in the 5th extension increased imports from member countries but decreased imports from non-member countries. The subset of new members who increase imports from the member countries at the cost of imports from non-member countries consists of Cyprus, Hungary, Lithuania, Malta and Slovenia. Thus, these five countries are causing import diversion. However, Table 3 shows that all the countries joining the EU in 5th extension of the EU, whether they are causing imports diversion or not, in net, they increase the imports. This indicates that overall these members increase international trade.

TABLE 3
Overall Trade Creation and Trade Diversion Effects
of New Members joining EU in 4th and 5th
Extension in the EU, for Imports

Extension	New Member	TD	TC	Net
4th	Austria	-0.097	0.147	0.244
	Finland	0.018	0.112	0.094
	Sweden	-0.026	0.308	0.334
	Cyprus	-0.249	-0.09	0.159
	Czech Republic	-	-	-
	Estonia	0.031	0.184	0.153
	Hungary	-0.261	0.388	0.648
5th	Latvia	0.003	0.21	0.207
	Lithuania	-0.124	0.22	0.344
	Malta	-0.121	0.212	0.333
	Poland	0.049	0.345	0.296
	Slovakia	0.043	0.321	0.277
	Slovenia	-0.517	0.104	0.621

See, Section IV.3 for definitions of TD, TC and Net.

See, Appendix, Table A-1, for SITC codes.

1. Robustness

In order to check the sensitivity of our results, we have applied the model given in equation (1) using logged exports of the EU member countries as the dependent variable and calculated the trade creation and trade diversion of the 4th and 5th extensions of the EU. The results are given in Table 4 and Table A-3 below and in Tables A-5 and A-4 in Appendix. The results reported in these tables show that real GDP of EU countries significantly explains EU exports. This indicates that with the increase in the GDP of EU countries their capacity to exports increased. A one per cent increase in the GDP of EU countries leads to a less than one per cent increase in their exports before the 4th extension of the EU. However, a one per cent increase in the GDP of EU countries leads to more than one per cent increase in their exports before the 5th extension of the EU. This indicates that the EU countries' export performance has improved after the 4th extension of the EU. However, the GDP elasticity of exports of the EU countries has decreased to 1:469 after the 4th extension and to 0:929 after the 5th extension of the EU. This suggests that the 5th extension has been relatively less beneficial for the EU's exports performance.

Table 4 shows that importer countries' GDP also significantly explains the exports of the EU. Positive and significant coefficients of importer countries GDP indicate

that demand for EU's exports increases with an increase in the importer countries' GDP. However, Table 4 shows that a one per cent increase in the importer countries' GDP increases EU's exports less than one per cent. However, Table 4 shows that distance between the importers and EU countries and EU's exports are negatively related. As the distance between importer country and the EU countries increase the exports of the EU decrease. This indicates that EU countries export less to far-flung countries. This also implies that as the transportation cost increases the exports of EU countries decrease. This table also shows that EU's exports are sensitive to the variations in real exchange rates. EU countries' exports increase with the depreciation of the domestic currency. Table 4 shows that sensitivity of the EU's exports to real exchange rate has decreased with extensions in the EU's membership. The elasticity of the EU's exports to real exchange rates decrease to 0.173 from 0.222 after the 4th extension

TABLE 4

Total Exports of the EU from 1988 to 2008

	Before 4th Extension	Before 5th Extension	With 4th and 5th Extension
Y_i	0.273**	1.469***	0.929***
	-0.113	-0.12	-0.213
Y_i	0.205**	0.239**	0.296**
	-0.086	-0.097	-0.121
d_{ii}	-1.711***	-1.629***	-1.506***
	-0.1	-0.094	-0.097
SIM	-0.036	-0.084	-0.066
	-0.058	-0.064	-0.084
e_{ii}	0.222***	0.173***	0.124***
	-0.037	-0.026	-0.04
R_i	0.601***	0.565***	0.267***
	-0.024	-0.023	-0.032
R_i	0.063***	0.055**	0.028
	-0.024	-0.023	-0.037
RF	-0.008	-0.03	-0.044
	-0.039	-0.041	-0.063
COL	0.848***	0.834***	0.914***
	-0.123	-0.117	-0.135
CL	0.690***	0.703***	0.726***
	-0.107	-0.104	-0.118
CB	0.595***	0.596***	0.298*
	-0.127	-0.123	-0.178
N	196770	155293	51099
r_{2-o}	0.643	0.665	0.708

Robust Standard Errors in parentheses, Standard Errors are clustered by Partner Time, Reporter, Partner and Sector fixed effects are controlled * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

and it further decreased to 0.124 after the 5th extension in the EU. In addition, this table indicates that foreign reserves of the importer and exporter countries R_{it} and R_{jt} significantly explain variations in the EU's exports by providing the stability to the real exchange rates of the EU's countries with its trading partners. Moreover, Table 4 shows that past colonial relationship of exporter and importer country, common language, and a common border also significantly explain variations in the EU countries' exports. These trade promoting factors positively affect the EU's exports. EU countries export more to the countries with whom they have past colonial relationships, share a common language and have a common border.

Now we discuss our results for commodity group level exports of the EU. Tables A-5 and A-4 in the Appendix show the results for commodity group level exports of the EU before the 4th and 5th extensions of the EU and Table A-3 shows the results for commodity group level exports of the EU for the whole sample period which contains the time period before and after the 4th and 5th extensions of the EU. The results reported in these tables indicate that for most of the commodity groups, commodity group level results for exports are similar to results reported in Table 4 for overall exports of the EU. These tables show that importer and exporter country GDP significantly explains the variations in the commodity level exports of the EU. This implies that both the demand and supply side play their role in determining the commodity level exports of the EU. However, the GDP elasticity of the exports varies across the commodity groups. For example, Table A-3 shows that one per cent change in exporter's GDP leads to 2.488 per cent change in exports of the commodities included in SITC-9 commodity groups. For all other commodity groups one per cent change in exporter's GDP leads to less than one per cent change in exports of the commodities included in these groups. Next, we discuss the trade creation and trade diversion caused by the 4th and 5th extensions of the EU with reference to exports of the EU. The 3rd, 4th and 5th columns of Table 5 show the trade creation, trade diversions and net trade effects of the 4th and 5th extensions of the EU considering the total exports of the EU as well as the commodity group level of the exports of the EU countries. The negative value of the TD in 3rd Column of the Table 5 indicates trade diversion. Positive values of TC in 4th column of the Table 5 indicate trade creation and the values given 5th column of Table 5 presents the net trade effects. Table 5 indicates that with regard to total exports the 4th extension of the EU increases exports of the EU to the EU member countries but decreases the exports to non-member countries. This implies that the 4th extension of the EU caused the exports diversion. The new members joining the EU in 1995 increase exports to member countries at the cost of reducing exports to non-member countries. However, the increase in the exports of new members joining the EU to member countries is more than the reduction in exports to non-member countries.

Table 5 shows that in contrast to the 4th extension of the EU, the 5th extension of the EU, along with increasing the exports to member countries increases exports

to non-member countries as well. This implies that the 5th extension of the EU lead to trade creation. Overall, Table 5 indicates that the 4th extension of the EU diverts trade from the non-member countries to member countries but the 5th extension of the EU increases trade with members and non-member countries. However, with regard to commodity level trade creation, trade diversion and net effects of the 4th and 5th extension of the EU varies across the commodity groups. Table 5 indicates that the 4th and 5th extensions of the EU increase exports to member countries with decreasing the exports to member countries in Minerals Fuels, Lubricants and related material, Machinery and Transport Equipments, Miscellaneous manufactured items and Commodities and Transactions not classified elsewhere in the SITC commodity groups. For all other commodity groups, the 4th and 5th extension of the EU increase exports to member countries but decrease the exports to non-member countries. Our results are consistent with the findings of Commission of the European Communities (2009), Sura (2009) as well as with the findings of Balassa (1967).

TABLE 5

Overall Trade Creation and Trade Diversion of 4th and 5th Extension
in the EU, for Total and Commodity-Group level Export

Exports	Extension	TD	TC	Net
Total	4th	-0.0078	0.1192	0.127
Total	5th	0.0092	0.1607	0.1515
S3-0	4th	-0.0212	0.2587	0.2798
	5th	-0.0203	0.3234	0.3437
S3-1	4th	-0.0294	0.1962	0.2256
	5th	-0.0013	0.2721	0.2734
S3-2	4th	-0.0114	0.0624	0.0738
	5th	-0.0242	0.0748	0.099
S3-3	4th	0.021	0.0029	-0.0181
	5th	0.0251	0.1125	0.0873
S3-4	4th	-0.0606	0.1852	0.2458
	5th	-0.0352	0.0847	0.1199
S3-5	4th	-0.0086	0.1382	0.1468
	5th	-0.1035	0.1832	0.2867
S3-6	4th	-0.0187	0.1221	0.1408
	5th	-0.0175	0.1384	0.1559
S3-7	4th	0.024	0.0851	0.0611
	5th	0.0439	0.088	0.0441
S3-8	4th	0.0088	0.0684	0.0597
	5th	0.0143	0.0714	0.0571
S3-9	4th	0.0021	0.2441	0.2419
	5th	0.4027	0.7173	0.3146

See, Section IV.3 for definitions of TD, TC and Net.

See, Appendix, Table A-1, for SITC codes.

Table 6 shows the trade creation, trade diversion and net trade effects of new members joining the EU in the 4th and 5th extensions of the EU. This table indicates that from the members who joined the EU in the 4th extension only Sweden increased its trade with both members and non-member countries. The other two countries, Austria and Finland increased exports to member countries but decreased their exports to non-member countries. This implies that Austria and Finland have diverted their exports from non-members to member countries and caused trade diversion. However, Sweden the third member joining the EU in the 4th extension of the EU presents evidence of trade creation. However, the increase in the exports of Austria and Finland to member countries is greater than the decrease in exports to non-member countries. In addition, Table 6 points out that from the countries who joined EU in the 5th extension of the EU, Cyprus, Estonia, Hungary and Slovenia caused export diversion as the values of TD are less than zero for these countries. This implies that these new members of the EU increase their exports to member countries at the cost of decrease in the exports to non-member countries. However, their increase in the exports to member countries is greater than the decrease in the exports to non-member countries.

Moreover, Table 6 indicates that Latvia, Lithuania, Malta, Poland and Slovakia led to trade creation and increase their exports to member and non-member countries. However, the increase in the exports of these countries to member countries is greater than the increase in their exports to non-member countries. Thus, these countries lead to trade creation after joining the EU in 2004.

TABLE 6
Overall Trade Creation and Trade Diversion of New Members joining
EU in 4th and 5th Extension in the EU, for Exports

Extension	New Member	TD	TC	Net
4th	Austria	-0.123	0.085	0.207
	Finland	-0.009	0.078	0.087
	Sweden	0.105	0.319	0.214
5th	Cyprus	-0.444	-0.443	0.001
	Czech Republic	-	-	-
	Estonia	-0.081	0.016	0.097
	Hungary	-0.023	0.289	0.312
	Latvia	0.056	0.352	0.296
	Lithuania	0.035	0.515	0.48
	Malta	0.171	0.209	0.038
	Poland	0.06	0.56	0.501
	Slovakia	0.016	0.364	0.348
Slovenia	-0.03	0.181	0.211	

See, Section IV.3 for definitions of TD, TC and Net.
The data of Czech Republic is not available.

VI. Conclusion

In this paper, we analyzed the impact of the 4th and 5th extensions of the EU on the trade with members as well as with the rest of the world. Particularly, we estimated the trade creation and trade diversion impacts of the 4th and 5th extensions of the EU for total imports, exports and for each commodity group classified by SITC. Finally, we analyzed the trade creation and trade diversion impacts of new members joining the EU in these two extensions. We used correctly-specified fixed effect gravity model on the panel of 27 EU member countries spanning from 1988 to 2008. The results provide evidence that the effects of the 4th and 5th extensions of the EU on trade flows are mixed. In some product groups, the EU creates trade among members without affecting their trade with non-member countries and in some other product categories the EU diverts trade from the rest of world to member countries. After the 4th and 5th extensions of the EU, the member countries have decreased their imports from non-member countries and have increased their imports from the member countries. However, the decrease in imports from non-member countries is lower than the increase in imports from member countries. This implies that the intra EU trade has strengthened after the 4th and 5th extension of the EU and the EU member countries' trade with the rest of the world has suffered. These findings provide the evidence of trade diversion taking place in result of the 4th and 5th extensions of the EU.

We also found that after the 4th extension of the EU the member countries divert their exports from non-member countries to member countries. However, this diversion of exports from non-member countries to member countries is lower than the increase in their export to member countries. Furthermore, we found that after the 5th extension of the EU the exports of the EU countries has increased to both member and non-member countries. These findings indicate that the 5th extension has resulted in trade creation but the 4th extension has resulted in trade diversion. Our results regarding trade creation and trade diversion impacts of the extensions in the EU for commodity level imports and exports indicate that after the 4th extension of EU, intra EU imports has increased at the cost of decreasing imports from the rest of the world in all the commodity groups except Minerals Fuel, Lubricants and related material and Machinery and Transport equipments. This indicates that except these two-commodity groups the 4th extension of the EU leads to trade diversion. The evidence of the trade diversion impact for most of the commodity groups is an indication that the EU countries are becoming self sufficient in fulfilling the domestic need for the products included in the commodity groups. The dependence of the EU countries on the non-member countries has further decreased after the 4th extension of the EU that has led to imports diversion in all the commodity groups except Machinery and Transport Equipments.

Similarly, our findings show that both 4th and 5th extensions in the EU divert exports of all the commodity groups except Minerals Fuel, Lubricants and related material and Machinery and Transport equipments from non-member countries to member countries. On the whole, our findings suggest that trade creation and trade diversion effects of the extensions in the EU vary across the extensions, across the commodity groups, and across the new members joining the EU in fourth and fifth extensions of the EU.

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APPENDIX

Trade Creation and Diversion Effects of European Union

TABLE A-1
Standard International Trade Classification, Revision 3

SITC Code	Explanation
SITC-0	Food and Live Animal
SITC-1	Beverages and Tobacco
SITC-2	Crude Materials, Inedible except Fuel
SITC-3	Minerals Fuels, Lubricants and Related material
SITC-4	Animal and vegetable oils, Fats and Waxes
SITC-5	Chemical and Related Products, n.e.s
SITC-6	Manufactured goods classified chiefly by material
SITC-7	Machinery and Transport Equipments
SITC-8	Miscellaneous manufactured article
SITC-9	Commodities and Transactions not Classified elsewhere in the SITC

TABLE A-2
Commodity Level Imports of the EU from 1988 to 2008
Dependent Variable: Log(Imports)

	SITC-0	SITC-1	SITC-2	SITC-3	SITC-4	SITC-5	SITC-6	SITC-7	SITC-8	SITC-9
Y_i	0.611***	0.29	0.400*	1.094***	0.342	0.469**	0.523***	0.336	1.281***	2.480***
Y_i	-0.188	-0.391	-0.218	-0.364	-0.535	-0.229	-0.179	-0.21	-0.171	-0.787
d_{it}	0.05	-0.134	-0.013	0.121	1.034***	-0.053	0.147	0.202	0.153	0.322**
	-0.109	-0.16	-0.103	-0.32	-0.35	-0.175	-0.114	-0.142	-0.137	-0.159
	-1.587***	-1.174***	-1.639***	-2.459***	-1.445***	-1.655***	-1.740***	-1.505***	-1.500***	-1.398***
SIM	-0.136	-0.133	-0.145	-0.236	-0.153	-0.132	-0.128	-0.137	-0.144	-0.222
	-0.0001	-0.082	0.042	-0.204	-0.235	0.154	-0.021	0.067	-0.114	0.033
	-0.099	-0.123	-0.103	-0.205	-0.18	-0.097	-0.089	-0.094	-0.086	-0.161
e_{it}	-0.152***	-0.137***	-0.170***	-0.221***	-0.103**	-0.110***	-0.101***	-0.115***	-0.113***	-0.070*
	-0.024	-0.04	-0.028	-0.061	-0.043	-0.023	-0.026	-0.031	-0.027	-0.041
R_i	0.401***	0.541***	0.561***	0.441***	0.351***	0.478***	0.491***	0.550***	0.462***	0.089
	-0.051	-0.092	-0.048	-0.105	-0.099	-0.058	-0.047	-0.051	-0.045	-0.118
R_i	0.200***	0.288***	0.185***	0.202	0.105	0.229***	0.161***	0.152***	0.115**	0.021
	-0.052	-0.08	-0.045	-0.136	-0.08	-0.046	-0.049	-0.047	-0.053	-0.079
RF	-0.023	-0.052	0.042	-0.055	-0.05	0.117	-0.024	0.04	-0.033	0.049
	-0.072	-0.094	-0.073	-0.148	-0.152	-0.073	-0.061	-0.073	-0.061	-0.12
COL	0.956***	0.697***	0.581***	0.221	0.451*	0.520**	0.562***	0.634***	0.881***	0.896**
	-0.2	-0.229	-0.201	-0.329	-0.234	-0.208	-0.18	-0.192	-0.179	-0.371
CL	0.927***	0.629**	0.413**	0.482*	0.343	0.471**	0.799***	0.556***	0.508***	1.154***
	-0.168	-0.249	-0.183	-0.283	-0.249	-0.202	-0.179	-0.173	-0.159	-0.294
CB	0.421**	0.578**	0.778**	1.198***	1.457***	0.552***	0.148	0.353**	0.21	0.623*
	-0.191	-0.234	-0.192	-0.315	-0.22	-0.206	-0.174	-0.178	-0.186	-0.336
N	23712	12334	20778	8361	7401	16948	22201	21409	23754	9003
r_{2-0}	0.724	0.589	0.685	0.614	0.607	0.788	0.82	0.825	0.855	0.582

Robust Standard errors in parentheses. Standard errors are clustered by Partner. Time, Reporter, Partner and Sector fixed effects are controlled
* p < 0.1, ** p < 0.05, *** p < 0.01 See, Table A-1 in the Appendix for SITC Code Explanation.

TABLE A-3
Commodity Level Exports of the EU from 1988 to 2008

	Dependent Variable: Log(Exports)									
	SITC-0	SITC-1	SITC-2	SITC-3	SITC-4	SITC-5	SITC-6	SITC-7	SITC-8	SITC-9
Y_i	0.332*	0.944***	0.097	0.821**	0.927*	0.236	0.085	0.569***	0.612***	2.448***
Y_i	-0.196	-0.358	-0.235	-0.335	-0.501	-0.184	-0.207	-0.169	-0.175	-0.476
	0.101	0.205	0.232*	0.368**	0.08	0.256***	0.298**	0.336***	0.244**	0.212*
d_{it}	-0.104	-0.183	-0.131	-0.188	-0.17	-0.083	-0.148	-0.117	-0.12	-0.11
	-1.639***	-1.624***	-1.691***	3.018***	-1.622***	-1.928***	-1.783***	-1.802***	-1.610***	-1.263***
SIM	-0.146	-0.148	-0.118	-0.176	-0.179	-0.125	-0.114	-0.118	-0.131	-0.179
	-0.001	-0.101	0.019	0.109	0.217	-0.054	0.047	-0.081	-0.09	-0.078
	-0.096	-0.131	-0.1	-0.165	-0.196	-0.073	-0.101	-0.073	-0.085	-0.13
e_{it}	0.221***	0.164***	0.199***	0.155***	0.154***	0.282***	0.292***	0.232***	0.205***	0.130***
	-0.043	-0.046	-0.048	-0.048	-0.045	-0.057	-0.055	-0.042	-0.036	-0.026
R_i	0.592***	0.311***	0.503***	0.542***	0.429***	0.799***	0.644***	0.680***	0.659***	-0.11
	-0.059	-0.074	-0.061	-0.089	-0.124	-0.045	-0.044	-0.046	-0.037	-0.083
R_i	0.077***	0.047	0.101**	0.089	0.014	0.047*	0.037	0.105***	0.061**	0.01
	-0.026	-0.047	-0.043	-0.061	-0.048	-0.027	-0.033	-0.025	-0.03	-0.038
RF	-0.014	-0.075	0.011	-0.009	0.072	-0.009	0.056	-0.009	-0.028	-0.06
	-0.062	-0.089	-0.064	-0.113	-0.135	-0.048	-0.057	-0.052	-0.06	-0.103
COL	0.886***	0.706***	0.721***	0.610***	0.612***	0.976***	1.025***	1.048***	1.218***	0.825***
	-0.173	-0.177	-0.15	-0.234	-0.201	-0.16	-0.173	-0.178	-0.188	-0.192
CL	0.856***	0.616***	0.658***	0.27	0.626***	0.650***	0.549***	0.637***	0.903***	0.968***
	-0.171	-0.173	-0.15	-0.238	-0.225	-0.147	-0.172	-0.167	-0.167	-0.204
CB	0.779***	0.527**	0.763***	1.132***	1.318***	0.352*	0.231	-0.018	0.188	0.742***
	-0.183	-0.215	-0.192	-0.225	-0.198	-0.194	-0.165	-0.2	-0.212	-0.24
N	21214	16638	18301	13025	9393	25853	26716	27820	26203	11607
r_{2-0}	0.69	0.621	0.705	0.575	0.54	0.76	0.794	0.797	0.806	0.629

Robust Standard errors in parentheses. Standard errors are clustered by Partner. Time, Reporter, Partner and Sector fixed effects are controlled
* p < 0.1, ** p < 0.05, *** p < 0.01 See, Table A-1 in the Appendix for SITC Code Explanation.

TABLE A-4
Commodity Level Exports of the EU before 5th Extension in the EU

	Dependent Variable: Log(Exports)									
	SITC-0	SITC-1	SITC-2	SITC-3	SITC-4	SITC-5	SITC-6	SITC-7	SITC-8	SITC-9
Y_i	0.763***	1.382***	0.593*	1.217***	3.372***	2.120***	1.483***	1.838***	1.201***	0.983
Y_i	-0.212	-0.366	-0.307	-0.43	-0.611	-0.222	-0.239	-0.22	-0.205	-0.69
d_i	-0.01	0.445*	0.112	0.737***	0.045	0.176***	0.292*	0.353**	0.218*	0.269**
d_i	-0.145	-0.232	-0.114	-0.166	-0.195	-0.067	-0.166	-0.146	-0.116	-0.117
d_i	-1.536***	-1.590***	-1.606***	-2.881***	-1.498***	-1.828***	-1.740***	-1.721***	-1.557***	-1.233***
SIM	-0.14	-0.153	-0.12	-0.175	-0.179	-0.123	-0.106	-0.109	-0.134	-0.16
SIM	0.019	-0.187	0.084	0.065	0.023	-0.076	-0.052	-0.08	-0.153*	-0.169
e_{ii}	-0.108	-0.134	-0.097	-0.15	-0.161	-0.064	-0.099	-0.082	-0.088	-0.136
e_{ii}	0.183***	0.130***	0.144***	0.134***	0.140***	0.195***	0.214***	0.179***	0.170***	0.125***
R_i	-0.033	-0.04	-0.035	-0.047	-0.038	-0.04	-0.043	-0.034	-0.025	-0.031
R_i	0.543***	0.318***	0.461***	0.503***	0.316***	0.754***	0.607***	0.631***	0.615***	-0.374***
R_i	-0.057	-0.072	-0.065	-0.09	-0.109	-0.042	-0.042	-0.042	-0.038	-0.088
R_i	0.065**	0.047	0.077**	0.065	0.043	0.036	0.015	0.095***	0.057**	0.026
RF	-0.028	-0.045	-0.036	-0.051	-0.041	-0.025	-0.032	-0.025	-0.028	-0.039
RF	0.016	-0.177**	0.065	-0.005	-0.05	-0.008	0.018	0.013	-0.093	-0.114
RF	-0.071	-0.089	-0.063	-0.104	-0.112	-0.049	-0.057	-0.055	-0.058	-0.105
COL	0.831***	0.675***	0.755***	0.598**	0.606***	0.930***	0.917***	1.085***	1.231***	0.821***
COL	-0.169	-0.181	-0.144	-0.24	-0.209	-0.158	-0.157	-0.172	-0.185	-0.172
CL	0.916***	0.635***	0.680***	0.308	0.606**	0.664***	0.674***	0.625***	0.902***	0.964***
CL	-0.172	-0.174	-0.151	-0.241	-0.24	-0.144	-0.152	-0.166	-0.161	-0.201
CB	0.849***	0.586***	0.706***	1.192***	1.168***	0.427**	0.239	0.029	0.18	0.551***
CB	-0.184	-0.226	-0.186	-0.226	-0.209	-0.188	-0.159	-0.2	-0.215	-0.212
N	16879	13601	14424	10132	7899	20189	21046	21607	20307	9209
r_{2-0}	0.711	0.645	0.732	0.607	0.568	0.787	0.815	0.81	0.82	0.64

Robust Standard errors in parentheses, Standard errors are clustered by Partner. Time, Reporter, Partner and Sector fixed effects are controlled
* p<0.1, ** p<0.05, *** p<0.01. See, Table A-1 in the Appendix for SITC Code Explanation.

TABLE A-5
Commodity Level Exports of the EU before 4th Extension in the EU

	Dependent Variable: Log(Exports)									
	SITC-0	SITC-1	SITC-2	SITC-3	SITC-4	SITC-5	SITC-6	SITC-7	SITC-8	SITC-9
Y_i	1.307**	-0.397	0.168	-0.878	2.357	1.954***	1.070**	1.991***	0.627	18.935***
Y_i	-0.593	-0.512	-0.494	-1.522	-1.549	-0.422	-0.5	-0.52	-0.433	-1.431
d_{it}	-0.015	0.718**	0.515***	1.131**	0.169	0.231*	0.448*	0.390*	0.406**	0.562***
	-0.45	-0.355	-0.165	-0.549	-0.299	-0.132	-0.237	-0.23	-0.182	-0.213
	-1.228***	-1.544***	-1.339***	2.888***	-1.706***	-1.751***	-1.658***	-1.521***	-1.204***	-1.063***
SIM	-0.132	-0.191	-0.13	-0.262	-0.148	-0.137	-0.138	-0.127	-0.158	-0.187
	0.076	-0.256	-0.008	-0.097	0.109	-0.007	-0.088	-0.011	-0.14	0.202
	-0.183	-0.177	-0.116	-0.263	-0.252	-0.102	-0.122	-0.123	-0.112	-0.178
e_{it}	0.208***	0.169**	0.083**	0.047	0.116	0.131***	0.144***	0.102**	0.166***	0.079**
	-0.049	-0.068	-0.039	-0.099	-0.071	-0.043	-0.051	-0.05	-0.049	-0.033
R_i	0.240***	0.233***	0.388***	0.142	-0.169	0.112**	0.189***	0.454***	0.276***	-0.515***
	-0.08	-0.09	-0.078	-0.147	-0.155	-0.053	-0.062	-0.074	-0.06	-0.136
R_i	-0.029	-0.074*	0.072	0.102	0.064	0.018	0.03	0.028	0.025	-0.058*
	-0.059	-0.044	-0.054	-0.08	-0.081	-0.04	-0.047	-0.039	-0.039	-0.032
RF	0.044	-0.200*	-0.047	-0.113	-0.065	0.023	-0.057	-0.009	-0.059	0.172
	-0.123	-0.121	-0.091	-0.174	-0.168	-0.07	-0.089	-0.095	-0.084	-0.123
COL	0.894***	0.624***	0.977***	0.814***	0.214	1.024***	1.102***	1.144***	1.359***	0.740***
	-0.185	-0.205	-0.16	-0.295	-0.269	-0.174	-0.173	-0.18	-0.196	-0.201
CL	0.798***	0.636***	0.538***	0.228	0.873***	0.635***	0.674***	0.744***	1.017***	1.256***
	-0.186	-0.195	-0.179	-0.338	-0.289	-0.15	-0.163	-0.177	-0.177	-0.225
CB	0.725***	0.473*	0.327*	0.677**	0.880***	0.06	-0.268	-0.196	-0.069	0.214
	-0.222	-0.254	-0.194	-0.33	-0.278	-0.231	-0.204	-0.249	-0.267	-0.335
N	5504	4832	4839	3346	2919	6364	6621	6785	6496	3393
r_{2-0}	0.764	0.721	0.79	0.671	0.612	0.838	0.859	0.84	0.863	0.717

Robust Standard errors in parentheses. Standard errors are clustered by Partner. Time, Reporter, Partner and Sector fixed effects are controlled
* p < 0.1, ** p < 0.05, *** p < 0.01, See Table A.1 in the Appendix A for SITC Code Explanation.

TABLE A-6
Commodity Level Imports of the EU before 5th Extension in the EU

	Dependent Variable: Log(Imports)									
	SITC-0	SITC-1	SITC-2	SITC-3	SITC-4	SITC-5	SITC-6	SITC-7	SITC-8	SITC-9
Y_i	1.230***	0.846*	1.050***	1.090*	1.199*	1.092***	0.787***	0.643**	2.329***	2.452***
	-0.259	-0.452	-0.265	-0.63	-0.62	-0.24	-0.232	-0.303	-0.221	-0.676
Y_{ij}	-0.025	-0.194	-0.04	0.482	0.654	0.026	0.128	0.308**	0.131	0.12
	-0.084	-0.154	-0.085	-0.351	-0.463	-0.168	-0.1	-0.132	-0.152	-0.129
d_{it}	-1.544***	-1.103***	-1.611***	-2.351***	-1.304***	-1.635***	-1.673***	-1.388***	-1.369***	-1.550***
	-0.135	-0.154	-0.144	-0.232	-0.162	-0.122	-0.128	-0.135	-0.145	-0.245
SIM	0.067	-0.13	-0.061	-0.391**	-0.364**	0.012	0.057	0.047	-0.107	-0.048
	-0.087	-0.125	-0.091	-0.188	-0.185	-0.088	-0.094	-0.094	-0.098	-0.163
e_{it}	-0.118***	-0.113***	-0.128***	-0.213***	-0.056	-0.096***	-0.093***	-0.124***	-0.086***	-0.063
	-0.025	-0.036	-0.026	-0.054	-0.048	-0.024	-0.022	-0.028	-0.03	-0.039
R_{it}	0.437***	0.554***	0.568***	0.463***	0.386***	0.478***	0.427***	0.458***	0.452***	0.291**
	-0.048	-0.089	-0.044	-0.092	-0.106	-0.052	-0.04	-0.047	-0.045	-0.118
R_{it}	0.170***	0.227***	0.151***	0.282***	0.06	0.210***	0.143***	0.185***	0.092	0.057
	-0.05	-0.073	-0.044	-0.093	-0.088	-0.047	-0.039	-0.045	-0.059	-0.072
RF	0.016	-0.071	-0.019	-0.17	-0.164	-0.009	0.004	0.047	-0.04	-0.002
	-0.066	-0.089	-0.07	-0.124	-0.156	-0.064	-0.071	-0.07	-0.072	-0.12
COL	0.954***	0.494**	0.616***	0.26	0.464**	0.542***	0.609***	0.608***	0.894***	1.007***
	-0.198	-0.239	-0.2	-0.249	-0.222	-0.186	-0.163	-0.183	-0.168	-0.277
CL	0.884***	0.814***	0.337*	0.345	0.2	0.421**	0.644***	0.635***	0.532***	0.956***
	-0.169	-0.237	-0.179	-0.253	-0.23	-0.201	-0.153	-0.158	-0.145	-0.246
CB	0.428**	0.499**	0.702***	1.171***	1.327***	0.511***	0.241	0.409**	0.298	0.397
	-0.188	-0.244	-0.192	-0.302	-0.249	-0.195	-0.175	-0.172	-0.189	-0.319
N	18857	9520	16571	6607	5917	13130	17400	16505	18368	6936
r_{2-o}	0.742	0.62	0.703	0.658	0.63	0.81	0.836	0.843	0.867	0.635

Robust Standard errors in parentheses. Standard errors are clustered by Partner. Time, Reporter, Partner and Sector fixed effects are controlled
* p < 0.1, ** p < 0.05, *** p < 0.01. See, Table A.1 in the Appendix A for SITC Code Explanation.

TABLE A-7
Commodity Level Imports of the EU before 4th Extension in the EU

	Dependent Variable: Log(Imports)									
	SITC-0	SITC-1	SITC-2	SITC-3	SITC-4	SITC-5	SITC-6	SITC-7	SITC-8	SITC-9
Y_i	0.944*	1.214**	1.855***	1.552	1.145	0.765*	1.325**	1.062*	3.612***	8.864***
Y_i	-0.486	-0.526	-0.554	-1.176	-0.829	-0.462	-0.59	-0.603	-0.465	-1.715
d_{it}	0.440**	-0.097	-0.186	1.562**	0.246	0.24	-0.241	0.476	0.241	-0.774**
SIM	-0.199	-0.343	-0.222	-0.75	-0.385	-0.243	-0.205	-0.299	-0.266	-0.369
e_{it}	-1.173***	-0.556***	-1.487***	-2.045***	-1.376***	-1.452***	-1.405***	-1.211***	-1.126***	-1.329***
	-0.154	-0.212	-0.179	-0.257	-0.21	-0.162	-0.137	-0.124	-0.159	-0.327
	-0.06	-0.136	-0.279*	-0.513*	-0.403	-0.126	0.049	0.107	-0.241*	0.168
	-0.137	-0.263	-0.167	-0.294	-0.276	-0.139	-0.142	-0.201	-0.145	-0.252
	-0.066***	-0.063*	-0.101***	-0.234***	-0.009	-0.122***	-0.051*	-0.098**	-0.108***	0.113**
	-0.023	-0.035	-0.028	-0.081	-0.057	-0.029	-0.029	-0.041	-0.033	-0.051
R_i	0.156**	0.534***	0.178**	0.539***	0.265*	0.345***	0.374***	0.354***	0.171***	0.077
R_i	-0.077	-0.112	-0.076	-0.209	-0.143	-0.079	0.128***	-0.081	-0.057	-0.177
RF	0.064	0.138*	0.133***	0.329***	0.021	0.264***	0.128***	0.197***	0.205***	-0.056
COL	-0.041	-0.072	-0.042	-0.111	-0.11	-0.056	-0.048	-0.073	-0.062	-0.105
	-0.091	-0.164	-0.210*	-0.307	-0.351*	-0.13	-0.01	0.132	-0.143	0.148
	-0.106	-0.198	-0.111	-0.216	-0.213	-0.106	-0.108	-0.162	-0.115	-0.205
	1.073***	0.408	0.723***	0.202	0.234	0.682***	0.691***	0.835***	1.019***	1.439***
CL	-0.185	-0.297	-0.203	-0.268	-0.265	-0.204	-0.164	-0.19	-0.159	-0.284
	0.869***	0.852***	0.198	0.463*	0.324	0.338	0.650***	0.509***	0.525***	0.650**
CB	-0.17	-0.269	-0.205	-0.273	-0.297	-0.215	-0.16	-0.173	-0.149	-0.287
	0.327	0.573*	0.267	0.956***	1.215***	0.051	-0.006	0.287	-0.019	0.437
N	-0.238	-0.298	-0.251	-0.31	-0.243	-0.207	-0.214	-0.23	-0.247	-0.481
	6035	3143	5490	2175	2049	4058	5538	5079	5735	2522
r_{2-0}	0.773	0.68	0.728	0.708	0.695	0.857	0.857	0.876	0.895	0.704

Robust Standard errors in parentheses. Standard errors are clustered by Partner. Time, Reporter, Partner and Sector fixed effects are controlled
* p < 0.1, ** p < 0.05, *** p < 0.01. See, Table A.1 in the Appendix A for SITC Code Explanation.

TABLE A-8

Trading Partners of the EU

Afghanistan, Albania, Algeria, American Samoa, Andorra, Angola, Antarctica, Antigua and Barbuda, Argentina, Armenia, Aruba, Australia, Austria, Azerbaijan, Bahamas, Bahrain, Bangladesh, Barbados, Belarus, Belgium, Belize, Benin, Bermuda, Bhutan, Bolivia, Bosnia and Herzegovina, Botswana, Bouvet Island, Brazil, Brunei Darussalam, Bulgaria, Bunkers, Burkina Faso, Burundi, Cambodia, Cameroon, Canada, Cape Verde, Cayman Island, Chad, Chile, China, Christmas Island, Cocos Island, Colombia, Comoros, Congo Democratic Republic, Congo Republic, Cook Island, Costa Rica, Cote d'Ivoire, Croatia, Cuba, Cyprus, Czech Republic, Czechoslovakia, Denmark, Djibouti, Dominica, Dominican Republic, Ecuador, Egypt, Arab Republic, El Salvador, Equatorial Guinea, Eritrea, Estonia, Ethiopia, Faeroe Islands, Falkland Island, Fiji, Finland, Fmr Arab Republic of Yemen, Fmr Democratic Republic of Germany, Fmr Democratic Yemen, Fmr Ethiopia, Fmr Fed. Republic of Germany, Fmr USSR, Fmr Yugoslavia, France, French Guiana, French Polynesia, Gabon, Gambia, Georgia, Germany, Ghana, Gibraltar, Greece, Greenland, Grenada, Guadeloupe, Guam, Guatemala, Guinea, Guinea-Bissau, Guyana, Haiti, Heard Island and McDonald Islands, Holy See (Vatican City State), Honduras, Hong Kong SAR China, Hungary, Iceland, India, Indonesia, Iran, Iraq, Ireland, Israel, Italy, Jamaica, Japan, Jordan, Kazakhstan, Kenya, Kiribati, Korea Democratic Republic, Korea Republic, Kuwait, Kyrgyz Republic, Lao PDR, Latvia, Lebanon, Lesotho, Liberia, Libya, Lithuania, Luxembourg, Macao SAR China, Macedonia, FYR, Madagascar, Malawi, Malaysia, Maldives, Mali, Malta, Marshall Islands, Martinique, Mauritania, Mauritius, Mayotte, Mexico, Micronesia, Moldova, Mongolia, Montenegro, Montserrat, Morocco, Mozambique, Myanmar, Namibia, Nauru, Nepal, Netherlands, New Caledonia, New Zealand, Nicaragua, Niger, Nigeria, Niue, Norfolk Island, Northern Mariana Islands, Norway, Oman, Pakistan, Palau, Panama, Papua New Guinea, Paraguay, Peru, Philippines, Pitcairn, Poland, Portugal, Qatar, Romania, Russian Federation, Rwanda, Saint Helena, Saint Pierre and Miquelon, Samoa, San Marino, Sao Tome and Principe, Saudi Arabia, Senegal, Serbia, Seychelles, Sierra Leone, Singapore, Slovak Republic, Slovenia, Solomon Islands, Somalia, South Africa, South Georgia and the South Sandwich Island, Spain, Sri Lanka, Saint Kitts and Nevis, Saint Lucia, Saint Vincent and the Grenadines, Sudan, Suriname, Swaziland, Sweden, Switzerland, Syrian Arab Republic, Tajikistan, Tanzania, Thailand, Timor-Leste, Togo, Tokelau, Tonga, Trinidad and Tobago, Tunisia, Turkey, Turkmenistan, Turks and Caicos Islands, Tuvalu, Uganda, Ukraine, United Arab Emirates, United Kingdom, United States, Uruguay, Uzbekistan, Vanuatu, Venezuela, RB, Vietnam, Virgin Islands (U.S.), Wallis and Futuna Island, West Bank and Gaza, Yemen, Republic, Zambia, Zimbabwe
