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ON THE IMPACT OF THE EU GSP SCHEME

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INTRODUCTION

The aim of this study is to provide an evaluation of the Generalized System of Preferences (GSP) of the European Union (EU).

A GSP is an agreement, through which the EU discriminates in favor of developing countries by reducing tariff barriers. The ultimate goal of tariff concessions is to encourage the growth of these counties exports to the EU. In this work we intend to verify empirically the question whether the GSP does indeed play a useful role in fostering exports from the beneficiary countries.

The main preferential regimes can be classified into three main categories (Tangerman, 2002): (1) GSP; (2) special preferential regimes based on the principle of non reciprocity, for groups of developing countries; (3) regional reciprocal free trade agreements between developed and developing countries. According to the World Trade Organization regional trade agreements include bilateral free trade agreements, customs unions and multilateral agreements. The fundamental difference between free trade agreements (or customs unions and preferential trade agreements is that with the former the concession of preferential treatment is reciprocal, whereas with the latter preferential treatment is one-sided. Multilateral trade agreements, according to the rules laid down by the WTO are by their nature non discriminatory: in other words, the countries involved cannot discriminate between one trading partner and another. Thus all imports are subject to duties on the basis of the Most Favored Nation clause[1] (MFN), or to the country whose exports are subject to the lowest duty.

There are nevertheless certain cases in which trade takes place on a discriminatory basis, i.e. when preferential agreements are signed. These provide a sort of fast lane for the exports of products and represent an exception to the MFN principle, which in the ambit of the WTO considers illegal all preferential treatment of one country rather than another (this exception is permitted under article 24 of the WTO charter.

[1] The "Most Favored Nation" clause is a concession recognized under international law by which one state (the donor) is obliged to concede to another (the beneficiary) or a person or body representing the state all the benefits, advantages and favors that the former has conceded or will concede in the future to any other third state. The country entitled to most favored nation status will, therefore, benefit from treatment which cannot be less favorable than that reserved for any other state.

The preferences operate according to the following mechanism: in the presence of an import tariff, a state concedes a preference, that is to say applies to another country or group of countries a lower or zero customs duty in order to increase the latter's exports. These agreements can either be defined as trade creating, i.e. they general new flows of trade, or trade diverting, i.e. moving preexistent trade flows in another direction. In the past it was believed that these measures had a greater effect than was the case in reality but, at the present time, the debate on the actual effects is very much open[2].

In the literature some authors support the idea that preferential trade agreements help to achieve the aim of global free trade while, for others, such agreements produce the opposite result, by creating obstacles to multinational agreements which would be far more advantageous for developing countries (Krugman, 1991; Kruegar, 1999; Winters, 1993; Bhagwati, 1998; Panagariya, 1998; Cadot et al. 2001).

The most important EU trade preference regime is the GSP, Generalized Preferential System DRUG, now PLUS (GSP DRUG); the Everything But Arms initiative (EBA), the Cotonou Agreement, now the European Partnership Agreements and, finally, the Euro-Mediterranean Partnership Agreements.

The EBA initiative introduced in 2001 is the agreement that, together with EPAs, guarantees high preferences through the concession of access to the European Community of all the exports aside from arms and ammunition, from 50 developing countries without the application of any tariff or quantitative limits. Unlike the EBA agreement, in the GSP and GSP DRUG not all agricultural products enjoy such generous concessions, despite the fact in 2006 a new version of the GSP was introduced with the idea of extending the range of agricultural products. In addition to the GSP, the EU has signed a new agreement with African, Caribbean and Pacific countries (ACP) called the Cotonau agreement, in which preferential tariff for agricultural goods are in most cases equal to zero, although restrictions and limitations still exist for certain co-called sensitive products. In 2008 the new APE agreements, which substituted the

[2] A PTA improves the welfare of a country if it stimulates the creation of new trade flows, but worsens it if it substitutes existing trade flows for others which cost more. Therefore, there is trade creation when the formation of an APC favors the substitution of a high cost national product with lower cost imports. On the other hand, trade diversion occurs when the formation of an APC leads to the substitution of low cost imports from third part countries with high cost imports from member states.

Cotonau agreement, modifying EU trade policy, came into force. Their most characteristic is the principal of reciprocity in the agreement: 78 countries (plus South Africa as observer) are involved in the European partnership agreements. Finally, reference should be made to the bilateral agreements that the EU has signed with many countries of the Mediterranean basin, in the ambit of the integration process started in Barcelona in 1995, the objective of which was to create, within the year 2010, a free trade area between the different regions of the Mediterranean basin. Yet, this agreement includes only a few preferential concessions on agricultural items, because such products are in competition with the same products grown in the EU.

The focus of this work is the effects of the GPS, whose fundamental goal is to assign tariff preferences to developing countries and stimulate their exports. GPS recognizes tariff preferences on a non discriminatory and non reciprocal basis mainly for industrial and semi industrial products. Moreover, as underlined in the introduction to the EU Regulation number 980/2005, the GSP has the ultimate aim of eliminating poverty and promoting sustainable development and sound governance for the economies of the developing countries that benefit from the scheme. Although the GPS was the fruit of a multilateral accord negotiated within the GATT, this measure of preferential treatment is applied solely by the European Union. This means that the level of preferences changes from one country to another. The scheme is characterized by numerous criteria and levels of differentiation between the different beneficiary countries, but the differentiation concerns the sensitivity of products above all. The general regime is conceded to all the beneficiary countries, classified by the World Bank as countries with low to medium levels of income and with an insufficiently diversified export base. The two special regimes are aimed at poor countries with the lowest level of development.

There have been numerous studies in the literature analyzing the role of preferential trade agreements (Anderson and Van Wincoop, 2003; Person and Wilhelmsson, 2005; Martinez-Zarzoso et al., 2006; Cipollina and Salvatici, 2007; Aiello et al., 2008; Cardamone, 2008).

The studies that analyze the impact of the GPS do not agree on the actual effectiveness of the scheme on account of the high administrative costs, restrictive rules of origin, and other conditions that impede the full take-up of the preference (Nilsonn,

2002; Personn and Wilhelmsonn, 2005; Verdeja, 2006 Demaria et al., 2008). In the past various quantitative analyses demonstrated that the impact of the GPS was essentially negative overall, more recent studies have shown how this scheme can have a positive effect not the economy of a developing country, although the effects, in terms of growth and development, could be greater than those empirically observed (Bureau, Chakir, Gallezot, 2006; Cardamone, 2007; OECD, 2005).

The instrument utilized by most studies to evaluate the effects of preferential trade agreements is gravitational equations (Manchin, 2005; Aiello et al., 2008; Marinez-Zarzoso, 2003; Nilsonn, 2002; Verdeja, 2006; Ozden, Hoekman, 2005). This stems from Newton's law of gravitation, according to which the attraction between two planets is in direct proportion to their mass and in inverse proportion to their distance. Analogously, it is possible to apply this law to international trade extrapolating that the flow of trade (between two or more countries) is in direct proportion to their economic mass (GDP) and in inverse proportion to their distance (Anderson, 1979; Bergstrand, 1985; Matyas, 1997; Wall, 2000; Egger and Pfaffermayer, 2002; Glick and Rose, 2002; Anderson and van Wincoop, 2003). Although these studies differ as regards time reference period, sample employed, estimation method, they all have two common elements: the use of aggregated data and the use of dummy variables to measure the impact of trade preferences (Verdeja, 2006; Nilsonn, 2002; Nilsonn, 2005; Manchin, 2005; Personn and Wilhelmsson, 2005). If these choices, on the one hand, allow us to simplify the analysis, on the other they have numerous drawbacks, and it is only recently that a number of studies have been published that use more explicit measures for assessing trade preferences (Emingler et al., 2007; Cipollina and Salvatici, 2007; Cardamone, 2008).

The original contribution of the present work to the debate concerns the use of aggregated data, the use of a specific measure for trade preferences and the attempt to resolve certain problems linked to the econometric application of the gravitational model (sample selection, unobserved heterogeneity, and endogeneity). The sample on which the present study is based has been formed by 169 countries and 763 agricultural product lines. From the temporal point of view, the period under consideration is 2001-2004, a choice driven by the fact that the tariff data in the DBTAR archive was only available for this time interval.

Perhaps it would be useful to point out the limitations of the literature that has up to now analyzed the impact of preferential trade agreements (Verdeja, 2006; Nilsson, 2002; Martinez-Zarzoso, 2003; Manchin, 2005; Persson and Wilhelmsson, 2005). The first problem concerns the use of aggregate data: in fact, the use of overall trade flows does not allow us to identify the protection and preference that the EU applies at product level. Moreover, it does not allow us to determine the exact flow between different agricultural products with different levels of protection. In order to overcome these limitations, the present study makes use of a highly detailed level of data disaggregation. The harmonized system (HS) of codification of goods allows us to work at a six figure level of disaggregation (HS6).

This work focuses on the agricultural sector because tariff preferences on agricultural goods have a particular status. On the one hand many MFN duties are still very high, which makes the benefit from any preferential agreement potentially significant, on the other, because of the particularly sensitive nature of certain homegrown agricultural products, many countries in the developed world has always shown a certain reluctance when it comes to granting deep and effective tariff reductions. For instance, the level of protectionism found on exports of agricultural products from developing countries is between 4 and 7 times that found on manufacturing products towards industrialized countries (IMF-WB data).

As regards the second original element in the work, we should point out the relevant literature uses dummies to assess the impact of trade preferences. This approach, however, is unsuitable for the work in hand because dummies gather, at one and the same time, not only a series of special country effects, but also those due to the application of the preferential scheme itself. Moreover, the states that sign up to the agreements are considered as a single homogeneous group and, therefore, one cannot take into account the effects of the different preferential trade policy instruments that each country enjoys. The use of preferential trade margins, on the other hand, seems to overcome these drawbacks. It, in fact, allows us to keep account of the different level of protection that the EU applies to different agricultural lines and different groups of countries. The preferential trade margin is equivalent to the difference between the MFN tariff and the preferential tariff granted to each item, and from this one can understand the real effective impact of trade preferences. Indeed, the current process of

world trade liberalization with the consequent reduction of MFN duties erodes the preferential trade margins, thereby leading to a progressive loss of relevance of tariff preferences.

Finally, from the point of view of methodology, this work searches for a number of potential causes of distortion in the econometric estimates. Usually, the problems to do with unobserved heterogeneity, for example, or the question of zero trade flows or the problem of the endogeneity of the repressors, are considered individually, whereas in the present work it is possible to keep account of these aspects simultaneously. With reference to unobserved heterogeneity, it is possible to consider "unobserved" factors, such as the individual characteristics of each country (for example, a country's export capacity) that vary from one unit to another and are constant over time. As regards zero trade flows, most studies on the subject do not take into account the fact that certain countries may not produce nor export a given product (Santos, Silva and Tenreyro, 2006; Linders, 2007; Helpman et al., 2007).

Zero trade is a question of fundamental importance because it contains information about a country's trading capacity the exclusion of which can lead to unreliable estimations. For this reason a Poisson model is used (Santos, Silva and Tenreyro, 2006). That said, we should underline the fact that, if it is the case that the missing trade flows in COMTRADE could be caused by recording errors, rounding up, or by lack of communication, it is also possible that, given the existence of rigorous administrative rules and customs procedures, they are effectively zero trade flows (Martin and Pham, 2008).

The thesis is divided into five chapters. The first contains the analysis of the trade creation and trade diversion effects of trade agreements. The second chapter provides a brief overall description of the historical and economic background of EU trade policies, and preferential trade agreements (PTA) in particular. In the third chapter a theoretic gravitational model is proposed alongside a summary of the works that use gravitational equations to evaluate the impact of trade preferences. The fourth chapter is structured in three parts: first a résumé of studies assessing the effectiveness of the GPS, then a descriptive statistical analysis of the agricultural trade flows in the EU between 2001-2004, finally, in the third part, a statistical description is proposed of preferential tariffs from 2001-2006 (from 1st January, 2006 a new scheme came into force). The fifth

chapter describes the construction of the preferential trade margin and shows the results obtained from the empirical analysis of the effectiveness of the GPS.

As aforementioned, in the present study a gravitational equation is estimated with a Poisson model, which controls for the problem of sample selection. Moreover, in order to take account of the possibility of endogeneity between exports and GDP and the preferential trade margin, the method of variable instruments is used.

The econometric analysis has been carried out both through the use of disaggregated data and homogeneous categories (animal products, beverages and spirits, cereals, coffee and tea, dairy products, fisheries, fruit and vegetables, lac and gums, live trees, oils and fats, other plants, residues, sugar, tropical fruits and tobacco).

This approach helps to throw light on the positive effects of agreements of preferential trade agreements, in particular the GPS. Although a positive effect is indeed recorded, this result is limited by a number of factors (rules of origin, lack of infrastructure, the absence of innovation, minimum quality standards in the private and public sector and so on) that prevent the beneficiary countries from fully exploiting the advantages of the scheme. Furthermore, the study highlights the fact that the countries that benefit from the Cotonau agreement enjoy greater effects in terms of export growth. Positive effects are also found with the GSP DRUG and EBA schemes, although with the latter agreement the results obtained are mixed. Finally, as regards the countries in the Mediterranean basin, trade preferences do not seem to have produced the desired effects.

INTRODUZIONE

L'obiettivo di questo studio è di fornire una valutazione empirica del Sistema di Preferenze Generalizzate (SPG) dell'Unione Europea (UE). Si tratta di un accordo, attraverso il quale l'UE riduce in maniera discriminatoria le barriere tariffarie a favore dei Paesi in via di sviluppo (PVS). Lo scopo del trattamento discriminatorio è di concedere ai paesi beneficiari un vantaggio tariffario e di favorire, di conseguenza, l'accesso sul mercato comunitario alle esportazioni di questi paesi. Con questo lavoro, si intende verificare empiricamente, se tale il SPG è stato efficace, ovvero se ha positivamente influenzato le esportazioni dei paesi beneficiari.

I principali regimi preferenziali esistenti possono classificarsi in tre grandi categorie (Tangermann 2002) (1) il SPG; (2) i regimi preferenziali speciali, basati sul principio di non reciprocità, per gruppi di paesi in via di sviluppo; (3) gli accordi regionali reciproci di libero scambio, fra paesi sviluppati e paesi in via di sviluppo. Secondo l'Organizzazione Mondiale del Commercio (OMC) gli accordi commerciali regionali includono gli accordi di libero scambio bilaterali, le unioni doganali e gli accordi multilaterali. La differenza fondamentale tra le aree di libero scambio (o unioni doganali) e gli accordi commerciali preferenziali è che con i primi la concessione del trattamento preferenziale è reciproca, mentre è di natura unilaterale nel caso degli accordi preferenziali. Gli accordi multilaterali realizzati secondo le regole dettate dall'OMC sono di tipo non discriminatorio: i paesi, cioè, non possono discriminare tra i propri partner commerciali. Pertanto, tutte le importazioni sono soggette ai dazi accordati in base alla clausola della nazione più favorita[1]

[1] La clausola della nazione più favorita è una disposizione di diritto internazionale convenzionale attraverso la quale uno stato (stato concedente) si obbliga a concedere ad una altro stato (stato beneficiario) o a persona o cosa vincolata con quest'ultimo, tutti i benefici, i vantaggi e le franchigie cha ha concesso o concederà in futuro ad un qualsiasi stato terzo. Il paese a favore del quale è stipulato il trattamento della nazione più favorita viene così a beneficiare di un trattamento non meno favorevole di quello riservato a qualsiasi paese terzo.

(MFN), ovvero, alla nazione le cui esportazioni sono soggette al dazio più basso.

Esistono tuttavia alcuni casi in cui il commercio avviene su base discriminatoria, ovvero quando vengono siglati accordi di preferenza commerciale. I sistemi di preferenza commerciale consistono in una sorta di corsia privilegiata per l'esportazione dei prodotti e rappresentano un'eccezione al principio della MFN, che in ambito del WTO, rende illegale il trattamento preferenziale di un paese rispetto ad un altro (tale eccezione è consentita dall'art. 24 del GATT).

Le preferenze operano secondo questo meccanismo: in presenza di una tariffa sulle importazioni, uno Stato concede una preferenza, ovvero applica ad un paese o ad un gruppo di paesi un dazio inferiore o nullo, in modo da favorirne le esportazioni. Questi accordi creano flussi commerciali (*trade creation*), sia determinano deviazioni dei flussi preesistenti (*trade diversion*). Tradizionalmente si ritiene che essi incrementino il commercio internazionale più di quanto lo devino, ma, in realtà, gli studi condotti sull'argomento pervengono a risultati contrastanti.[2]

In letteratura alcuni autori sostengono la tesi che gli accordi preferenziali aiutino il raggiungimento del *global free trade*, per altri studi, invece, tali accordi non conducono a questo risultato, anzi oppongono degli ostacoli alle negoziazioni multilaterali. Infine, in alcuni lavori si sostiene che la liberalizzazione multilaterale sia più vantaggiosa per i PVS (Krugman, 1991; Krueger, 1999; Winters, 1993; Bhagwati, 1998; Panagariya, 1998; Cadot et al., 2001).

I più importanti regimi di preferenza commerciale dell'UE sono il Sistema Generalizzato di Preferenze (SPG), il Sistema di Preferenze Generalizzate DRUG, ora PLUS (SPG DRUG), l'iniziativa EBA (Everything

[2] Un APC migliora il benessere di un paese se stimola la creazione di nuovi flussi commerciali, ma lo peggiora se sostituisce scambi commerciali esistenti con flussi alternativi caratterizzati da costi più alti. Dunque, si ha creazione di flussi commerciali quando la formazione di un APC favorisce la sostituzione della produzione nazionale ad alto costo con importazioni a basso costo. Per contro, si ha deviazione dei flussi commerciali quando la formazione di un APC porta a sostituire importazione a basso costo da paesi terzi con importazioni ad alto costo da altri paesi membri.

But Arms), l'accordo di Cotonou, ora Accordi di Partenariato Economico (APE), ed infine, gli accordi di partenariato euro-mediterraneo.

L'iniziativa EBA (Everything But Arms) introdotta nel 2001 è quella che, insieme agli APE, garantisce preferenze più elevate concedendo, a tutte le importazioni (escluso armi e munizioni) provenienti dai 50 PVS, l'accesso sul mercato comunitario, senza applicare prelievi tariffari e senza limiti di quantità. A differenza dell'accordo EBA, nel SPG e nel SPG DRUG, non tutti i prodotti agroalimentari beneficiano di concessioni così estese, nonostante nel 2006 sia stato introdotto un nuovo schema SPG avente lo scopo di estendere la gamma dei beni agricoli inclusi nel sistema. In aggiunta al SPG, l'UE concede un altro accordo rivolto ai Paesi dell'Africa dei Caraibi e del Pacifico (ACP) denominato accordo di Cotonou. In esso le tariffe preferenziali per i beni agricoli sono, nella maggior parte dei casi, pari a zero, mentre l'accordo prevede l'inclusione di restrizioni e limitazioni per i prodotti considerati sensibili. Nel 2008 sono entrati in vigore i nuovi accordi APE. Questi ultimi sostituiscono l'accordo di Cotonou e modificano la politica commerciale dell'UE. La loro principale caratteristica è costituita dalla reciprocità della concessione preferenziale. Il processo di attuazione degli accordi di partenariato economico coinvolge ben 78 Paesi a cui si aggiunge il Sud Africa come osservatore. Infine, vanno, anche, considerati gli accordi bilaterali che l'UE ha sottoscritto con molti Paesi del bacino del Mediterraneo, nell'ambito del processo di integrazione elaborato a Barcellona nel 1995. L'obiettivo di tale processo è quello di creare, entro il 2010, un'area di libero scambio tra le regioni appartenenti al bacino del Mediterraneo. Tuttavia, questo accordo prevede solo poche concessioni preferenziali relativamente ai beni agroalimentari, perché si tratta di beni in forte competizione con quelli prodotti da alcuni Paesi dell'UE.

Il focus del lavoro di tesi è costituito dal SPG, il cui obiettivo fondamentale è di attribuire preferenze tariffarie ai PVS stimolando la crescita delle loro esportazioni. Esso riconosce preferenze tariffarie su base non discriminatoria e non reciproca, prevalentemente per prodotti industriali e semindustriali. Inoltre, così come sottolineato dal preambolo del Regolamento

(CE) n. 980/2005, il SPG ha l'ulteriore scopo di eliminare la povertà e di promuovere lo sviluppo sostenibile ed il buon governo per le economie dei paesi cui detto schema è accordato. Sebbene il SPG sia stato il frutto di un accordo multilaterale negoziato in sede GATT, la misura del trattamento preferenziale riconosciuto rimane ad esclusivo appannaggio dell'UE. Ciò sta a significare che la *profondità* delle preferenze cambia da paese a paese. Lo schema si caratterizza per la presenza di numerosi criteri e livelli di differenziazione tra i paesi beneficiari, ma la differenziazione riguarda soprattutto la sensibilità dei prodotti. Il regime generale viene concesso a tutti i paesi beneficiari, classificati dalla banca mondiale come paesi a basso e medio reddito e con esportazioni non sufficientemente diversificate. I due regimi speciali sono rivolti agli Stati poveri che registrano i più bassi livelli di sviluppo.

In letteratura esistono numerosi studi che analizzano il ruolo degli accordi di preferenza commerciali (Anderson and Van Wincoop, 2003; Person and Wilhelmsson, 2005; Martinez-Zarzoso et al. 2006; Cipollina and Salvatici, 2007; Aiello et al., 2008; Cardamone, 2008). Gli studi analizzano l'impatto del SPG, non sono concordi sulla reale efficacia dello schema a causa degli alti costi amministrativi, regole dell'origine restrittive e altre condizioni che impediscono il pieno utilizzo dello preferenze (Nilsson 2002; Persson and Wilhelmsson 2005; Verdeja 2006; Demaria et al. 2008). Mentre in passato le analisi quantitative hanno dimostrato che l'impatto del SPG sulle economie dei PVS era essenzialmente negativo, studi recenti mostrano come questo schema riesca ad avere una incidenza positiva sull'economia degli Stati più poveri, sebbene gli effetti, in termini di crescita e sviluppo, potrebbero essere potenzialmente maggiori rispetto a quelli empiricamente osservati (Bureau, Chakir, Gallezot, 2006; Cardamone, 2007; Oecd, 2005).

Lo strumento utilizzato dalla maggior parte degli studi per valutare gli effetti degli accordi di preferenza commerciale è l'equazione gravitazionale (Manchin, 2005; Aiello et al. 2008; Martinez-Zarzoso, 2003; Nilsson 2002; Verdeja, 2006; Ozden, Hoekman 2005). Essa deriva dalla legge sulla gravità di Newton secondo la quale l'attrazione tra due pianeti è direttamente

proporzionale alla loro massa ed inversamente proporzionale alla loro distanza. Per analogia è possibile applicare tale legge al commercio internazionale, sottintendendo che il flusso di commercio (tra due o più Paesi) è direttamente proporzionale al prodotto delle loro masse economiche (PIL) ed inversamente proporzionale alla loro distanza (Anderson, 1979; Bergstrand, 1985; Matyas, 1997; Wall, 2000; Egger and Pfaffermayer, 2002; Glick and Rose, 2002; Anderson and van Wincoop, 2003). Sebbene questi studi si differenzino tra loro per il periodo temporale di riferimento, per il campione utilizzato, per i metodi di stima implementati, essi hanno in comune due elementi, ovvero l'utilizzo di dati aggregati e l'uso di dummy variables per misurare l'impatto delle preferenze commerciali (Verdeja, 2006; Nilsson 2002, Nilsson 2005; Manchin, 2005; Persson and Wilhelmsson 2005). Queste scelte, se da un lato consentono di semplificare l'analisi, dall'altro presentano numerosi limiti. Solo recentemente alcuni lavori hanno utilizzato misure esplicite delle preferenze commerciali (Emingler et al., 2007; Cipollina e Salvatici, 2007; Cardamone, 2008).

Il contributo che il presente lavoro apporta alla letteratura esistente riguarda l'utilizzazione di dati disaggregati, l'uso di una misura specifica del margine di preferenza commerciale ed il tentativo di risolvere alcuni problemi legati all'applicazione econometria del modello gravitazionale (selezione del campione, eterogeneità non osservata, endogeneità). Il campione su cui si basa l'analisi del presente studio è costituto da 169 paesi e da 763 linee agricole. Da un punto di vista temporale, la ricerca considera il periodo 2001-2004. Questa scelta è legata alla necessità di utilizzare dati delle tariffe, che sono disponibili nell'archivio DBTAR limitatamente a questo intervallo temporale.

È opportuno evidenziare quali siano i limiti della letteratura che finora ha analizzato l'impatto degli accordi di preferenza commerciali (Verdeja, 2006; Nilsson 2002, Martinez-Zarzoso, 2003; Manchin, 2005; Persson and Wilhelmsson 2005). Un primo problema riguarda l'utilizzo dei dati aggregati, infatti l'uso dei flussi totali di commercio non permette di identificare la protezione e le preferenze che l'UE applica a livello di prodotto, e non consente di controllare qual è il flusso tra i diversi prodotti agricoli con

differenti livelli di protezione. Per superare questi limiti, il presente studio, utilizza un livello molto spinto di disaggregazione dei dati. Il Sistema armonizzato di designazione e di codificazione delle merci (HS) permette di lavorare ad un livello di disaggregazione pari a 6 cifre (HS6).

Il focus del lavoro è rappresentato dal settore agricolo, perché le preferenze tariffarie dei beni agroalimentari hanno uno status molto particolare. Da un lato molti dazi MFN sono ancora estremamente alti, rendendo con ciò ogni accordo preferenziale potenzialmente proficuo; dall'altro, a causa della natura particolarmente sensibile delle proprie politiche agricole, molti paesi sviluppati hanno sempre mostrato una certa riluttanza nei confronti di concessioni tariffarie profonde ed efficaci. Il livello di barriere protezionistiche incontrato dalle esportazioni di prodotti agricoli dei PVS è da quattro a sette volte maggiore di quello incontrato dalle esportazioni di manufatti verso i paesi industrializzati (Dati IMF-WB).

Riguardo il secondo elemento di novità del lavoro, occorre ricordare che la letteratura di riferimento utilizza le *dummies* per cogliere l'impatto delle preferenze commerciali. Questo approccio non è idoneo a trattare il problema in esame, poiché le *dummies* colgono contemporaneamente non solo una serie di effetti specifici dei paesi, ma anche quelli dovuti all'attuazione degli schemi preferenziali. Inoltre, gli Stati aderenti agli accordi sono considerati come un gruppo omogeneo e, pertanto, non si tiene conto dei diversi strumenti di preferenza commerciale di cui ciascuno di essi gode. L'utilizzo del margine di preferenza commerciale sembra, invece, superare una parte di questi limiti. Esso, infatti, permette di tener conto del diverso grado di protezione che l'UE applica alle differenti linee agricole e ai diversi gruppi di paesi. Il margine di preferenza commerciale è pari alla differenza tra la tariffa MFN e la tariffa preferenziale accordata per ciascun prodotto. Da questa definizione si può comprendere l'utilità di analizzare l'impatto delle preferenze commerciali. Infatti, l'attuale processo di liberalizzazione internazionale degli scambi, con la conseguente riduzione generalizzata dei dazi MFN, erode i margini di preferenza commerciale provocando, in tal modo, una progressiva perdita di rilevanza delle preferenze tariffarie.

Infine, da un punto di vista metodologico, questo lavoro controlla per alcune potenziali cause di distorsione nelle stime econometriche. Infatti, i problemi relativi all'eterogeneità non osservata, alla presenza dei flussi commerciali pari a zero e all'endogeneità dei repressori venivano considerati singolarmente. Nel presente si tiene conto, invece, contemporaneamente, conto di tutti questi aspetti. Con riferimento all'eterogeneità non osservata, si considerano i fattori, cioè le caratteristiche individuali non osservate dei singoli Paesi (per esempio la capacità di esportare di un paese), che variano fra le unità e sono costanti nel tempo. Per quanto riguarda la presenza di flussi commerciali pari a zero, la maggior parte degli studi presenti in letteratura non tiene conto della possibilità che alcuni paesi possano non produrre e non esportare un determinato prodotto (Santos Silva and Tenreyro, 2006; Linders, 2007, Helpman et al. 2007).
Gli zero sono di fondamentale importanza perché contengono anche informazioni sulla capacità produttiva di uno Stato e la loro esclusione conduce a risultati delle stime poco attendibili. Per tale ragione si utilizza il modello di Poisson (Santos-Silva, Tenreyro, 2006). Tutto ciò premesso, è da sottolineare che se è pur vero che i flussi mancanti in UN COMTRADE potrebbero essere causati da errori di registrazione, arrotondamenti o da una mancata comunicazione, è altamente probabile che essi, data l'esistenza di rigorose regole amministrative e di registrazione doganale, siano effettivamente flussi commerciali pari a zero (Martin and Pham, 2008).

La tesi è suddivisa in cinque capitoli. Il primo capitolo contiene l'analisi degli effetti di creazione e di diversione del commercio legati agli accordi commerciali. Nel secondo capitolo vengono presentati gli accordi di preferenza commerciale stipulati dall'UE. In particolare, questo capitolo offre in maniera sintetica l'inquadramento storico ed economico della politica commerciale europea ed un riepilogo degli Accordi di Preferenza Commerciale (APC) dell'UE. Nel terzo capitolo si propone il modello gravitazionale teorico e una rassegna dei lavori che usano l'equazione gravitazionale per valutare l'impatto delle preferenze commerciali. Il quarto capitolo si articola in tre parti: una

rassegna dei lavori che misurano l'efficacia del SPG; un'analisi di statistica descrittiva sui flussi agricoli dell'unione europea per il periodo 2001-2004; infine, poiché dal primo gennaio del 2006 è entrato in vigore un nuovo schema SPG, si propone una statistica descrittiva sulle tariffe preferenziali per il periodo 2000 - 2006. Il quinto capitolo descrive la costruzione del margine di preferenza commerciale e mostra i risultati ottenuti dall'analisi empirica relativa alla valutazione dell'efficacia del SPG.

Come già indicato, nel presente studio si stima una equazione gravitazionale utilizzando il modello di Poisson. Questa metodologia controlla per il problema di selezione del campione. Inoltre, per tener conto dell'eventuale endogeneità tra le esportazioni ed il Pil e il margine di preferenza commerciale si utilizza il metodo delle variabili strumentali.

L'analisi econometrica è stata condotta utilizzando sia dati disaggregati (763 linee agricole) che categorie omogenee di prodotto (animal products, beverages and spirits, cereals, coffee and tea, dairy products, fisheries, fruits and vegetables, lac and gums, live trees, oils and fats, other plants, residues food industries, sugar, tropical fruits and tobacco).

Essa mette in luce l'effetto positivo degli accordi di preferenza commerciale ed, in particolare, del il SPG. Sebbene si registri un effetto positivo, tale risultato è però limitato da molti fattori (regole dell'origine, carenza di infrastrutture, mancanza di innovazioni, standard qualitativi minimi pubblici e privati) che impediscono ai paesi beneficiari di sfruttare appieno i vantaggi dello schema. Inoltre, lo studio evidenzia che i paesi che beneficiano dell'accordo di Cotonou godono di effetti maggiori in termini di crescita delle esportazioni. Effetti positivi si registrano anche per il SPG DRUG e l'EBA, sebbene per quest'ultimo accordo i risultati ottenuti siano controversi. Infine, per i paesi appartenenti all'area del bacino del Mediterraneo le preferenze commerciali non sembrano produrre gli effetti previsti.

Chapter 1

Traditional welfare analysis

1.1 Introduction

If the nations could coordinate their economic policies they would have benefits that are not possible otherwise. It is know that if countries cooperate and set zero tariffs against each other, then both countries are likely to have some benefit. Any type of agreements in which countries consent to coordinate their trade, fiscal and monetary policies is referred to as economic integration. There are different degrees of integration and we focus on Preferential Trade Agreements and on their trade effects.

A preferential trade agreement is a lower form of economic integration. In it countries offer tariff reductions, even they not eliminate the tariffs, to a group of partner countries in some product categories.

The WTO members cannot discriminate between them and they are obligated to grant Most-Favored Nation (MFN) status to all other WTO members.

Over the time PTAs are grown and also the interest to their economic impact. An important point concerning the formation of PTAs is whether these arrangements are a good or not.

To answer at this question in the recent years quantitative analysis of the effects of economic trade policies are grown. The effects of PTA can be examined in two different ways: the first one is an ex-ante simulation of a change in trade policy (Computable Geneal Equilibrium – CGE – and Partial Equilibrium); while the second one is an ex-post analysis using historical data to conduct an study of the effect of preferential trade policy (generally the gravity equation). In any case, any argument on the welfare effects of PTAs must start off with the concepts of trade creation and trade diversion, introduced by Viner (1950). The analysis of Viner try to answer the question why free traders and protectionists are interested to PTAs; over the time authors, such us,

Bhagwati Panagariya (1996), Wannacott and Lutz (1989), Krugman (1991) develop advance at this theory.

As aforementioned the economic analysis may be done by using general equilibrium and partial equilibrium models. A general equilibrium analysis takes into account all links between sectors of economy; while partial equilibrium model focuses only on one sector or in a part of a sector of the economy. Thus a partial equilibrium model supposes that the other factors that can may have some affect on the economy are non-existent or are very small.
In this section we present a traditional analysis of trade diversion and trade creation effects by using a partial equilibrium framework.
This chapter is organized as follows: section 1 presents the trade creation and trade diversion effects. Section 2 presents the relationship between EU and WTO. Section 3 concludes.

1.2 Trade creation and trade diversion effects

When countries agree to start a PTA, relative prices in those economies will change and so demand patterns will change too. Trade flows will change and output levels will also change, not only in the participating countries but also in countries outside the block. What is the impact on the economy?

Initially, to analyze the welfare effect of the PTAs we focus on the welfare effects of a Customs Union, which can be analyzed in terms of *Trade Creation* and *Trade Diversion* effects. Trade creation arises when some domestic production of one customs union member is replaced by another member's lower cost imports. Trade creation increases the welfare of the member countries because it induces greater production specialization according to factor endowment and comparative advantage. Trade Diversion arises when lower cost imports from a country that is not a member of the customs union are replaced by higher cost imports from a member country. In the sense that the trade creation occurs when there is a shift from a low cost producer outside the union to a high cost producer inside the union. The trade diversion decreases the welfare of member countries because it goes against production specialization on the basis of factor endowment and comparative advantage.

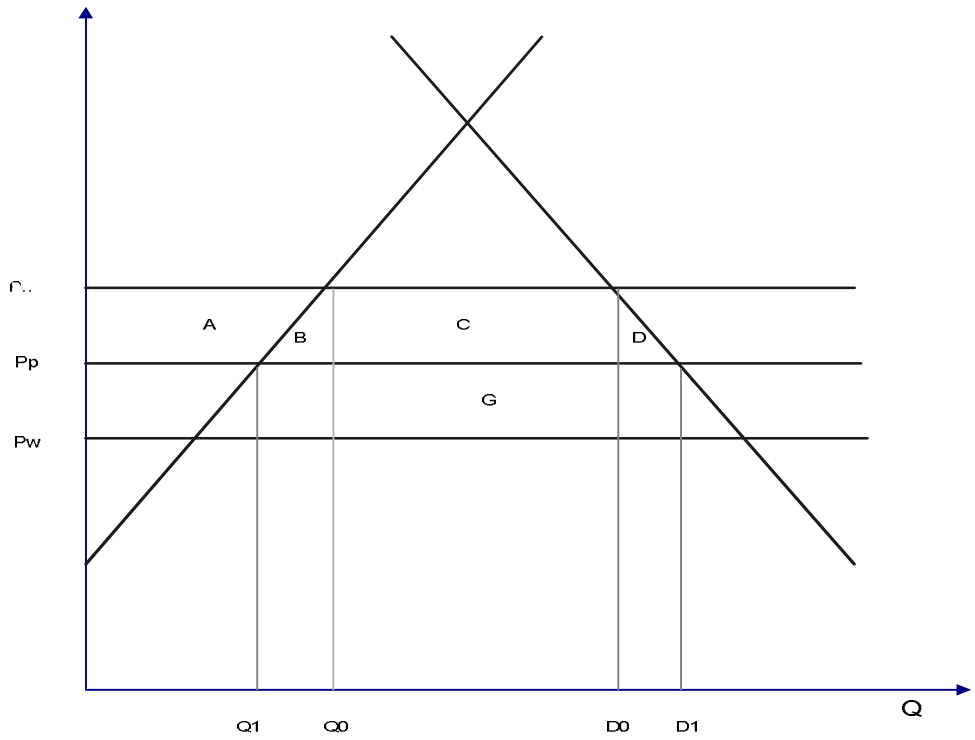
Consider a three country model, where (H) is the domestic country and it is assumed to be small compared to the partner (P) and the Rest of the World (W). It has an infinitely elastic supply at prices pp and pw: that is, at the prices country H can import whatever quantity it demands, but it cannot affect the price. Before forming a Customs Union (CU), H is assumed to have a non discriminatory ad valorem tariff *t* on imports. Assume that country W is the least-cost source of foreign supply, before the regional trade agreement. Country H will import d0-q0 at the price ph= pw(1+t). Now suppose that country H and country P form a FTA. Country H will import from P, since pp is less than ph: so consumers will pay pp and imports will rise to d1-q1, as a result of the FTA, overall imports increase by qo-q1 plus dq-d0 and domestic prices fall. In terms of gains:

- Consumers gain area A+B+C+D in fact now they can consume a higher quantity for a lower price;

- producers lose area A and government loses tariff revenue area C+G.

Area B plus area D is a trade creation effect of FTA and it is an increase in welfare, area G is a trade diversion effect of FTA and it is a reduction in welfare. The overall welfare effects of the FTA will depend on the balance between trade creation and trade diversion, but this is only weakly related to the variation in the patterns of trade.

Figure 1: Trade creation and trade diversion effects.



An important advance in the theory is due to the considerations introduced by Meade, Gehrels and Lipsey.

Mead has specified that, if the trade barriers with the non-member countries take the shape of a fixed quantitative restriction, then the preferential agreements must increase to the welfare total of the member countries for which the possibility of a move in the imports of the rest of the world do not exist.

Ohyama, Kemp and Wan[1] highlight that, if the external barrier to commerce takes the shape of a tariff, it is possible to adapt it in order to keep constant the volumes of foreign trade so as to to avoid trade diversion.

Lipsey argues that in the case of a union of the largest countries that are already trade partners it is improbable that this leads to diversion, because of the low costs.

Now we examine the literature that takes into account the welfare effect of PTA. Consider three countries: the domestic country (A), the partner country (B) and the ROW[2]; assume that markets are perfectly competitive, and that goods imported are homogeneous. We assume that country A and country B form a FTA, the domestic and the partner countries are assumed to be small with respect to the ROW. The domestic country and the partner country take prices from the ROW (Pb) as given. The demand curve of country A is *Ma*, and Xc is the supply curve of the partner country, finally Xb is the supply curve of the ROW. Under FTA imports are q4; the domestic country's welfare is the area KEI. When country A imposes an MFN tariff equal to t, the price of the imports shifts to Pb+t and Xb rises to Xbt, similarly, Xc shifts to Xct. The imports from the partner country equal Qc1, while imports from the ROW are equal to Q3- Q1, and total imports are Q3. The domestic country's welfare after the application of the MFN is KDA+tarrif ADIF. Now if the domestic country forms a FTA with a partner country, the partner country no longer pays the tariff t and its exports supply curve shifts to Xc, while the ROW pays the tariff t, the domestic country price remains Pb+t. The imports of the partner country increase from q1 to q2 and the imports from the ROW fall from q3-q1 to q3-q2. In terms of trade the domestic country is worse off and, the welfare after the formation of the FTA is equal to: KDA+CDGF. Moreover the formation of the FTA has no impact on the consumers surplus because the price is not affected, but there is a loss of tariff revenue. Welfare after the

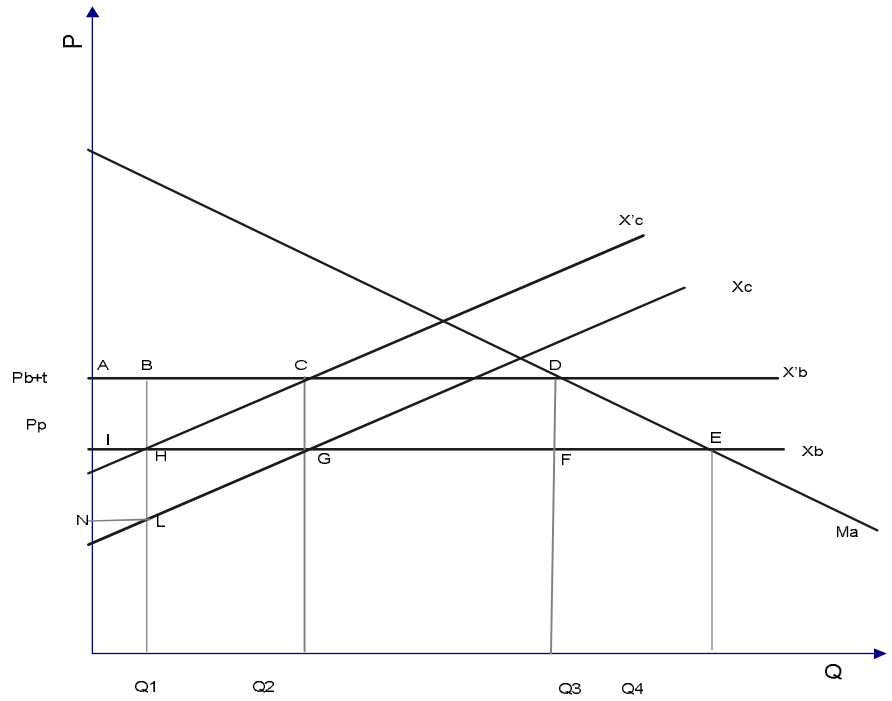
[1] Kemp and Wan have developed a theorem which states that: if the commerce of a PTA, element for element, remains as well as large or larger than before the formation of the PTA, it upgrades the well-being of partners PTA must increase and the well-being of the rest of the world not reduced.

[2] Graphic representation follows Bhagwati e Panagariya (1996), Panagariya (1998), Bora et al. (2002).

application of the MFN is larger compared to welfare after the formation of the FTA by ACIG. We can note that the welfare loss to the home country would occur in the absence of trade diversion, the loss would be ACIG if XC is vertical to level q2. The welfare loss of the domestic country from the formation of the FTA is proportional to the level of imports partner country, therefore the loss from a FTA with a natural trading partner is larger if imports from the partner are larger. The partner gains ACHI, HCG represents the net loss for the FTA members due to the trade diversion, that previously was imported from ROW at a cost of Pb. The loss HCG depends on the elasticty of the supply curve of the country B and on the level tariff.

If we assume that the home country forms a FTA with the ROW, the curves that we are now interested in are Xb and X'c, in this case, the domestic country gains EFD+ the tariff revenue collected on the third country equal to AHIB, the imports of the partner fall to HE, while those of the third country increase, so welfare for the country A rises. Thus a small domestic country loses from the formation FTA with a small partner country, while it gains from the formation of a FTA with the ROW.

Figure 2. Effects of a PTA between two countries A and B. Country B has an elastic supply curve.



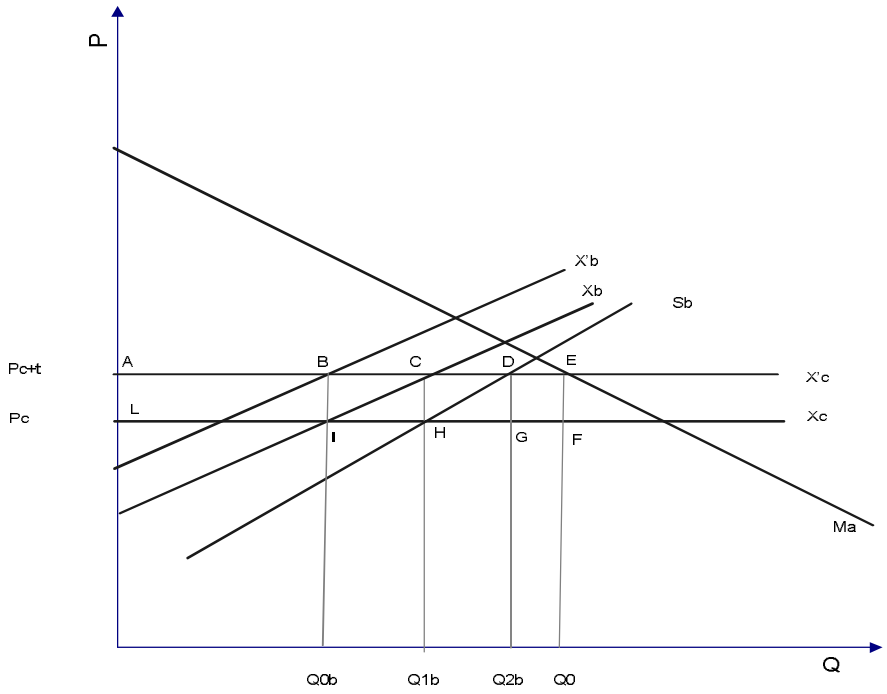
Now we consider the case of PTA between A and B when C has an infinitely elastic supply for exports, and X_bX_b is the supply for exports of country B (that is the difference between domestic supply and demand of goods). When A imposes a non-discriminatory tariff, the amount of the imported goods by B is oq1, while the total tariff gains are equal to area AEFL. The net price received by an exporter of B is P_c, so this will be the domestic price in that country. What happens if A and B conclude a PTA where exports of B are duty free?

Since the home price remains P_c+t, producers of B will continue production in that country, but if the price in B increases to P_c+t, the production will not be moved. This is impossible because we have assumed in this country an inferior level of duty.

If, in country B, domestic consumption is zero (X_bX_b represent both export supply and home supply and no movement affects such a curve when a PTA is formed). The export supply will be moved towards the right of the amount

requested in B for every level of price, that is, the curve export supply of B will be represented by its same domestic supply (Bhagwati and Panagariya, 1996).
In this case the losses in terms of tariff gains for Country A are bigger, and represented, in fact, by area ADGL.
The increase of the exports of B from OQ_b^1 to OQ_b^2 derive from the " diversion " of the sales on the inside to country A, naturally this has a beneficial effect in B measured by the area ADHL. Domestic consumption in this country will be satisfied by C for a price equal to P_c, country A will import from B and C. The world in general suffers a loss equal to the difference between the lesser revenue in A and the increase of the surplus of the producers in B: area CDH.

Figure 3. Effects of a PTA on the preference-giving country A when supply curve of the rest of the word is perfectly horizontal.



As Krueger argues, the original distinction of Viner between *trade creation* and *trade diversion* has been modified by various authors, but its analytic conclusion does not change.

Anania (1989) proposes work on the welfare effects of a preferential tariff reduction for equlibrium with one product and three large countries. Country A is the importing developed country, Country B is the developed exporting country and C is the developing exporting country. In this analysis we can considere: 1) a starting point where A applies a non-discriminatory tariff on B and C; 2) FTA created by a generalized tariff reduction of A; 3) a preferential tariff reduction of A on C. Transportation costs are zero, demand and supply curves are linear, and final markets are perfectly competitive.

Inverse demand and supply functions are represented in the graphical representation, expressed as a function of the equilibrium price in country A.

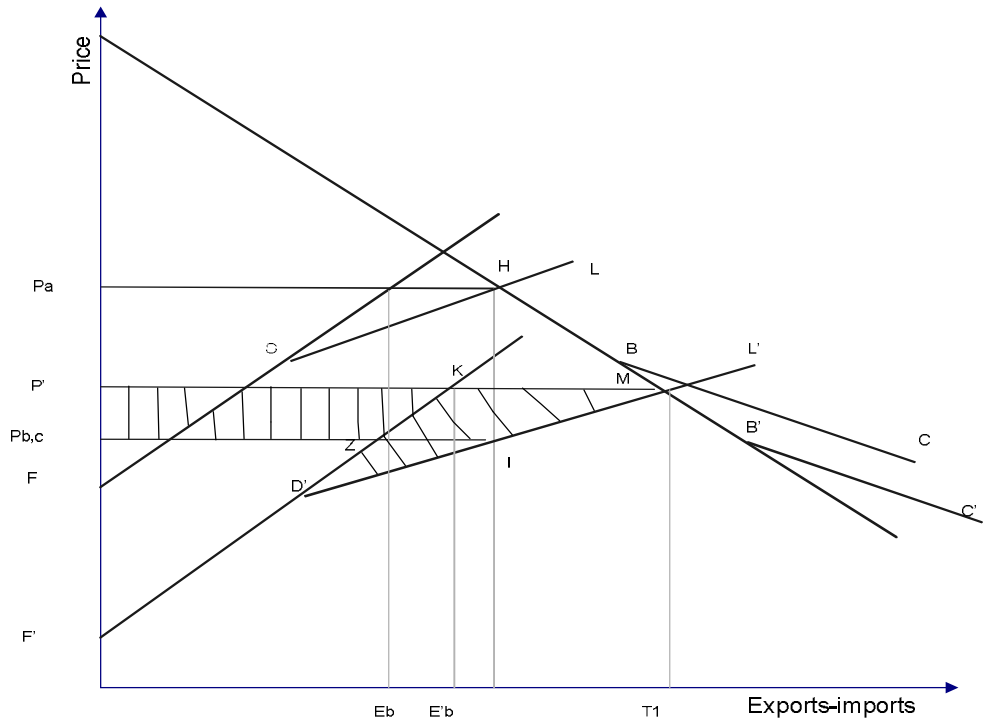
What happens when A imposes a non-discriminatory tariff on the imports coming from B and C? FDL is an inverse supply function, while SBC is an inverse demand function; when A applies a generalized tariff reduction (equal FF') on the imports coming from B and C, supply and demand curves become F'D'L' and SB'C'.

When Country A imposes the tairff, the market equilibrium results in a volume of trade equal to T. Countries B and C is export price is $P_{b,c}$ (that is the difference between Pbc and tariff), and the tariff revenue collected by country A and redistributed to its consumers and producers as a lump-sum transfer is given by the area $P_aHIP_{b,c}$.

If country A eliminates the tariff the market equilibrium will result in a volume of trade equal to T' and the world price will be equal to P'. A is imports from country B are equal to E_b', those from country C to E_b'T'.

The welfare implications for country B and C which are positive and are represented by the area P'KZPbc for country B and by the area KMB' for country C. The impacts of tariff reduction for country A depends on the initial tariff level and the sign is ambiguous: country A expands consumers and producers surplus, but no tariff revenue is now collected.

Figure 4. Effects of a general reduction of duties.



Analyze the case in which country A liberalizes unilaterally commerce with C, maintaining a tariff discriminatory on imports coming from B.

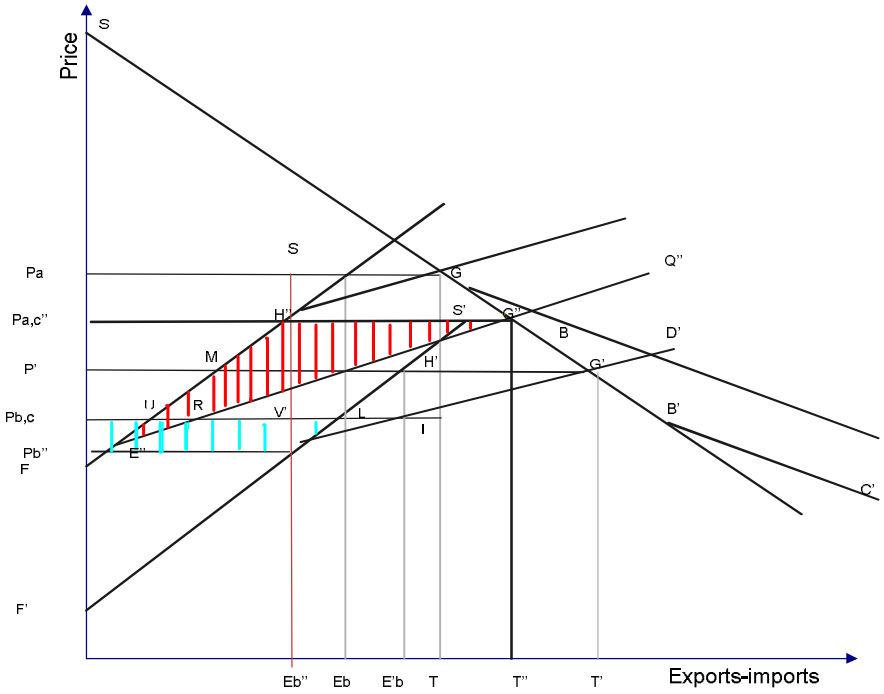
The only variation affects the inverse supply curve (AB''C''), which changes because on the exports to country C there are no tariffs from country A. $P_{a,c}$'' is equilibrium price in countries A and C, while P_b''(that is the difference between Pac'' and tariff) is the price in B. A's imports equal to T'', OE_b''of which coming from B and (T''-E_b'') coming from C.

In the non discriminatory tariff, country C gains from trade are equal to area B''UR, while they are equal to area URNM in the free trade scenario. Under the discriminatory tariff, the welfare of C increases to MNG''H''. Area UH''S'R represents the welfare increase in country C when A moves from a non-discriminatory tariff to a preferential one.

The loss of welfare for B country when A applies a preferential tariff to C is equal to the area with vertical lines. Country B's gains in the trade scenario decrease to F'V$P_{b,c}$'', but are smaller regarding free trade (A'H'P') and in the

case of non-discriminatory tariff (A'LP $_{b,c}$). The impact in welfare terms for country A is ambiguous: it is given by the difference between the sum of areas $P_aSH''P_{a,c}''e$ GG''S' and area H''S'IV.

Figure 5. Effects of a PTA between country A and country C.



PTAs are often formed among countries that are geographically proximate, and some studies (Wannacott and Lutz, 1989; Krugman, 1991) have gone on the argue that low transport costs can be beneficial; other studies (Corden, 1972) instead analyze the implications of economies of scale for PTAs in a homogeneous good model.

Michaely (2001) speaks about trade destruction, trade dislocation and consumption diversion. *The trade destruction* is equivalent to the trade creation of the Vinerian analysis, with an opposite effect in terms of social welfare; *trade dislocation* is the loss deriving from the movement of the source of the imports from low cost of the partner countries to the higher costs of the member countries (trade diversion); finally the diversion of consumption is similar to the analysis of the gain of consumption of second-best, consisting in a defined loss rather than in a defined gain.

Krueger (1999) demonstrates that unlike CU FTAs are inherently protectionist. Traditionally it is thought that a country can diminish the losses of joining if it has very low trade barriers when it in enters an FTA. The rule of the origin suggests that not only must the trade barriers be low but also that a partner must assure that the protection of another trade partner is automatically extended to other members of the FTA. In a FTA the rule of the origin has another aim, that is to avoid the situation in which the assets imported from outside the FTA enter with a lower tariff on all goods.

According to Nielsen, when members of a PTA are large enough to affect world market prices, there are *terms of trade effects* in addition to the trade creation and trade diversion effects. A PTA is likely to improve the *terms of trade effects* for its members and worsen them for non members. Indeed, the lower demand for non member imports may lead to lower export prices of the non member countries; if trade within PTA is increased, the availability of goods for non members decreases, so the price of non member imports rises within PTA: there is a deterioration of *terms of trade*. But as underlind in the literature, the net impact depends on a number of factors:

- on comparative advantages and complementarities of PTA members;
- on level of protection before and after the creation of the PTA;
- on interaction between trade liberalisation and domestic policies;
- on of the economies involved;
- on rules of origin.

A part of the literature analyzes the theoretic and empirical link between international trade and productivity, that seems to be the greatest source of increase and welfare. A possible explanation of the trade-productivity link is what Ethier (1998) calls *Investment Creation* The new regionalism can consider integrating part of a strategy of increase of developing countries that hope that the internal reforms and opened trade could lead to a productivity increase. Moreover, the growth effect connected to commerce through productivity can favour business policy reforms (*reform creation)*, increasing the welfare that derives from the trade agreements. At the same time, the

countries that do not draw advantage from the investment flow are less induced to operate reforms (*reform destruction).*

Fernandez (1997) supports the idea that the reforms regarding trade policy and other types of reform are often hindered by the probability that they can be reversed.

The reform generally requires investments that will not be forthcoming if the investor does not believe that the reform will last. These problems are attenuated if a country has a "commitment mechanism" that guarantees that the reform is durable, and that the members of a trade agreement can in certain circumstances be fortified by such a mechanism[3].

Trade agreements could stimulate the investment flow in a several ways:

- the reduction of the distortion in the production within two countries could increase investments in the member countries;
- increasing the quota of the potential market, the amount of investments made by foreign and domestic investors could be increased;
- in the case of a CU, the creation single market on the inside of “a wall of Common External Tariff” can increase the reason for the foreign investor to engage in tariff-jumping if the CET is superior to the preexisting rate for some specific members.

In the literature, some authors support the idea that the preferential agreements help the attainment of *global free trade;* for others, however, they do not lead to *global free trade;* indeed they constitute an obstacle to multilateral negotiations. Finally another group of authors is opposed to PTA suggesting that multilateral liberalization is more profitable for developing countries.

Krugman (1991) develops a model in which the world is constituted by a great number of small provinces, each one specialized in the production of a single, distinguish able product.

The products of every country enter world-wide demand symmetrically with an elasticity of constant substitution between two products. The model assumes that the world is organized in a certain number of trade blocks of equal

[3] You see Kydland and Prescott (1977), Staiger and Tabellini (1987).

dimensions with free trade on the inside, but with a Single Common External Tariff for the imports from the rest of the world.

Every block acts in an uncooperative way fixes an external tariff at a level that maximizes its economic welfare. Regionalism is analyzed by Krugman as a movement towards a smaller number of blocks. The effects that are obtained are two: creation (trade happens on the inside of the blocks where they are not tariffs applied) and at the same time the trade distortion (every block, having a wider market potential, has an incentive to impose a higher rate on the imports from the other blocks).

Krueger (1999) emphasizes that two important effects produced by the preferential agreements must be taken into account: first the alteration of trade, production, and models of consumption of the partner countries and the rest of the world; second the formation of the PTA affects the opening of multilateral trade systems, and in particular the liberalization of multilateral trade. Both arguments are interconnected; indeed, the suspension could have an negative impact both on the countries that join the agreement and on the international economy. Under these circumstances a large PTA that offers gains in the short term could even involve a change in the equilibrium (passage from the multilateralism to the regionalism).

Bhagwati (1998), using a logical structure based on the "dynamic temporal paths", investigates whether trade regional blocks lead to free commerce or not. Multilateral trade agreements and regional trade agreements can be seen as two entirely different ways to achieve free world-wide commerce.

Winters (1993) explains that the trade blocks rather than the single country assume protectionist decisions, in particular in the case of the EU.

Baldwin (1995) supports the idea that *the free trade* through the PTA can achieve *global free trade* through a so-called " domino " effect; therefore, more and more external Countries are interested in joining the PTA. On the basis of the "domino" theory, every regional trade block causes a multiplying effect in which the bilateral import barriers fall. The formation of an area of preferential trade causes a distortion both in trade and in investment; the distortion leads subsequently to *pressure for the inclusion* in the regional block

of non participant countries: the greater the trading the block, the greater will be the pressure on those who remain outside. One important aspect of the "domino" theory is the incorporation of *political economy*.

Panagriya (1998) emphasizes that this result will not be reached if the model used by Baldwin comprises tariffs to the entrance into the PTA and if the insiders have the incentive and the ability to block the entry of new members.

In a model of general equilibrium with trade blocks, Riezman (1999) concludes that the ability to reach multilateral from bilateral agreements depends on the size of the blocks: in the presence of a big trade blocks bilateral agreements concur with the smaller blocks to arrange and to block the power of monopoly of the great blocks through the promotion of competition, facilitating the attainment of *free trade.*

According to Wickramasinghe (2000), preferential agreements are not easy to negotiate.

Kose and Raymond (1999) examine several implications of preferential agreements, in particular CUs and FTAs: through a model of general economic equilibrium they demonstrate that FTAs are better than the CUs, in terms of social well-being members.

Levy (1999) considers the opinion that the PTA formation can render possible a previously feasible multilateral liberalization and vice versa. He applies the median voting model[4] and shows that, if the multilateral agreement is not feasible, median voting will have less difficulty in deciding an independent regime rather than in a trade regime of free trade. Median voting would consent to the participation in a PTA but it would not accept multilateral liberalization, fearing the loss of the advantage earned by the participation in the PTA: in this case the block becomes an obstacle to multilateralism.

Krishna (1998) obtains an analogous result with an oligopolistic model; it claims that trade could turn away from the PTA leading the preferences

[4] If the preferences of the individuals introduce a single maximum compared to a sure shared order and, if every individual votes for the alternative nearer the preferred position, then the majority always produces an equilibrium and the winning proposal is that one in the center, that is in median position vis-a-vis the others.

towards multilateralism and could make uncooperative governments support multilateral liberalization.

Panagriya (2000) asserts that rules of the origin, even if criticized by Krueger, can create an improvement in efficiency reversing the *trade* effect *diverting* of trade preference on the final product.

Bhagwati calls the proliferation of the FTA a "spaghetti bowl", indicating with this term a mechanism through which a country subjects the same product to different tariffs depending on its origin.

1.3 EU and Multilateral Trade Agreements of the WTO

For more than half a century developing countries have made great progress in integrating their economies into the international trading system. Integration into the world trading system depends on whether countries and their trading partners establish policies and institutions that are conducive to the mutually beneficial exchange of goods and services, based on specialization and comparative advantages. The effective integration of developing countries involves, not only their own trade policies and institutions, but also those of the developed countries.

International trade in goods is governed by the *GATT (General Agreement on Tariffs and Trade)* with the aim to favour the liberalization of world-wide commerce. The initiative, initially had as a goal the formation of *ITO (International Trade Organization)* as a permanent organization for the regulation of world-wide trade and to be placed side by side with the International Monetary Fund born from the Bretton Woods conference.

This agreement was incorporated into the 1994 Marrakesh Agreement establishing the *WTO (World Trade Organization)*. The General Agreement on the Tariffs and Commerce (GATT) and the successive WTO have contributed to the development of multilateral agreements.

In 1995 the World Trade Organization (WTO) replaced the General Agreement on Tariffs and Trade (GATT). The GATT had provided rules for international trading system since 1948. Over time, the GATT developed through in several agreements called round.

The stated objectives of the WTO remains those of its predecessors: a) non discriminatory treatment in international trade; b) the pursuit of reduction and possible elimination of barriers to trade; 3) the pacific settlement of disputes through a generalized adherence to a dispute settlement mechanism. Therefore the fundamental goal of the WTO is to promote free trade by opening markets through the elimination of import tariffs.

While the GATT was concerned just with the trade in goods, the legal framework administered by the WTO has widened its coverage with the inclusion of regulations on trade and services. So now the WTO also covers intellectual property rights (TRIPS), goods and services.

The WTO regulates international trade through a body of rules that are organized into a series of Agreements, each of which subjects one aspect of commercial activity and

its related areas to disciplines of MFN and reciprocity. Fundamental principles that serve as foundation of the multilateral trading system are:

- abolishing *Most Favoured Nation (MFN):* countries cannot discriminate between their trading partners. This implies that if someone grants a special favor to one country, for example lower customs duty rate for one of their products, this has to be done for all other WTO members (ART. 1 GATT);
- National Treatment: imported and locally-produced products and other items should be treated equally once they have entered the domestic market (ART. 3 GATT) ;
- Lowering trade barriers by negotiations that result in reduced customs or tariffs, removing import bans or quotas that restrict quantities selectively and, in addition, lowering non tariff barriers;
- Binding commitments for market access which provide ceilings on customs tariff rates (bound rates), even though countries may tax imports at rates that are lower than the bound rates (applied rates) which can be changed only after negotiating with trading partners;
- Promoting fair competition by rules for open and undistorted competition based on the principle of non discrimination such as those on dumping and subsidies and counter measures of charging additional import duties to compensate for losses accrued;
- Development and economic reform allows for special assistance and trade concessions for developing countries.

However there are three exceptions to MFN concept that allow WTO members to discriminate against other member in trade policy (Panagariya, 2000):

- the Generalized System Preferences (GSP), which allows developed countries to give one-way preferences to developing countries;
- the Enabling Clause[5] allows developing countries to exchange virtually any trade preferences to which they mutually agree;

[5] The clause establishes the principle of differential and more favourable treatment for developing countries, reciprocity and fuller participation by developing countries (GATT 1980). It provided for: a) preferential market access for developing countries to developed country market in a non reciprocal, non discriminatory basis; b) more favourable treatment for developing countries in respect of other GATT rules on non tariff barriers; c) the introduction of preferential trade regimes between developing countries; 4) special treatment of Least Developed Counties (LDCs) in the context of specific measures for developing countries. The introduction of the Enabling Clause established a stronger legal basis for the special and differential treatment of developing countries within the rules of the multilateral trade system.

- article XXIV allows for any two or more members to form a preferential trading arrangement under strict conditions. One main condition is that the exchange of preferences is not partial but extends substantially to all the trade in products originating in participating countries. Similar provisions can be found in article 5 GATS.

But the non-discriminating approach has created one way to trade liberalization through tariff reductions. Despite their lower bargaining power, thanks to this clause smaller nations have been able to enjoy the advantages of the bilateral negotiations that the greater nations no longer have (De Melo and Panagariya, 1993).

EU under Article XXIV formed FTA and CU

Overview on GATT- Agreements

Year	Place	Subjects covered	countries
1947	Geneva	Tariffs	23
1949	Annecy	Tariffs	13
1951	Torquay	Tariffs	38
1956	Geneva	Tariffs	26
1960-1961	Geneva (Dillon Round)	Tariffs	26
1964-1967	Geneva (Kennedy Round)	Tariffs and Anti-dumping measures	62
1973-1979	Geneva (Tokyo Round)	Tariffs, non tariff measures, "framework" agreement	102
1986-1994	Geneva (Uruguay Round)	Tariffs, non tariff measures, rules, services, intellectual property right, dispute settlement, textile, agricultural, creation WTO, etc	123

Source: WTO 2004

Areas covered by the WTO

Umbrella	Agreement establishing the WTO		
	Goods	Services	Intellectual property rights
Basic principles	GATT	GATS	TRIPS
Additional Details	Other goods agreements and annex	Services annex	
Market access commitments	Countries schedules of commitments	Countries schedules of commitments	
Dispute settlement	Dispute settlement		
Transparency	Trade Policy Reviews		

Source: WTO 2004

1.4 Conclusion

It is known that if countries cooperate and set zero tariffs, then they are likely to have some benefits. Any type of agreement in which countries consent to coordinate their trade, fiscal and monetary policies is referred to as economic integration. This is a term used to describe how parts of different economies are integrated. When the integration increases, the barriers of trade between markets diminish. There are different degrees of integration but we have examined the effects of Preferential Trade Agreements. Since over time PTAs have grown we use the traditional welfare analysis to study their effects. These can be examined in two different ways: first by using a CGE or a Partial Equilibrium Model, or alternatively by using the gravity equation.

It is known that the implementation of a PTA provides ambiguous effects on participating countries and on the rest of the world. The gains associated with a better condition within the agreement must be compared with the effect of trade diversion to understand these effect it is necessary apply an equilibrium analysis.

Chapter 2
EU's Preferential Trade Agreement

2.1 Introduction

Economic integration is an agreement among nations to decrease or eliminate trade barriers, depending on the terms and intensity of the agreement, economic integration can be classified as a Preferential Trade Agreement, Free Trade Area, Customs Union, Common Market and, finally, Economic Union. When the economic integration increases, trade barriers between markets diminishes. The most integrated economy today, between independent nations, is the European Union. Thus European integration process has always been an important cornerstone for preferential trade agreements. Trade can be affected both trade barriers and multilaterally by governments and firms from various nations acting in concord. The terms *Regional Trading agreement* (RTA), *Regional Integration Agreement* (RIA), *Preferential Trading Agreement* (PTA) are; often used indifferently to describe various kinds of PTA and non preferential trade agreements. However we can distinguish between different degrees of liberalizations in each agreement in the following way:

- *Preferential Trading Agreement* (PTA), refers to the union between two or more countries in which low tariffs are applied on local goods rather than those coming from abroad Countries. PTAs differ with respect to product coverage, extent of tariff preferences, time frames for implementation, rules of origin, technical standards, safety provisions, etc. With reference to tariff provisions, agreements differ as regards to the extent of product coverage and to the extent of liberalisation. Apart from tariff provisions, PTAs contain a wide range of other provisions, in particular quantitative restrictions.
- *Free trade area* (FTA), includes a group of countries among which trade is free, that is without customs duties and quantitative restrictions: in other words, without visible barriers to exchange; moreover, participant countries conserve their own autonomy as far as the trade policy with external countries;

- *Customs Union* (CU), adds to the elimination of the visible barriers, the creation of a Common External Tariff (CET) or single trade policy towards the outside as far as visible barriers. Substantially the CU is an FTA in which the member countries apply a Common External Tariff (CET) on every product imported by non members;
- *Common Market* (CM), presumes, beyond the already described liberalization, also full mobility of the production factors, both as far as the free circulation of the capital and labour, and for the right of establishing productive activities and services;

In addition there are:

- *Monetary Union* (MU), a still more advanced phase in the process of unification because it adds to the previously reached level of integration an internal monetary system with a single currency, whose aim is to eliminate exchange rate uncertainty;
- *Economic Union* (EU), a monetary union in which there is a high level of coordination of economic policies between members states. The monetary union already presumes a single monetary policy; in the economic union, integration of fiscal politics and of sectorial politics assume a particular relevance, such as those relating to industry, agriculture, social problems etc.

Another kind of agreement that could be added to this classification is *the Organization for Economic Cooperation Development* (OECD), which maintains rules regulating the economic cooperation without effective and full integration. Panagariya (1999) provides a very clear description of the alternative definitions.

The term "Regional Agreement" is sometimes used as a PTA substitute or in order to describe a different agreement from a PTA one .

With the exception of the free trade area, all the phases of integration processes include both negative integration elements, that removal of the rules that create discrimination between the internal economic operators and those of the other members, and elements of positive *integration* that is the creation of common policies for the attainment of common objectives.

While the free trade area includes only measures of negative integration, measures of positive integration, in the later phases, show a stronger political will unification, because they imply renunciation of national autonomy in certain areas.

The number of preferential trade agreements has grown over time, with a great proliferation in the 1990s, in a phrase of Bhagwati's (1995) the global trading system can be characterised as a *Spaghetti Bowl* of tariff and non-tariff preferences. PTAs differ with respect to product coverage, extent of tariff preferences, time frames for implementation, rules of origin, technical standards, safeguard provisions, etc. With reference to tariff provision, agreements differ as to the extent of product coverage and to the extent of liberalisation. Apart from tariff provisions, PTA contain a wide range of other provisions, in particular quantitative restrictions. Other important rules are the *Rules of origin*[1], which used to determine the country of origin of the goods in cases where the production takes place in more than one country. In general the country of origin for a product with inputs from more than one country is defined as the country where the last substantial transformation took place. There are three methods that are used to establish this: a) tariff classification method; b) the value added criterion; c) the technical test method. There are two types of ROO: non preferential and preferential. Non-preferential are used for the application of tariffs and tariff quotas, while preferential prescribes the characteristics of goods eligible for preferential or duty free trade within an FTA.

Over the years we have seen two big waves of regionalism, by this term is meant the process of formation and extension of the trade agreements to a regional level: the first one, recorded in the Sixties, concerned the formation of trade agreements, while the other, in about the middle of the Eighties, had as an object the increase of the agreements to a regional level. In the former period, many African, Latin America and Asia countries, pushed by the positive experience of the EEC, developed analogous shapes of trade agreements. This phase is characterized by:

[1] Rules of origin (ROO) comprise a set of laws and regulations applied by national trade authorities to determine the country of origin of goods. Rules of origin affect different aspects of trade because the origin of goods has a direct bearing on the administration of trade measures such as a systems quotas, tariff preferences or anti-dumping and countervailing duties.

1) "horizontal" agreements: such negotiations held only by countries with similar levels of economic development and production structures (agreements North-North and South-South);
2) the motivations for the formation of agreements among various areas are different: those between North-North, and in particular the EEC, are economic motivation (to take advantage of the opportunities to increase the welfare offered by the increasing market) and political (to ensure the peace and European cohesion after the experience of the Second World War and against the threat represented by the Soviet Union) and finally in cultural motivation (preserve European cultural identity in a historical period that sees the decline of European hegemony in the world-wide system);
3) the South-South agreements, instead, have a primarily economic motivations: the participant countries, generally "small" economies, are linked by a desire for development based on one strategy of substitution of imports. Such a strategy is based on the assumption that, through external custom protection and the creation of a sufficiently wide home market, it is possible to favour the increase of national industry and be released from dependence on industrialized countries.

This first phase of regionalism had little success except for the EEC during the Seventies. According to Bhagwati (1993), the most important reason both for the failed attempts of South – South integration and the success of the European attempts must be found in the US position, the most hegemonic country in the international system[2]. The second "big wave" of regionalism, as indicated, began around half-way through the Eighties starting from the industrialized countries, in particular in North America.

In this second phase, the agreements are no longer horizontal but vertical: they, in fact, are concluded among countries of different levels of development and various economic structures (vertical agreements or North-South). NAFTA, for example includes, in addition to the USA, Canada and Mexico as well; the "European Agreements" link the EEC, the

[2] The USA support the multilateral process of the exchanges liberalization, except the EEC because it would have facilitated GATT negotiates, and do not support any regional agreement .

Countries of Central and Eastern Europe; the "Mediterranean Agreements" the Countries of the Maghreb and the Mashreq with the EEC.

This radical change of direction can be interpreted in two ways: according to the first interpretation, the opening of the regional agreements could derive from the failure of the GATT, in particular at the beginning of the ' 90s. According to the second interpretation, instead, the regional agreement is an attempt to obtain advantages in terms of trade by using in a power of the trade blocks in a strategic way.

According to Bhagwati the reasons that strengthen the tendency to regional integration are different:

- regionalism is considered as a substitute for multilateralism and acquires political importance, in particular in the United States, all when the second is introduced as a synonym of "altruism", while the first one satisfies the necessity "to finally look after one's own interests";
- regionalism, instead, is, for other authors, a supplement to multilateralism not an alternative, because it strengthens the tendency to trade open;
- regionalism can accelerate the multilateral liberalization process, because it prompts, for fear of political-commercial decline, the attainment of multilateral agreements that otherwise would remain unfinished;
- the worry about the deficits of the balance of payments has pushed many countries to look for regional agreements which bring a rapid improvement in trade.

Encouraged by the perspectives of economic development deriving from a greater market access, countries try to create or join a PTA, by exploiting, economies of scale from regional specialization, technical spillovers, etc. (Schiff and Winters - 2003)

Several different models have been proposed to predict patterns of trade and to analyze the effects of trade policies such as tariffs. The models are: Ricardian Model, Heckscher-Ohlin model, Specific factors model, New Trade Theory, Gravity model.

The Ricardian model is based on the hypotheses of the theory of the comparative advantage. Ricardo's theory assumes that domestic differences in natural or acquired endowment give rise to different factor productivities that provide the basis for trade among nations. This implies that the primary basis for trade is differences in factor productivities.

The Heckscher-Ohlin's theory argues that international differentials in supply of factors of production explain the direction of international trade. They explains that the supply includes not only factor productivities but factor endowment as well[3]. The theory assumes that: a) there are two countries using two factors of production, capital and labor, to produce two goods; b) identical production functions exist in both countries; c) production functions in both countries display constant return to scale; d) one the commodities is capital intensive at all input prices; the other is labour intensive; e) perfect competition in both commodities and factor markets, and full employment of resources exists in both nations; f) both nations have identical tastes; g) there are no transportation or similar costs and no barriers to free international trade; h) perfect factor mobility exists within each nation but not between nations; i) neither country has complete specialization in production. One of the assumptions of the H-O model says that production functions in both countries display constant returns to scale.

The specific factor (SF) model was originally discussed by Jacob Viner and it is a variant of the Ricardian model. In this model, one factor of production is assumed to be "specific" to a particular industry. A *specific* factor is one which is stuck in an industry or is immobile between industries in response to changes in market conditions. The assumption of this model is the following: an economy produces two goods using two factors of production, capital and labor, in a perfectly competitive market. One of the two factors of production, typically capital, is assumed to be specific to a particular industry, that is, it is completely immobile. The second factor, labor, is assumed to be freely and costlessly mobile between the two industries. Because capital is immobile, one could assume that the capital in the two industries is different, or differentiated, and thus are not substitutable in production. Under this interpretation, it makes sense to imagine that there are really three factors of production: labor, specific capital in industry one, and specific capital in industry two.

New trade theory, which began in the early 1980's (see Ethier 1982; Krugman 1984,1986; Grossman and Helpman 1991), attempts to address the shortcomings of standard trade

[3] The term factor productivity refers to the productivity of the factors of production, for example labour productivity. Whilst the term factor endowment refers to the relative abundance of factors of production in a country. For example some countries have more capital to labour and other countries have more labour relative to capital.

theory by dealing with some of the realities of trade in a more complex and sophisticated manner by incorporating a fuller range of factors. New trade models incorporate four innovations within neoclassical economics: a) market imperfections; b) the new industrial economics of strategic behaviour; c) new growth theory; d) a changing appreciation of the political context.

The gravity model of trade in international economics predicts bilateral trade flows based on the economic size of (GDP) and distance between two countries. We will focus on this model in chapter three. The task of this chapter is to explore the mosaic of relations between the EU and the rest of the word providing an exhaustive overview of the EU trade agreements.

2.2. EU Trade Policy

Trade policy has represented and represents a fundamental aspect among the external relations of the EU. It has been the main tool of the common market and subsequently of the single market through the control of the relations of the community with all its trade partners.

Through trade policy the EU defends, on the one hand, its own trade interest and, on the other, that of its members, furthermore it establishes the rules for globalization, which are accepted by the members. Trade policy plays a fundamental role between the European Union is relations with the rest of the world.

EU trade policy objectives are the eradication of poverty and the promotion of sustainable development in developing countries.

Trade has proved to be one of the most effective tools in promoting development. Increased trade with developing countries enhances their exports, promotes their industrialisation, encourages the diversification of their economies and accelerates their economic growth.

The classical instrument for achieving these objectives is tariff preferences, which provide an incentive for traders to import products from developing countries and thus help them to compete in international markets.

Trade interests are defended through bilateral and multilateral trading agreements.

Regional integration has been the most important feature of European economic development for several decades, but what is the origin and what are the motivations of EU's development policy? The origin can be found in the Treaty of Rome (1957): in fact it can be considered as first preferential trade agreement to come into force in 1958. One of the main objectives of the Treaty of Rome was to create a customs union between Members States in which there would be no barriers to trade and a common external tariff would be applied to import from third countries.

The legal basis for the EU's trade policy is Art. 133 of the European Community Treaty, so the Commission negotiates on behalf of Member States, in consultation with a special committee: "Article 133 Committee".

The 133 Committee is composed of representatives from the 25 Member States and the European Commission. Its main function is to coordinate the trade policy of the EU. The

133 Committee discusses the full range of trade policy issues affecting the EU, from the strategic issues surrounding the launch of rounds of trade negotiations at the WTO to specific difficulties with the export of individual products. (e.g., textiles), and considers the trade aspects of wider EU policies in order to ensure consistency. In this Committee, the European Commission secures endorsement of the Member States on all trade policy issues. The major formal decisions (for example agreement to launch or conclude negotiations) are then confirmed by the Council of the European Union.

EU trade policy changed on 1 February 2003, when the Treaty of Nice entered in force. The EC trade policy is formulated and implemented by means of Community acts, which consist in:

- regulations, with general application, binding and directly applicable in all member States;
- directives;
- decisions;
- decisions of general application;
- recommendations and options.

The EC also has power to conclude international agreements. The EC has exclusive competence in formulating and ensuring the implementation of the Common Commercial Policy (CCP), which covers trade in goods and services. Under the treaty the EC's competence has extended to cover the negotiation and commercial aspects of intellectual property right. In addition, reforms to improve the regulatory environment and promote a culture of dialogue and participation have been taken.

The objective of the EC's CCP is fixed in ART. 131 of the Treaty of Nice, which established that the EC must *contribute, in the Common interest, to the harmonious development of words trade, the progressive abolition of restrictions on international trade and lowering of customs barriers.*

The EC's common Trade Policy covers all the main measures regarding the trade in goods and services and almost all trade issues.

One of the most important aspects of the EU trade policy is that the EU is a customs union. The same import duties are charged on imports from third countries regardless of the

country of entry. The main principles of customs law are regulated at EU level, although the customs authorities of the EU Member States are in charge of their application. In addition, remedies against unfair trade practices (i.e. anti-dumping and countervailing measures) and safeguards are adopted by the EU and imposed on imports concerned regardless of the country of origin.

The EC trade policy is carried out in the multilateral and preferential ways. At the multilateral level it is a key player, including in the launch and ongoing implementation of the Doha Development Agenda (DDA). Multilateral trade rules, market opening, integration of developing countries in the world trade system and the improvement of the functioning of WTO are a primary objectives of EU trade policy. The basic EU priorities in the DDA are on:

- market access for industrial goods;
- market access negotiations on services;
- agricultural goods;
- development and sustainable development;
- environment.

2.3 EU Preferential Trade Agreements: unilateral and bilateral schemes

In this section we focus on EU Preferential Trade Agreements. We analyze both Unilateral and Bilateral Trade Arrangements.

The non-reciprocal preferences are unilateral trade concessions of the EU, nearly exclusively for developing countries. This kind of agreement is based on the relation "trade-development", it has a multiregional nature and stretches to cover of numerous criteria and levels of differentiation between the beneficiary Countries. Before 1995, imports of sensitive goods were subject to tariff quotas, with tariff reductions applying to a limited quantity only, or tariff limit (so that ordinary tariffs were reinstated if imports exceeded a certain quantity). Tariff quotas could be allocated to EU members as well as beneficiary countries. From 1995 tariff quotas and limits were abolished, from the on tariff reductions were applied according to product sensitivity.

Bilateral and Multilateral preferences, or reciprocal agreements, refer to restricted areas or single countries, bilateral agreements are arrangements between two political entities, thus legally binding these two territories only. These agreements are included in cooperation schemes in which, besides economic issues, there are other political and economic requirements that affect the partnership.

2.3.1Unilateral AgreementsFrom Lome' to Cotonou

By the mid 1960s the vast majority of African states found their relation with the EC through the first Yaounde' Convention, which established PTAs between the francophone countries (Associated African and Malagasy States – AAMS). The Yaounde' Convention was aimed at strengthening the economic independence of the associated states, promote their industrialization and encourage African regional integration. The first Yaounde' convention expired in 1969 and the second Yaounde' convention did not take place until 1975s. During the lifetime of second Convention, the first enlargement of the Community took place and foreshadowed a restructuring of external relations. The first decade of Treaty provided the context within which the Lome' Convention was signed (28 February 1975) by the EEC and 46 ACP States. The main feature of the Lome' convention was a commitment to an equal partnership between Europe and the ACP countries. The major policy objectives of the convention were: a) the promotion of EU-ACP trade; b)

agricultural and industrial development; c) special aid for the Least Developed Countries; d) support for regional cooperation.

STABEX (the System for the stabilization of export earnings from agricultural commodities) was the major innovation of Lome' I. Its objective was to provide funds to ACP countries to cover production shortfalls or price fluctuations for specific agricultural products exported to Europe. STABEX can be equated with an insurance policy for the ACPs: the EC guaranteed minimum earnings threshold for specific exports and compensated for any loss of revenue caused by prices or loss in production.

The most important change affecting the Yaounde' trade regulation was the Sugar Protocol; in the 1976 a Beef Protocol was included in the treaty granting access for specific quantities of beef originating in certain African countries.

Lome' II varied little from the Lome' I framework institutionally and in basic approach, but introduced SYSMIN. Which aimed at safeguarding raw material supplied for the EC. SYSMIN funds are allotted to avoid the danger of a stand-still in mining production, caused by a decline in raw material proceeds.

The third convention (Lome' III – signed in 1984) sought to promote the economic, cultural and social development of the ACP States and consolidate and diversify relations in a spirit of solidarity and mutual trust (Art. 1).

Lome' IV the first convention that covered a ten year period. A key element in Lome IV was the renewed emphasis on conditionality economic and political the following area. Great emphasis has been put on: the promotion of human rights, democracy and good governance; strengthening of the position of women; the protection of the environment; decentralized cooperation; diversification of ACP economies; the promotion of the private sector; and increasing regional cooperation.

2.3.2 Cotonou Agreement

The agreement was signed on 23 June 2000 in Cotonou for a period of twenty years. The new partnership is the result of a lengthy negotiation process, the global changes that preceded the Cotonou reforms are summarized in order to set the necessary historical context (Schuman Declaration; European Integration and Yaounde' Convention; enlargement of the Community; Lome' Convention). In particular, the renegotiation of Lome' IV coincided with German Reunification and the collapse of communism in the East. The Lome' IV contained policy that was also political and focused on human rights. Signs of a changing economic philosophy also began to emerge with the adoption of the structural adjustment programmes of the Bretton Wood institutions becoming part of EU development policy for the first time. Lome' IV promoted the role of the private sector in development as well as that of regional cooperation. All these shifts in development policy were consistent with the global trends of the 1990s that saw the market replace the State as the principle economic mechanism throughout Eastern and central Europe. The final change that preceded Cotonou saw the Lome' IV mid-term review and the Green Paper emerge at a time when development policy was confronted by new challenges in the form of globalization and liberalization. So the trade liberalization, accompanied by democratic institution-building, was the new international context that the successor of Lome' was obligated to recognize.

Relations between the EU and the African, Caribbean and Pacific states have developed as a unique combination of aid, trade and political cooperation (EU Commission, 2000). These special EU-ACP relations date back to the Treaty of Rome (1957). At that time, the first of today's ACP countries (mainly African states), as dependent countries and territories of some of the founding member states, were associated with the Community, in order "to promote (their) economic and social development…and to establish close economic relations between them and the Community as a whole" (Art. 131 of the Treaty).

The main objective of the agreement is a common provision underlining that development strategies, and economic and trade cooperation are interlinked (and complementary) and that the efforts undertaken in both areas must be mutually reinforcing. Economic and trade

cooperation is thus primarily conceived as an instrument of development (EU Commission, 2000a).

The broad objectives of the Partnership Agreement are defined in Article 1 to promote and expedite the economic, cultural and social development of the ACP States, with a view to contributing to peace and security and to promoting a stable and democratic political environment.

Cotonou Agreement is developed through article 2[4] (see note) and is established on three interconnected pillars: a) political dimension; b) economic and trade cooperation; c) development finance cooperation.

The political dimension underlines as principle objective the promotion of peace and democratic stability. Article 6 defines the actors of cooperation, that is: a) State (local, national and regional); b) Non-State (Private sector; Economic and social partners, including trade union organizations; Civil Society in all its forms according to national characteristics).

With reference to economic development the central objective of ACP-EC cooperation is poverty reduction and ultimately its eradication; sustainable development; and progressive integration of the ACP countries into the world economy.

Article 21 establishes that Cooperation supports the necessary economic and institutional reforms and policies at national and/or regional level, aiming at creating a favorable

- [4] *equality of the partners and ownership of the development strategies: for the purposes of implementing the objectives of the partnership, the ACP States shall determine the development strategies for their economies and societies in all sovereignty and with due regard for the essential elements described in Article 9; the partnership shall encourage ownership of the development strategies by the countries and populations concerned;*
- *participation: apart from central government as the main partner, the partnership shall be open to different kinds of other actors in order to encourage the integration of all sections of society, including the private sector and civil society organizations, into the mainstream of political, economic and social life;*
- *the pivotal role of dialogue and the fulfillment of mutual obligations: the obligations assumed by the Parties in the framework of their dialogue shall be central to their partnership and cooperation relations;*
- *differentiation and regionalization: cooperation arrangements and priorities shall vary according to a partner's level of development, its needs, its performance and its long-term development strategy. Particular emphasis shall be placed on the regional dimension. Special treatment shall be given to the least-developed countries. The vulnerability of landlocked and island countries shall be taken into account.*

environment for private investment, and the development of a dynamic, viable and competitive private sector. Cooperation further supports:

- the promotion of public-private sector dialogue and cooperation;
- the development of entrepreneurial skills and business culture;
- privatization and enterprise reform; and development and modernization of mediation and arbitration systems.

Cooperation promotes business development through the provision of finance, facilities and technical support aimed at encouraging and supporting the creation, establishment, expansion, diversification, rehabilitation, restructuring, modernization or privatization of dynamic, viable and competitive enterprises in all economic sectors as well as financial intermediaries such as development finance and venture capital institutions, and leasing companies by:

- creating and/or strengthening financial instruments in the form of investment capital;
- improving access to essential inputs such as business information and advisory, consultancy or technical assistance services;
- enhancement of export activities, in particular through capacity building in all trade-related areas; and encouraging inter-firm linkages, networks and cooperation including those involving the transfer of technology and know-how at national, regional and ACP-EU levels, and partnerships with private foreign investors which are consistent with the objectives and guidelines of ACP-EC Development cooperation.

Cooperation supports sustainable policy and institutional reforms and the investments necessary for equitable access to economic activities and productive resources. The ultimate objective of economic and trade cooperation is to enable the ACP States to play a full part in international trade. With reference to development and finance cooperation, Cotonou Agreement was established to support and promote the efforts of ACP States to achieve the objectives set out in this Agreement on the basis of mutual interest and in a spirit of interdependence.

Products covered by the ACP-EC Partnership Agreement are energy, machinery, transport material, chemical products, textiles and clothing and agricultural products. The bulk of ACP exports are raw materials, particularly agricultural products. There are non-reciprocal preferences for industrial and processed goods and for agricultural products. Products originating in the ACP states shall be imported into the Community free of customs duties, quantitative restrictions and charges having equivalent effect. The EC agreed to ensure more favorable treatment than that granted to third countries benefiting from the most-favored-nation clause for the same products. Thereby it is agreed that products covered by the CAP follow specific rules and regulations, in particular with regard to safeguard measures (EU Commission, 2000). Some agricultural exceptions, such as, beef, veal and sugar. They are handled under a specific regime (beef, veal and sugar protocols).

The rules of origin define specific requirements that products imported into the EC must fulfill with respect to various issues. Those requirements include criteria such as the cumulation of origin, territorial requirements, proof of origin, administrative cooperation, etc. In the agreement the parties recognize the need to ensure an adequate and effective level of protection of intellectual, industrial and commercial property rights and other rights covered by TRIPs in line with the international standards with a view to reducing distortions to bilateral trade. But what are the innovations of new Partnership? Cotonou innovation are: a) application of good governance as fundamental element of the relationship and the responsibility and accountability of ACP in this respect; b) poverty eradication combined with sustainable development and the gradual integration of the ACP economies within the global economy. Cotonou seeks to better influence the context within which development occurs, emphasizing trade development and investment.

2.3.3 Beyond Cotonou: the Economic Partnership Agreements (EPA)

On 27 September 2002, the EU and the 6 African, Carribean and Pacific regions (ACP) opened new negotiations called Economic Partnership Agreements (EPAs). These new negotiations were aimed at redefining the trade reime between the two countries' groups replacing the system applied since Lomé I. The previously agreements had not live up to

exceptions in terms of increasing ACP competitiveness and the promotion and of diversification of those countries' economies. The limited competitiveness of the ACP economies, the lack of investments, under-industrialization and other problems combined with protectionism, are all factors that led to the failure of the old system.

On 1 January 2008 the new agreements entered in force, the aim is a progressive abolition of both tariff and non tariff obstacles to trade. Special treatment will continue to be reserved for the poorest ACP countries. In terms of trade the EPAs will take the form of Free Trade Areas between the EU and the 6 ACP groups. The EPAs would replace the Lomé system of unilateral trade preferences with more comprehensive, modern, free trade agreements that are legalized under Article XXIV of the General Agreement on Tariffs and Trade (GATT). The new arrangement will attempts to involve on an almost reciprocal basis trade in goods and services, including intellectual property and investment protection. To realize the objectives of accelerated integration and greater market access to the EU, a pro-development EPA should be structured around the following eight elements:

- ✓ *A 10 percent value-added rule as a nonrestrictive rule of origin*. If the value added requirement is higher, cumulation rules should be global to allow ACP producers maximum access to the world's lowest-cost inputs and to avoid putting regional suppliers outside the EPA group at a disadvantage.
- ✓ *Additional aid for trade*. This should take the form of a program of technical and financial assistance for trade facilitation, sanitary and phytosanitary standards, and other supply-side measures (such as infrastructure). Putting additional aid for trade on the table as part of an EPA negotiation could increase the incentive of all countries to enter into an arrangement.
- ✓ *MFN reductions in external tariffs*. MFN reductions in external tariffs should be phased in, consistent with regional development programs[5].
- ✓ *Reform of tax administration and intraregional tax policy*. A program to harmonize tax structures through gradual but purposeful reform of tax administration and intraregional tax policy would promote regional integration and replace lost tariff

[5] Phases 1 and 2: Promote internal trade by progressively eliminating all internal barriers within customs unions and, for free trade agreements, adopt common nonrestrictive rules of origin.
- Phases 1 and 2: Reduce MFN peak tariffs to the average levels to promote intra-African and other efficient trade with third parties.
- Phases 2 and 3: Reduce to East Asian levels average levels of MFN tariffs within the EPA grouping.
- − Phase 3: Enact EU preferences. Making this the final step lessens the risks of trade diversion and hub-and-spokes development.

revenues. Such a program could complement tariff and customs reforms at the regional level, with support through new aid for trade.

- ✓ *Liberalized trade in services*. Region-specific program of services liberalization could expand access to efficient trade-related services, such as telecommunications, electricity, and transport. To avoid entrenching monopolies, liberalization should be done on an MFN basis.
- ✓ *Trade facilitation*. A program of trade facilitation measures—for example, improvements in customs, ports, border posts—should be linked to intraregional programs to lower the costs of trading, with special attention to lowering the transit costs of landlocked countries. The program, a high priority for all regions, should include specific benchmarks for implementation.
- ✓ *Temporary movement of persons*. The temporary movement of persons to supply services may be easier to deal with in regional arrangements than in multilateral talks.
- ✓ *Rules on investment and intellectual property rights (IPR)*. EPAs could include new IPR rules and rules on investment, but these should be calibrated in accordance with a region's capacity to implement them—and to benefit from them. Agreements could include competition policies consistent with national development strategies and in accordance with a region's implementation capacity

2.3.4 EU Generalized System of Preferences program

The Generalised System of Preferences (GSP) is a set of EU unilateral trade concessions in terms of tariff reductions exclusively granted to developing countries, with the exception of some socialist countries. This kind of agreement is based on the trade-development relation. It is multiregional and covers numerous criteria and levels of differentiation between the beneficiary countries.

Non reciprocal preferential trade schemes are based on the theory that the opening of a developed country market to a developing country will enhance trade and contribute to the economic growth in this country. They involve a large number of developing countries, but not all the intended beneficiaries actually benefit from these programs, because of a set of limitations in product and country coverage.

In 1964, the general secretary of the first United Nations Conferences on Trade and Development (UNCTAD) proposed the creation of a non reciprocal system of tariff preferences in favour of developing countries which entered in force in 1968. In oreder to do this it was necessary to exempt developed countries from the GATT's non discriminatory Most Favoured Nation (MFN) obligation to extend a tariff reduction granted

to one contracting party to all contracting parties. In 1971 the GATT members allowed a 10-year MFN waiver for the GSP, so the EU was able to implement its scheme.

The EU scheme for tariff preferences offers access to its market at lower or zero tariffs to imports from 112 developing countries and territories. It scheme also grants special benefits for the 49 least developed countries complying with certain labour or environmental standards.

The first GSP scheme was adopted by the European Union in 1971 for a period of ten years and has been renewed periodically. The periodic review involved changes in product coverage, quotas, ceilings, and their administration, beneficiaries and depth of tariff cuts for agricultural products. The main features of the previous schemes were quotas and ceilings for individual countries and products. On 1 January 1995 a new 10-year cycle EU GSP scheme entered in force.

It provides five types of arrangements:

- One general arrangement covering around 7000 tariffs lines where products are classified in four groups determining the depth of the tariff cuts: a) 3300 non sensitive entering the market duty-free; b) 3700 in: very sensitive products, where the duty applicable was 85% of the MFN rate; sensitive products, which had an applicable duty of 70% of the MFN rate; semi-sensitive products, which had an applicable duty of 35% of the MFN rate;
- Two "labour and environment-friendly" arrangements reduced the tariff for sensitive products by 8.5 percentage points on the MFN tariff.
- One Special GSP (GSP-drug) granted to all central and South American countries belonging to the Andean Community and Pakistan (7200 tariff lines at zero-duty).
- And a special scheme for LDCs incorporating the Everything But Arms (EBA) initiative which allowed free access for the 50 poorest countries in the world for all products but arms and ammunition.

On June 2001, the EC adopted a proposal for revision of the GSP scheme for the 2002-2004 period. This revision stipulated simplification and harmonisation of the previous arrangements principally reducing the number of product categories from four to two. The duty-free access is maintained for all non sensitive products, while all other products are

now classified in one single category: sensitive products with a flat rate reduction of 3.5 percentage points from the MFN duty[6].

The new GSP scheme

In 2003, the European Commission launched a major project to prepare the revision of the European system of rules of origin. A Green Paper was produced and a wide-ranging consultation process was started. The objectives of the Green Paper were summarised as follows: "*preferential origin rules need to be fundamentally reviewed, especially in view of the level of duties likely to emerge from the new round of multilateral trade negotiations, the role to be played by preferential origin rules in free trade agreements and the policy of market access and supporting sustainable development. Management procedures and supervisory and safeguard mechanisms also need to be designed to make sure that preferential arrangements are used properly and shield the business community and the financial interests at stake from abuses of the system. The purpose of this Green Paper is to help the Commission to formulate guidelines in response to these objectives, taking account of the various interests at stake and the contributions expected from those involved in the preferential arrangements*" (European Commission, 2003a and 2003b).

On 23 June 2005, the EU member states agreed on a new GSP scheme which came into force on 1 January 2006. This new system was designed to be more generous, simpler, more transparent and more stable.

The new scheme reduces the number of GSP arrangements from five to three:

- The general arrangement for standard GSP beneficiary countries is maintained but the product coverage increased from 6900 to 7200 mostly in the agricultural and fishery sectors. Current preferential margins are maintained.
- A *GSP PLUS:* designed for the poorest and most vulnerable countries. It cover about 7200 products which can enter in the EU duty free, but beneficiary countries must meet a number of criteria and effective application of 27 international conventions on human and labour rights, environmental protection, fight against the drugs, and good governance. To benefit from GSP PLUS countries must

[6] Only in the case of ad valorem duties. The reduction is 30% from the MFN rate in the sole presence of specific duty, 20% reduction for textiles and clothing and 15% reduction for ethyl alcohol.

demonstrate that their economies are poorly diversified small, lower-income economies, land-locked countries, small island nations), and therefore dependent and vulnerable. Poor diversification and dependences mean that the five largest sections of a country's GSP-covered imports to the EU must represent more than 75% of its total GSP- covered imports. GSP-covered imports from that country must represent less than 1% of total EU imports under GSP;

- The *Everything But Arms (EBA)* remains unchanged. It provides for an unlimited period of time, duty-quota-free treatment for all products originating in the beneficiary countries, except for arms and ammunition, and a special regime applicable for three sensitive products bananas, sugar and rice. Duty free access is provided for bananas in January 2006, for sugar duty free access will be provided in January 2009 and finally for rice, duty free access will be provided in September 2009.

Moreover, the new scheme will continue with the removal of GSP rates of duty where a beneficiary country becomes competitive in the export of a particular product or range of products. This means that the country no longer needs the GSP to promote this product's exports to the EU. However, the mechanism has been overhauled and simplified.

The current criteria (share of GSP imports, development index and export-specialisation index) have been replaced with a single simpler criterion: share of the community market expressed as a share of exports from GSP countries. This share would be 15% with 12.5% for textiles and 12.5% for clothing, and it will be assessed at the end of 2008, except in the case of textiles and clothing which will be reviewed annually to properly reflect the possibility of sharp increases in textile and clothing exports.

Countries may be temporarily excluded from the scheme for a number of reasons including: a) serious and systematic violation of the principles in the conventions on sustainable development and good governance; b) export of goods made by prison labour; c) shortcomings in customs controls on export or transit of drugs or failure to comply with international conventions on money laundering; d) fraud, irregularities or systematic failure to comply or to ensure compliance with the rules of origin of products and the proof thereof, and to provide administrative co-operation as required ;e) unfair trading practices;

f) infringements of the objectives of the arrangements concerning the conservation and management of fishery products.

Old GSP – Previous Regulation	
Very sensitive products	*15% preferential margin*
Sensitive products	*30% preferential margin*
Semi-sensitive products	*65% preferential margin*
Non-sensitive products	*100% preferential margin (i.e. duty free entry)*

Source: UNCTAD 2002

New GSP – Current Regulation	
Sensitive products	*Flat rate reduction of 3.5% points from MFN duty,* *In the case of on ad valorem duties only*
	30% from the MFN rate in the sole presence of specific duty
	20% reduction for textiles and clothing
	15% reduction for ethyl alcohol
Non-sensitive products	*Duty free entry*

Source: UNCTAD 2002

Old GSP	***New GSP***
Five schemes: - *general arrangement;* - *two labour and environment-friendly arrangement;* - *GSP-Drug;* - *EBA*	*Three schemes:* - *general scheme;* - *GSP Plus;* - *EBA*

Comparison between OLD and NEW GSP scheme

2.4 Bilateral agreement: The Mediterranean basin

Preferential links exist between the EU and the developing countries of the Mediterranean Countries. The Mediterranean countries are important suppliers to the EU market of natural resources and are an important market for EU exports.

Since its foundation, the European Union has maintained special political and economic relations with the countries of the Mediterranean Basin, in fact, the first general EEC policy for these region came with the establishment of Global Mediterranean Policy (GMP) launched in 1970s, in the context of the oil crisis. A renewed Mediterranean Policy was launched in 1992 and in November 1995, the EU and 12 Mediterranean countries launched in Barcelona an integration process to encourage sustainable and balanced economic development with the view of creating an area of shared prosperity.

Mediterranean Countries have been involved in different trading arrangements with the EU since the late 1960s and early 1970s, when Tunisia, Morocco, Israel and Egypt signed agreements with the EU. These were followed by Cooperation Agreements signed with the Maghreb (1976) and Mashreq (1977) countries. The bilateral Cooperation Agreements included trade preferences that were non-reciprocal, and gave duty free access for most industrial and many agricultural goods.

The Euro Mediterranean Partnership (EMP) launched at the Barcelona Conference in 1995, represent a renewed involvement of the EU with its Mediterranean Partnership Countries (MPCs). The partnership covers political, economic and social aspects. The objective is the creation of a Mediterranean free trade area (FTA) by 2010. An important feature of these trade agreements is the notion of reciprocity. This concept contrasts with earlier agreements from the 1970s, consisting of unilateral elimination of European barriers to Mediterranean industrial goods. Euro-Mediterranean Agreements have been concluded with Algeria, Egypt, Israel, Jordan, Lebanon, Morocco, The Palestinian Authority, Sirya, Tunisia, Malta and Cyprus and Lybia.

The partnership consists of two elements: a) Association Agreements that provide the institutional framework for cooperation and trade liberalization; b) financial support scheme (MEDA) that provides funds for easing structural adjustment in the MPCs. But the economic interest of the EU and MPCs is different, in fact the MPCs are of little economic

interest to the EU. The MPCs have a comparative advantage in typical Mediterranean products such as fresh fruit, vegetables, citrus products, tomatoes and olive oil.

Given the limited economic interest of the EU in the MPCs, the Euro-Mediterranean Agreements mainly serve the EU's political interest in stability in the area. This political interest derives from the Barcelona Process, in fact the establishment of EMA is part of the "Barcelona Process", which aims at "political stability and security" (political chapter), "shared prosperity" (economic chapter), and "understanding between cultures and exchanges between civil societies" (social chapter) (European Commission, 2005).

The EMP focuses on three key aspects:

- the political and security aspect aims to establish a common area of peace and stability;
- the economic and financial aspect to create an area of shared prosperity;
- the social, cultural and human aspect aims to develop human resources and promote understanding between cultures and exchange between civil societies.

The EMP comprises two complementary dimension:

- bilateral dimension[7];
- regional dimension[8].

[7] Bilateral dimension: The objectives of the Association Agreements.
The Association Agreements are intended to bring the Mediterranean Partners and the Union closer together through the gradual establishment of free trade, the provision of EU support for the economic transition process, cooperation in a whole range of areas, the opening up of cooperation to civil society and the undertakings entered into with regard to human rights and democracy.
The Association Agreements have two main objectives which are interdependent and complimentary: (*i) to establish the Euro-Mediterranean free trade area throughout the region and (ii) to take full account of the specific characteristics* of each of the Partners. Priority is given to the improvement of competitiveness, economic restructuring, administrative reform, the establishment of economic infrastructure or scientific cooperation depending on the needs of the individual Partners.
Because the partner countries are at different stages of development, progress towards free trade will be gradual, and will require scheme to support economic transition and structural adjustment by cushioning any negative social effects, speeding up economic modernization and promoting sustainable development. The Euro-Mediterranean free trade area will be established via the Euro-Mediterranean Association Agreements and the free trade agreements between the Partners.
The creation of a free trade area by the target date of 2010, agreed at Barcelona, is an essential instrument to further approximation and to raise the prosperity level of the Partners. Since the Agreements are crucial in this perspective, a major effort will be required on all sides to ensure that they are effectively implemented. This will also constitute a strong signal to foreign private investors of the irreversibility of the process and will contribute to increasing their activities in favor of Mediterranean partners.

[8] Regional dimension: this is one of the most innovative aspects of the partnership, because it covers the political, economic and cultural fields (regional cooperation).

2.5 Other Agreements: Agreement with non European Countries (MERCOSUR)

The countries of Latina America and those of the EU share a long tradition of economic, political and cultural relations. Since the 1970s the relations have increased and they have been accompanied by an interregional political dialogue. The MERCOSUR was created by Argentina, Brazil, Paraguay and Uruguay in March 1991 with the signing of the Treaty of Asuncion. Association agreement negotiations between the EC and MERCOSUR began in June 2000, with the aim of establishing a comprehensive political and economic partnership covering political, cooperation, and trade issues. The beginning of the process goes back to the Inter-Institutional Cooperation Agreement of 1992 and to the Interregional Framework Cooperation Agreement of 1995.

The agreement under negotiation consists of three parts: a chapter on political dialogue, a chapter on trade and economic issues (creating a bi-regional free trade area) and a chapter on co-operation. With referring to trade, the objectives of the agreement are to encourage the increase and diversification of trade, through a gradual and reciprocal liberalization of trade.

The scope and objectives of the free trade agreement are tied to the negotiations of 2000 and 2002 in which agreed about:

- the bilateral and reciprocal liberalization of trade in goods and services within an agreed time frame in conformity with the relevant WTO provisions;
- improvement of access to government procurement markets for goods, services, works;
- protection of intellectual property rights;
- adequate competition policies and a mechanism for cooperation in the field of competition;
- an agreement on Wines and Spirits;
- an agreement on Sanitary and Phytosanitary measures;
- a business Facilitation Action Plan.

In this agreement origin criteria are similar to the pan-European system[9].

2.5.1 Balkans

In 2000, the EU granted autonomous trade measures to beneficiary countries and territories of the region Albania, Bosnia and Herzegovina, Croatia, the former Yugoslav Republic of Macedonia, Serbia and Montenegro, as defined in United Nation Security Council Resolution 1244. These trade measures allow exports to enter the Union free of duties and or quantitative limits. The only exceptions apply to the following: Wine and certain fishery products are subject to preferential tariff quotas; Sugar is subject to preferential tariff quotas (except for Croatia where this is currently being negotiated); "Baby beef": only the specific import duty is eliminated - ad valorem duties of 20% continue to apply; Quotas apply on imports of textile products originating in the customs territories of Montenegro and Kosovo (as defined in United Nation Security Council resolution 1244). These preferences, which were originally adopted in 2000 for a period until the end of 2005, were extended until the year 2010.

The Stabilization and Association Agreements render (SAAs), over a transitory period, the trade concessions reciprocal, thereby gradually opening up the markets of the region to EU products.

The EU policy is acting on three levels: bilateral, regional and multilateral.

bilateral level, in addition to the autonomous measures, the EU has increased and implemented the SAAs with two agreements, on the one hand the agreement with the former Yugoslav Republic of Macedonia entered in force on 1st may 2004, on the other hand the agreement with Croatia entered in force on 1st February 2005. Negotiations with the other countries started in 2005 and 2006.

[9] The Pan-European Cumulation System was created in 1997 on the basis of the agreement (1994) between the EC, the EFTA countries, the CEEC countries and Baltic states. It was the widened to Slovenia and industrial products originating in Turkey. The Pan-European Cumulation System is based on harmonization of rules of origin applied in preferential trade between the community, the CEEC and the EFTA. The aim of this strategy was to strength the effectiveness of the Europe Agreements and to benefit the economic operators as the many sets of rules of origin within Europe were increasingly being costly barriers to trade.

On the regional level, bilateral agreements will be transformed into regional agreements, while on the multilateral level the EU supports the Balkan countries membership to the World Trade Organization.

2.5.2RSA-EC trade Agreement

The agreements with South African countries started in Pretoria in 1999. The Trade, Development and Cooperation Agreements covers different areas. The main element is the creation of FTA between South Africa and EU. The FTA aims to ensure better access to the Community Market for South Africa and thanks to the reciprocal nature of FTA, access to South African Market for the EU.

The principal features of this agreement can be summarized as follows:

- asymmetric timetable: the EU opens its market faster and more extensively than South Africa over asymmetric, transitional period of 12 years (EU Commission 1999a).
- protection of sensitive sectors: agricultural products are excluded by FTA in order to protect this vulnerable sector, while products covered by the agreement are in the field of energy, machinery, transport material, chemical products, textiles and clothing;
- integration of South Africa into the World Economy;
- Rules of Origin. The agreement defines the rules of origin in order to ensure to products benefiting from preferential arrangements only come from South Africa or the EU. The agreement provides for the cumulation of origin.

The agreement includes provision about Competition policy, intellectual property, safeguard measures, development and cooperation, political dialogue and social and cultural aspects.

2.5.3Relations between EU and Latin America

The relations between EU and Latin America was started in 1st summit between the Heads of State and government of Latin America, the Caribbean and the EU was held in Rio de Janeiro in 1999. The objective of the summit was to promote the growth of political, social, cultural and economic perspective between the two regions in order to develop a strategic partnership focusing on respect of democracy and individual freedom, international peace and security, political stability and building trust among nations. During following years there have been other meeting (Madrid in May 2002, Guadalajara in May 2004, Vienna in May 2006) whose aim has been to strengthen the strategic partnership started in Rio.

2.5.4 EU and Andean Community

The EU established a political dialogue with the countries of Andean Community (Bolivia, Colombia, Ecaudor, Peru and Venezuela) at a meeting held in Rome on 30 June 1996. This political dialogue has been consolidated and institutionalized through the signing of *Political Dialogue and Cooperation Agreement between the EU and Andean Community* in December 2003. Relationship on the cooperation between the EU and Andean Community was signed in 1983, while the current basis on EU cooperation with the individual Andean countries and the Andean Community as a whole in the Regional Framework Agreement on Cooperation in 1993. The different areas of the cooperation are specified in this agreement.

2.5.6 EC-Mexico Framework Cooperation

The FTA between EU and Mexico is the first comprehensive and reciprocal trade pact of the EU with the country of western hemisphere. For the EU it is also a way to get better access to the preferential trading area created by the North American free Trade Agreement (NAFTA) between Mexico, USA and Canada.

The agreement was signed in 1997 and entered in force in November 2000 and covers political and economic aspects. It is the first FTA between a Latin American country and the EU and, in addition, goes beyond goods, trade and border issue, because it include services, investment, public procurement, intellectual property rights and competition.

First of all, political dialogue is institutionalized by the agreement. With respect to trade agreement, the objective is to establish a FTA in goods and services, the mutual opening of the procurement markets, the liberalization of capital movements and payments and the adoption in the fields of competition and intellectual property rights (EU Commission, 2000b). The products covered by the agreement are industrial goods, agricultural and fishery products, the preferences agreed upon envisaged full liberalization of industrial products by 2003 for the EC and by 2007 for Mexico.

Bilateral cooperation also covers in different sectors such as social development and reduction of inequality and economic growth to ease the implementation of FTA.

The EU-Mexico agreement is part of the second wave of regionalism, that is new regionalism.

2.5.7 EC-Chile Agreement

This agreement was signed in November 2002, it has three fundamental pillars:

- political dialogue: The main aim of political dialogue is to promote and defend democratic values;
- Trade: the provisions on trade are set out in Part IV of the Agreement. The objectives of trade can be summarized in the progressive liberalization of trade in goods, facilitations of trade in goods, reciprocal liberalization in services, improvement of the investment environment, protection of intellectual property rights, effective cooperation mechanism in the file of competition, liberalization of current payments and capital movements, effective and reciprocal opening-up of government procurement markets and, finally, establishment of an effective dispute settlement mechanism;
- cooperation: objective of the cooperation is to reinforce institutional capacity, promote social development, stimulate productive synergies and increase cooperation.

The agreement covers all sectors: industry agriculture and fishery (Annex I and II – Tariff elimination schedules – Annex V and VI – agreement on wine and drinks).

2.5.8 EU and Asia

The Association of South East Asian Nations (ASEAN) encompasses 10 South East Asian countries (Brunei Darussalam, Cambodia, Indonesia, Laos, Malaysia, Burma/Myanmar, Philippines, Singapore, Thailand and Vietnam). Its key position in the Asia-Pacific region, its dedication to peace and stability in the region and its important economic weight have made ASEAN a key partner for the European Union. In October 2003, ASEAN leaders at their 9th Summit Meeting signed the Bali Concord II, a landmark treaty for the future integration of ASEAN, calling for the creation of an ASEAN Community by the year 2020.

Relations between EU and ASEAN countries are based on The Trans Regional EU-ASEAN Trade Initiative (TREATI). It is a framework for dialogue and regulatory cooperation developed to enhance EU trade relations with ASEAN. The initiative was launched as a key component of the Commission's Communication on "A New Partnership with South East Asia" in July 2003. The priority areas for cooperation under the *treaty* are linked to ASEAN's own drive for economic integration and include sanitary and phytosanitary standards in agro-food and fishery products, industrial product standards and technical barriers to trade, and forestry and wood-based products.

EU established in 1996 relations with East Asia through the Asia-Europe Meeting (ASEM). Although the ASEM process was initiated by members of the association of Southeast Asian Nations (ASEAN), EU and EU member states representatives have utilized ASEM as a means of coordinating and supplementing pre existing bilateral attempts to improve trade relations with the economies of the region and to address specific concerns of common interest on political and other issues.

The twenty five EU Member States, the European Commission and thirteen Asian countries (Brunei, Burma/Myanmar, China, Cambodia, Indonesia, Japan, South Korea, Malaysia, Laos, the Philippines, Singapore, Thailand, and Vietnam) participate in the process. The ASEM process aims to strengthen the relationship and increase mutual understanding between the two regions, in a spirit of mutual respect and equal partnership.

At the base of ASEM there are three fundamental pillars:

- Economic dialogue;
- Political dialogue;

- Cultural agenda.

Despite its three structural pillar, ASEM functions primarily to further trade and investment negotiations.

To date, there have been six summits: in Bangkok in 1996, London in 1998, in Seoul in 2000 and in Copenhagen in 2002, in Hanoi (Vietnam) 2004, in Helsinki 2006.

Key characteristics of the ASEM process include:

- its informal dialogue;
- its multidimensional character;
- equal partnership.

But the ASEM process has failed to eradicate a number of areas of protectionism such as within the agricultural sector of the EU. Indeed, where the EU protection has begun lessen, it is due to the effects of European Interregional changes in trade policy and in technical barriers, through the reduction of voluntary export restraints (VERs) and commitments made as part of Uruguay Round. ASEM is a relevant actor for the EU and this relevance is shown in several ways[10]. The ASEM process has at its core a number of bilateral and other interregional channels for dialogue that had already been established for same years, originated from the confluence of changing systematic, intraregional, domestic and sub-national interests.

[10] Aggarwal V., Fogarty E.A., (2004), "EU Trade Strategies, Between Regionalism and Globalism". Palgrave Macmillan 2004.

2.6 Conclusion

The aim of this chapter is to provide an overview on different preferential agreements signed by the EU.

According to the World Trade Organization regional trade agreements include bilateral free trade agreements, customs unions and multilateral agreements. The fundamental difference between free trade agreements (or customs unions and preferential trade agreements is that with the former the concession of preferential treatment is reciprocal, whereas with the latter preferential treatment is one-sided. Multilateral trade agreements, according to the rules laid down by the WTO are by their nature non discriminatory.

The number of preferential trade agreements has grown over time, with a great proliferation in the 1990s, in a phrase of Bhagwati's (1995) the global trading system can be characterised as a *Spaghetti Bowl* of tariff and non-tariff preferences.

Obviously PTAs differ with respect to product coverage, extent of tariff preferences, time frames for implementation, rules of origin, technical standards, safeguard provisions, etc.

Chapter 3: How Preferential Trade Agreements can be evaluated: the Gravity Approach

3.1 Introduction

In this section we propose a review on the methodologies for estimating the gravity equation. In particular we focus on the studies that assess the impact of preferential schemes. Gravity model has become the main tool in empirical analysis of bilateral trade flows. Gravity model is particularly used in empirical trade issues like: impact of trade policy decision, effects of preferential trade agreements and currency unions, explanation of trade patterns and cost of border, assessment of the impact on trade of GATT/WTO's membership.

The literature discussed on the lack of theoretical foundation of the gravity equation for a long time. But today the theoretical basis of the gravity model lies on the following economic justifications: general equilibrium model with perfect competition and differentiated products; models with monopolistic competition and the model of Heckser-Ohlin. The gravity equation can be justified by almost any model in which countries specialize in the production of differentiated goods. This specialization can be due to "Armington" preferences (Anderson, 1979; Bergastrand, 1985); to economies of scale (Krugman and Helpman 1985); or to differences in the factors endowments (Deardoff 1998) but the differentiation is not an essential condition to apply the gravity equation.

Over time, the literature has improved the gravity equation in relation to topics it intends to analyze, to improve the performance of this tool. The main approaches used in the literature are the cross section and panel data.

Cross-section is mainly static and refers to a long run relationship. Classical Gravity models generally use cross section data to estimate trade effects and trade relationship for a particular time period. But the recent literature suggests that the application of a fixed effects panel model may be a sufficient solution to capture the impact of unobservable multilateral resistance effects (Anderson and Van Wincoop,

2003). In our analysis we follow Anderson (1979) and Anderson and Van Wincoop (2003) in order to build the gravity equation.

Gravity models are econometric tools of the trade. The origins of the Gravity equation can be found in analogy to Isaac Newton's law of Universal Gravitation, it held that the attractive force between two objects *i* and *j* is given by:

(1)

$$F_{ij} = G\frac{M_i M_j}{D_{ij}^2}$$

where:

- F_{ij} is the attractive force;
- M_i and M_j are the masses;
- D_{ij} is the distance between the two objects;
- G is a gravitational constant depending on the units of measurement for mass and force.

In 1962 Tinbergen proposed Gravity Models of international trade (equation 1), in his model F_{ij} is the flow from origin *i* to destination *j*, for examples export values; M_i and M_j are the economic sizes, for example Gross Domestic Product (GDP) or Gross National Income (GNP); D_{ij} is the distance between the location usually measured from center to center. Taking the natural logarithm to obtain a linear relationship between trade flows and economic sizes and distance we obtain:

(3)

$$\ln F_{ij} = \alpha \ln M_i + \beta \ln M_j - \theta \ln D_j + \rho \ln G_j$$

But most authors estimate the following log linear form:

(4)

$$\ln X_{ij} = \alpha + \beta_1 \ln Y_i + \beta_2 \ln Y_j + \beta_3 \ln POP_i + \beta_4 \ln POP_j + \beta_5 \ln D_{ij} + \sum_h \delta_h P_{ijh} + \sum_k \gamma_k F_{ijk} + \varepsilon_{ij}$$

where (*i*,*j*) indicates a pair of countries, X_{ij} represents the volume of exports of country *i* to country *j*. Exports depend on incomes (Y_i and Y_j), on populations (POP_i and POP_j) on geographical distance (D_{ij}), on F_{ij} factors that affect trade such as a common border, a common language, past colonial links etc. Finally *h* preferential trade variables P_{ij} usually represented by dummy variables; ε_{ij} is the error term.

The coefficients β_1 and β_2 are expected to be positive and close to value 1, β_5 the coefficient of distance is expected to be negative because distance is a proxy of transportation costs and for the coefficients β_3 and β_4 there is no empirical evidence, the expected sign for these coefficients is ambiguous[1]. In other words, the volume of trade between two countries is directly proportional to their incomes and inversely proportional to the geographical distance.

Some authors consider a single variable given by the product of the GDPs of the two countries and by the product of population[2] (Agostino, 2007; Rose, 2004a and 2002). In this case the specification of the model is:

(5)

$$\ln X_{ij} = \alpha + \beta_1 \ln(Y_i Y_j) + \beta_2 \ln(POP_i POP_j) + \beta_3 \ln D_{ij} + \sum_h \delta_h P_{ijh} + \sum_k \gamma_k F_{ijk} + \varepsilon_{ij}$$

Finally other authors estimate the gravity model using population or GDP per capita[3].

[1] See Cheng and Wall, 2005 and Oguledo and Macphee, 1994.
[2] This why country i's income is constant over time, see Rose (2002 and 2005)
[3] See Nilsson (2002)

3.2 2. Theoretical foundation of the gravity model

The Gravity model can be derived from different theoretical trade models such as the Ricardian model, the Heckscher-Ohlin (HO) and increasing returns to scale models. The first important work providing a theoretical basis for gravity models is the one of Anderson(1979). Bergstrand (1985, 1989 and 1990) and Anderson apply CES preferences and generalize the gravity model by introducing prices. In his work Bergstrand applies Dixit and Stiglitz's monopolistic competition model and assumes that goods are differentiated among firms rather than countries. In 1990 the author included in the model the Linder hypothesis, which argues that consumers in countries with similar endowments and similar level of development are likely to share similar preferences, which increases the volume of international trade between them. Helpman and Krugman (1985) derive the gravity model under the assumption of increasing returns to scale in production. Evenett and Keller (1998) derive the gravity model from both the Hecksher-Ohiln model and increasing returns to scale hypothesis under perfect and imperfect product specialization. Anderson and Wincoop (2001) built the import gravity equation as a function of trade costs and income; according to the authors, trade between two countries depends on bilateral trade barriers between them relatively to the average trade barriers that they both face with all their trading partners. The authors use a CES function to derive a gravity equation. The assumptions of their model are:

- All goods are differentiated by place of origin. Each region is specialized in the production of only one good; moreover, the supply of each good is fixed;
- The preferences are homothetic.

If c_{ij} is the consumption by region j of goods from region *i*, consumers in region *j* maximize the following utility function:

(6)

$$\left[\sum_i \beta_i^{1-\sigma/\sigma} c_{ij}^{\sigma-1/\sigma}\right]^{\sigma/\sigma-1}$$

where:

- β is a positive distribution parameter;
- σ is the elasticity of substitution between all goods.

The CES utility function is subject to the following budget constraint:

(7)

$$\sum_i p_{ij} c_{ij} = y_{ij}$$

y_{ij} is the nominal income in region j and p_{ij} is the price of goods for region j. Prices between two locations are different because there are trade costs that are not directly observable. The price p_{ij} is equal to:

(8)

$$p_{ij} = p_i t_{ij}$$

where t_{ij} is the trade cost factor between i and j. The nominal demand for goods from region i by consumers of region j is:

(9)

$$x_{ij} = \left(\frac{\beta_i p_i t_{ij}}{P_j} \right)^{(1-\sigma)} y_j$$

And x_{ij} is the nominal value of exports from i to j, and p_j, the consumer price index of j,

(10)

$$x_{ij} = p_{ij} c_{ij}$$

therefore we obtain (11):

(11)

$$P_j = \left[\sum_i \left(\beta_i p_i t_{ij} \right)^{(1-\sigma)} \right]^{1/(1-\sigma)}$$

the total income of region i is:

(12)

$$y_i = \sum_j x_{ij}$$

from (11) and (12) with market clearance condition we derive :

(13)

$$y_i = \sum_j x_{ij} \quad = \sum_j \left(\beta_i p_i t_{ij} / P_j\right)^{1-\sigma} y_i = \left(\beta_i p_i\right)^{1-\sigma} \sum_j \left(t_{ij} / P_j\right)^{1-\sigma} y_i$$

from this equation we obtain:

(14)

$$\left(\beta_i p_i\right)^{1-\sigma} = y_i / \sum_j \left(t_{ij} / P_j\right)^{1-\sigma} y_i$$

substituting this equation into (9) we obtain:

(15)

$$x_{ij} = y_j \left(\frac{t_{ij}}{P_j}\right)^{(1-\sigma)} \frac{y_i}{\sum_j (t_{ij} / P_j)^{1-\sigma}} = \frac{y_i y_j \left(\frac{t_{ij}}{P_j}\right)^{1-\sigma}}{\sum_j y_j \left(\frac{t_{ij}}{pj}\right)^{1-\sigma}}$$

world nominal income is equal to:

(16)

$$y^w \equiv \sum_j y_j$$

(17)

$$x_{ij} = \frac{y_i y_j}{y^w} \left(\frac{t_{ij}}{P_j \prod_{ij}}\right)^{1-\sigma}$$

and income share. Therefore we can rewrite the equation (15):

(18)

$$\theta_j \equiv y_j / y^w$$

where:

(19)

$$\prod_i \equiv \left[\sum_j \theta_j \left(\frac{t_{ij}}{P_j} \right)^{1-\sigma} \right]^{1/1-\sigma}$$

if we substitute it and the equation (15) in the equation (11) we obtain:

(20)

$$P_j = \left[\sum_i \left(\frac{y_i}{\sum_j y_j (t_{ij} / P_j)^{1-\sigma}} \right) t_{ij}^{1-\sigma} \right] = \left[\sum_i \theta_i \left(\frac{t_{ij}}{\prod_i} \right)^{1-\sigma} \right]^{1/1-\sigma}$$

if we assume symmetric trade cost, then comparing the latter two equations π=P, we can then rewrite the equation (15) as:

(21)

$$x_{ij} = \frac{y_i y_j}{y^w} \left(\frac{t_{ij}}{P_j P_i} \right)^{1-\sigma}$$

with

(22)

$$P_j \equiv \left[\sum_i \theta_i \left(\frac{t_{ij}}{P_i} \right)^{1-\sigma} \right]^{1/1-\sigma}$$

the equation (22) is the gravity equation. Now we must consider the trade cost. Anderson and Van Wincoop (2003) assumed in their model that the trade cost factor consists of two terms corresponding to two different types of costs:

a) non border cost (d);
b) national border effects (bor).

The trade cost factors are equal to:

(23)

$$t_{ij} = d_{ij}^{\rho} bor_{ij}$$

They represent the border effect with only one dummy variable: if two countries have the same border the national border effects (*bor*) is equal to 1 and 0 otherwise. But the border effects are affected by other factors like colonial linkages, regional trade agreements or language between countries *i* and j, consequently, the border effects can be defined as:

(24)

$$t_{ij} = d_{ij}^{\rho} E_{ij}^{\psi} (\exp(\theta_1 B_{ij} + \theta_2 col_{ij} + \theta_3 lang_{ij} + \theta_4 RTA_{ij}))$$

Where B_{ij} is a dummy variable equal to 1 if countries *i* and *j* have a common border and 0 otherwise; col_{ij} is a dummy variable equal to 1 if countries *i* are the former colony of countries *j* and 0 otherwise; $lang_{ij}$ is a dummy variable equal to 1 if countries *i* and j speak the same language and 0 otherwise, and finally RTA is a dummy variable equal to 1 if both countries *i* and j are members of the RTA and 0 otherwise.

Thus, the authors suggested that the gravity equation is not correctly specified if it does not take into account multilateral resistance terms. According to Anderson Van Wincoop (2003) trade flows between two countries depend not just on the barriers between countries but also on the barriers between them and the rest of the world. Thus the fixed effects for importing and exporting countries are intended to capture the policy attitude of a country towards all its trading partners.

If we can take the log of equation (15) and we replace the trade cost (24), the gravity equation, will be:

(25)

$$\ln(X_{ijk}) = -\ln(Y_k^W) + \ln(Y_{jk}) - (1-\sigma)\ln(\overline{P}_{ik}) - (1-\sigma)\ln(\overline{P}_{jk}) + (1-\sigma)\rho\ln(d_{ij}) + (1-\sigma)\theta_1(B_{ij}) + \\ + (1-\sigma)\theta_2(Col) + (1-\sigma)\theta_3(L_{ij}) + (1-\sigma)\theta_4(Land_{ij}) + (1-\sigma)\theta_5(RTA_{ij}) + e_{ijk}$$

Where X_{ijk} is the nominal value of the exports from countries i to countries j, Y_k^W is the world GDP, Y_{ik} is the GDP of exporting countries, Y_{jk} is the GDP of importing countries, $\overline{P}_{ik}$ is the export price index on the exporting countries, $\overline{P}_{jk}$ is the import price index on the importing countries, and d_{ij} is the distance between two countries.
In this section we review the theoretical foundation of the gravity equation. In next section we provide a review of the recent literature on gravity model. The next section is divided in two subsections presenting the methodology used to estimate the gravity equation and to address some econometric issues.

3.2 Assessment of Preferential Trade Agreements impact

Over time, the empirical literature has contributed to specifying the gravity equation with relation to topics analyzed. Today gravity models are one of the most commonly tools used in empirical trade issues: trade policy decision making, effects of Preferential Trade Agreements (PTAs) and currency unions, explanation of trade patterns and cost of border, impact of GATT/WTO's membership on trade.

Several studies have analyzed the trade enhancing impact of preferential trading arrangements. These studies predict the additional bilateral trade consecutive to the economic integration of a set of economies. Both the cross section and panel data approach has been used by these studies. These approaches are mainly static and refer to long run relationships. Usually the effects of PTAs are evaluated in terms of trade creation and trade diversion and a large body of the literature is based on general equilibrium modelling. Within this body of literature the use of gravity models to capture the effect of preferential trade has increased. In Gravity Models, trade creation effects are measured by adding two dummy variables. Usually the first dummy is equal to one if only the importer belongs to the PTA and zero otherwise. The second is equal to one if only the exporter belongs to the PTA and zero otherwise. In that sense several studies add new variables to the basic model. Nilsson (2002) uses a gravity equation to estimate the effects of PTAs and includes dummy variables for membership in such agreements, while other authors include different dummy variables for each agreement (Sologa and Winters, 1999)[4]. Gravity equations have been extensively used to value the trade effects. Some authors examine the trade effects of regional integration: for example Greenway and Milner (2002) address issues relating to the proliferation of RTAs and underline that gravity models rarely decompose trade creation and trade diversion effects. Adam (2003) analyzes the role of PTAs in Eastern European Countries. In some studies PTAs are used to estimate and to check the impact on trade of currency unions (Augier et al., 2005; Micco et al., 2002, and Glick and Rose, 2002). Some studies focus on the impact of EU and US GSP scheme (Ozden and Reinhardt, 2003); or US schemes (Lederman and Ozden, 2004 or Nouve and Staatz, 2003) other works estimate market access gains for agricultural products (Bianchi et al. 2005) or the effects of borders on trade

[4] One dummy that measures trade within the arrangements, another one that captures imports by members from all countries and a third that deals with exports from members to all countries.

(Feenestra 2002), Cipollina and Salvatici (2007) assess the impact of preferences granted by the EU for agricultural products.

In general PTAs in gravity equations are introduced not only to verify their impact on trade but also to prove whether they encourage trade among countries belonging to PTAs. Most articles study a large sample of countries over a long period; moreover, they generally use aggregate data and only a few of them use disaggregate data[5]. A limited number of papers take into account other important variables as exchange rates between the currencies of countries; exchange rate volatility and finally price index of each countries.[6].

In all paper the impact of PTAs is captured by a dummy variable, but in our opinion it is not totally appropriate because it also captures other factors that are specific to country-pairs in the PTA. Cipollina and Salvatici (2007) and Emlinger et al. (2006) consider quantitative variable rather than qualitative variable.

[5] Feenestra (2001), Cipollina and Salavtici (2007) used disaggregated data; instead Agostino et al (2008) considered total trade.

[6] See Oguledo and NacPhee (1994), Fazio et al (2005), Bergastrand (1985 and 1989),

3.3 Econometric issues - Dealing with heterogeneity

The gravity equation can be estimated with both panel and cross sectional data methods. Classical Gravity models generally use cross section data to estimate trade effects and trade relationship for a particular time period, but panel data methodology is more useful than cross section, because it allows to capture the relevant relationships between variables over time and monitor unobservable trading partner-pairs individual effects. Empirical evidence focuses on:

1) Cross-Section data approach
2) Time series approach[7];
3) Static and dynamic model specification in a panel data.

Most papers employ cross-section data, and there are few studies that use panel data with fixed effects, random effects and Hausman-Taylor estimator.

The use of conventional cross section estimation[8]:

$$\ln X_{ij} = \alpha + \beta_1 \ln(Y_i) + \beta_2 \ln(Y_j) + \beta_3 \ln(POP_i) + \beta_4 \ln(POP_i) + \beta_5 \ln(D_{ij}) + \varepsilon_{ij} \quad \text{(a)}$$

under the assumption of the Gauss-Markov theorem is unbiased, but the log-linear form is misspecified since it is not able to deal with bilateral heterogeneity, which is likely to be present in bilateral trade flows. In other words, the trade flows between two countries are likely to be affected by some country and country-pair features, which are not observable and, consequently, are not included in equation (a). For example, a country may have a certain propensity to export or import which can be independent of GDP and tends to be time invariant; or a country may experience business cycle effects which vary over the time and are country specific. Historical, colonial and language links may also influence the trade relationship between countries. Some of these links are observable while others are not. The omission of

[7] Taking time series dimension into account by pooling the data, there is a drawback that the inclusion of fixed effects does not allow estimating the coefficient of the time invariant variables (distance), which enter directly into the fixed effects; in addition, the variables entering in the equation can contain unit root problem.

[8] There are basically two approaches to computing trade potential. The first approach obtains within-sample trade potential estimates. According to this approach, the residuals of the estimated equation represent the difference between potential and actual trade relations between countries. The second one derives out-of-sample trade potential estimates (see Brulhart and Kely, 1999). In this approach, parameters are estimated by gravity equation and the same coefficients are applied to project natural trade relations between countries. The difference between the observed and predicted trade flows represent the unexhausted trade potential.

unobservable factors makes the model misspecified and from an econometric point of view the OLS leads to biased or inconsistent estimates. In this regard a panel approach can overcome this problem. In fact, with such heterogeneity, a country would export different amounts to two countries, even though the two export markets have the same GDPs and are equidistant from the exporter. This can be due to different factors or several kinds of links that affect the level of trade and are correlated with the GDP, population and the distance. Matyas (1997) argues that the correct econometric specification, to solve this problem, should be a three-way model, where time exporter and importer effects are specified as fixed and unobservable. He suggests that adopting country and time specific effects called fixed effect (FEM) specifications, are not workable for gravity models tailored for world data and large database. He argues that it would be better to take these effects into account as non observable random variables in a panel framework. Egger (2000) underlines that panel frameworks provide several advantages over cross-section analysis: *on the one hand panels allow us to capture the relationships between the relevant variables over a longer period and to identify the role of the overall business cycle phenomenon: on the other hand, through a panel approach one is able to disentangle the time invariant country-specific effects.* In addition, the author suggests that FEM[9] is more appropriate than Random Effects Models (REM)[10], to estimate the gravity equation because the main forces behind trade relations, for example, size of country, geographical and historical determinants, *are not random but deterministically associated with certain historical*, political, geographical and other facts. Cheng and Wall (2004) propose alternative fixed effects which are very similar to Matyas's work. The authors demonstrate that, the two-way model is preferable to, the three-way model proposed by Matyas and suggest that ignoring unobserved heterogeneity translates into biased estimates of bilateral trade relationships. Egger and Pfaffermayer (2002) show that instead of using one dummy variable per country, individual country pair dummies should be included to get efficient estimators. Both Egger and Pfaffermayer (2002) as well as Cheng and Wall

[9] In the FEM, the intercept terms are allowed to vary over the individual units, but are held constant over time.
[10] REM assumes that intercepts of individual units are randomly distributed and independent of the explanatory variables.

(2004), underline that the three-way specification of Matyas can be reduced to a conventional two-way model with time and bilateral effects (for example adopting country-pair specific fixed effects instead of country specific fixed effects). Since bilateral interaction terms account for a large part of the variation of the dependent variable and are highly significant. Even if the inclusion of fixed bilateral effects makes it impossible to directly estimate the coefficients of time-invariant observable variables, such as distance, they can be estimated following a two-step procedure like the one set out in Zarzoso-Nowak (2002) and Coulibaly (2004)**.** In this way the authors show the superiority of the panel framework in comparison to the traditional cross section analysis. Subramanaian and Wei (2003) use importer and exporter dummies as a proxy of Multilateral Resistance (see Anderson and Van Wincoop, 2003). According to these authors, trade flows between two countries depend not only on the trade barriers but also on the barriers between the countries and the rest of the world. In the sense that the specific effects are able to capture the policy attitude of a country towards all its trading partners. Many studies use Hausman and Taylor (1981) estimator or FEMs, which are based both on the hypothesis of strict exogeneity of the regressors set. Agostino et al. (2008) reconsider the recent literature on gravity models emphasizing that there are sources of bias in the existing empirics on gravity equations. Trade flows between two nations are likely to be affected by country and country-pair variables that are often not observable, such as the propensity to export or import or the preference of a nation for another country's products. If these effects are not taken into account the estimation's result could be biased. For these reasons, the authors employ a fixed effects model which is robust in the presence of unobserved country heterogeneity. They address the issue of non random selection which zero-trade observations of the gravity model and test for the endogeneity of the preferential trade variable.

3.3.1 Panel data analysis and augmented gravity model

As previously pointed out, cross section regressions do not fully control for heterogeneity, so most recent studies use panel data framework. In the literature we can find applications both for Static and Dynamic Panel data. Static Panel Data analysis has been applied by Matyas (1997), Wall (2000) Glick and Rose (2002). The latter study the effect of Currency Union to understand if it reduces international trade; their analysis covers a period from 1948 through 1997 and their currency unions are formed by poor countries. Some studies use panel data employing fixed effects estimations in which the existence of non random individual effects is assumed[11]; for example, Micco et al. (2002) in the same way as Glick and Rose assess the impact on trade of currency unions. The authors use panel data employing fixed effects. Other studies use, random effects and Hausman-Taylor (1981) estimators. The fixed effects model takes into account the heterogeneity of each single country and of each pair of countries. In the random effects, the specific effects are part of the error terms. The relevant difference between the fixed effects model and the random effects model regards the hypothesis of correlation between individual effects and explanatory variables. If the individual effects and explanatory variables are uncorrelated both fixed and random effects are consistent, but the fixed effects estimator is not efficient. Instead if the individual effects and explanatory variables are correlated only the fixed effects estimator is consistent[12]. This hypothesis can be tested with Hausman's test, under the absence of correlation between individual effects and explanatory variables is tested under the null hypothesis. In that case, the coefficients estimated by Random Effects are the same as the ones estimated by the consistent Fixed Effects estimator. Dynamic panel data analysis and nonlinear specification of the gravity equation are considered[13].

[11] These individual effects are eliminated by either Least Squares Dummy Variables and (Within Group) estimation or by first differencing and under the assumption of strict exogeneity of the regressors.

[12] Statistically, fixed effects models always give consistent results, but they may not be most efficient model to use. Fixed effects estimation has two major drawbacks: a) the use of a dummy variable for each cross-sectional unit generates a loss in degrees of freedom; b) time-invariant variables are not identified and must be discarded from the equation; Random Effects give more accurate p-values as they are a more efficient estimator.

[13] See De Benedicts and Vicarelli (2004), Martinez-Zarzoso (2006), Micco et al. (2003).

Why does the literature use Panel data models? What are the advantages of Panel data?

We can answer these questions in the following way:

- Using panel data it is possible to control for unobserved heterogeneity among variables;
- One important source of heterogeneity is missing but relatively constant information on individual variables;
- Panel data can be used to identify the effect of time-varying variables (e.g. technology) and cross-sectional variables (e.g. economies of scale) simultaneously;
- Panel data allow better analysis of dynamic adjustments.

The literature uses different panel data approaches to estimate trade models; we can make a classification of different methods. Several model specifications have been estimated with Generalized Fixed Effects Models, Hasuman and Taylor Random Effects model, as well as GMM model as developed by Arellano and Bond (1998) and Arellano and Bover (1995). Moreover, some studies take into account zero trade flows, so the most popular approach for estimating the gravity models using panel data is problematic because the log-linearized model is not defined for observations with zero trade. Helpman et al. (2005) propose a theoretical model rationalizing the zero trade flows and, suggesting an estimation of the gravity equation with a correction for the probability of countries to trade. They applied a two-step estimation. Westerlund and Wilhelmsson (2006) examine the effects of zero trade using the Poisson fixed effects estimator. This method removes the need to linearize the model by taking logarithms and the problem with zero trade flows disappears. Gaulier et al (2004) and Emlinger (2006) employ the two step Heckman estimation procedure, thereby transforming the possible selection bias into an omitted variable[14].

[14] This estimator takes into account the likely sample selection bias due to the fact that the process underlying the decision to export could be correlated with the model used to explain exports, that is the gravity model. If this correlation is verified, then estimates obtained disregarding this problem are biased. Heckman estimator is based on the following two latent variables:

$Y_1 = \alpha' X + u_1$

$Y_2 = \beta' Z + u_2$

3.5 The review of the literature: cross section and panel studies: Cross section analysis

Many papers employ a cross sectional gravity model or pooled OLS specification. Ozden and Reinhardt assess the US GSP scheme estimating several sets of regressions over the period 1976 to 2000. They use a panel of 154 developing countries and cross sectional data, finding that countries removed from the GSP scheme adopt more liberal trade policies rather than those countries that remain eligible. Nilsson (2002) uses a series of cross sectional gravity equations to find a positive impact of both the Lome' convention and the GSP scheme on exports to the EU over the period 1973 to 2002. The author uses cross section estimation for seven different periods and for every regression he takes three year averages. His study shows a positive impact of EU GSP and the Lome' Convention in all regressions. Verdejia (2006) analyzes whether trade preferences granted by the EU have been beneficial to LDCs. In particular, the author estimates the impact of ACP, GSP, and EU-Mediterranean PTAs over the period 1972-2000. This work builds on Nilsson's work of 2002. Starting from a simple cross section the author constructs a number of panel data gravity models and uses three different panel data methods with time invariant variables. In line with Nilsson's results this study shows that the Lome' Convention and GSP scheme on the whole had a positive impact on the exporting capacity of the beneficiary countries. Initially, when Verdejia uses a cross section, the GSP coefficient is positive and significant but it is lower than that of ACP countries; when the other estimation methods are used the sign of coefficient of GSP scheme changes, becoming negative because of a low utilization of GSP scheme and because of Rules of origin (ROOs). Christie (2002) estimates trade potential for Southeast Europe using ordinary least square estimation on cross section data from 1996-99. Nilsson (2005) compares the effect on LDC exports of EU and US preferential trade policies in the period 2001-2005. He uses cross sectional data and estimates a cross section model for every year. The results indicate that the effects of

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Where X is a k- vector of regressors and Z is an *m-vector* of regressor and u_1 and u_2 are the error terms which are jointly normally distributed, independently of X and Z with zero expectations. The variable Y_2 takes the value of one if Y_1 is observed, while it is zero if the variables Y_1 is missing.
In the first step the selection process is modelled by a probit model, then in the second step the gravity equation is estimated adding a correction factor, called Inverse Mills Ratio, retrieved from the probit estimates.

EU trade policy towards developing countries are significant and greater than US policy.

A part of the literature investigates whether national borders are an impediment to trade or not. Some papers attempt to resolve this issue; for example**,** McCallum (1995) uses gravity test for border effects. He focuses on Canada and the US intra-trade flows, and finds that Canadian trade is heavily biased towards trade within its national borders. In this study all observations with a zero dependent variable were omitted. Feenstra (2002) provides a description of the link between the gravity equation and bilateral trade patterns in a monopolistic competition framework. The gravity equation is redefined to consider trade barriers such as transport costs or tariffs. The author points out that, when there are border effects, prices are not the same across countries. In his study Feenstra compares the approaches of Anderson and van Wincoop (2001)[15] and Baier and Bergstrand (2001) and introduces fixed effects to take account, of price indexes. Anderson and van Wincoop (2003) extend the standard gravity model by including a multilateral trade resistance term, which may be covered by fixed effects, to show that border effects have an asymmetric effect on countries of different size. More precisely, it has a larger effect on small economies. Mayer and Zignago (2005) estimate the impact of national borders on trade flows, and find that trade between both regions is far from its relative potential, although no explicit reference is made to EU preferences.

Voicu (2006) employs a gravity model to analyze bilateral trade between OECD countries and transition economies. This study evaluates whether RTAs have generated considerable growth in EU-CEECs trade flow and investigates whether business standards play a fundamental role in bilateral trade. Using cross section approach for the period 1995 to 2003, the gravity model is extended with the inclusion of a measure of the corruption perception index to capture the potential distrust of a trading partner, which can be considered as barrier to trade. Batra (2006) measures trade potential for India with an augmented gravity model using cross section data. Frankel (1997) investigates several issues, such as the estimates of

[15] Anderson and van Wincoop (2001) derive a gravity equation on the manipulation of the CES function.

trading blocs, role of currency links etc, using cross-section and panel data. Frankel and Wei (1993) have examined bilateral trade patterns throughout the world and analyzed the impact of currency blocks and exchange rate stability on trade. Cernat (2001) suggests the use of bilateral export flows arguing that, for a given pair of countries with total bilateral trade, one cannot distinguish between the impact of the RTA formation on exports from non member to RTA members from that on exports from RTA member to the non member[16]. Analyzing the effects of trade creation and trade diversion, he finds that EU, AFTA, SADC and COMESA are trade creating while Andean Community and MERCOSUR are trade diverting. Winters and Sologa (2001) find that EU is trading diverting and MERCOSUR is trade creating.

Some authors consider market access gains for agricultural products, for example Bianchi et al (2005) estimate market access gains for agricultural products in US and EU. They estimate the impact of tariffs and subsidies on agricultural imports in EU and US. Starting from HO approach they explain bilateral trade and proceed with an OLS estimation and with an extended gravity model incorporating tariff barriers and subsidies. Pavia (2005) provides an empirical analysis of agricultural trade, in particular this analysis investigates the determinants of agricultural trade in the world. The dataset covers bilateral trade in agricultural goods for 152 countries over the period 1990-93 and 1999-2002, dummy variables are progressively added to the general model in order to compare the relative trade performances of particular groups of countries. Garcia-Alvarez-Coque et al. (2006) assess whether Association Agreement between EU and Southern Mediterranean Countries (SMC) improved the competitive position of SMC in the EU for fruit and vegetable products[17].

Other papers look at the role of ROOs. Anson et al. (2004) describe the functioning of ROOs present in all PTAs. For their analysis the authors estimate a gravity standard model on cross section data using average data for the period 1999-2001 to evaluate the effects of ROOs.

Finally, attention to Foreign Direct Investment flows has been studied. Adams et al. (2003) examine whether PTAs are associated with net investment creation or

[16] Cernat (2001) uses bilateral export flow as dependent variables.
[17] In this case the GDP is substituted for production.

diversion. This study looks at the effects of PTA on trade and Foreign Direct Investment flows (FDI). They construct an index of liberalization to measure the generosity and the depth of PTAs. This index is included in the model to assess and to capture to what extent trade provisions included in PTAs have some effect on trade flows with members and non members countries. The authors find that non trade provisions have some impact on investment flows and find trade diversion.

Manchin (2004) explains the impact of preferential trade on exports of non least-developed ACP countries to the EU and examines the importance of tariff reduction on requesting preferences for the year 2001. She uses a gravity equation for disaggregated data and finds that, in the case of EU preferences offered to ACP countries, sectoral differences are important[18].

At this stage we can draw some conclusions about the use of cross sectional data. Although most studies used cross sectional approach to estimate the impact of various policy issues, according to the literature, the use of this estimation method can lead to biased results since heterogeneity among the countries is not controlled for in an appropriate way. The main reason for preferring panel data analysis is that the cross section suffers from omitted variables bias because of the unobserved country specific effects and since it completely neglects the temporal aspects and dynamics of trade. To resolve these problems, researchers have employed the panel data approach.

3.5.1 Panel data analysis

Serlenga and Shin (2004) examine bilateral trade flows in the 15 EU countries over 1960-2001, applying Hausman-Taylor technique along with the conventional panel data approach. This estimator considers that only a subset of the independent variables is correlated with individual effects. Initially, in their analysis, they use a basic specification considering the impacts of core explanatory variables. In the second step, they augment the basic specification adding various variables (common border, common language, free trade area, etc.) and finally, following Egger (2002),

[18] Manchin uses Heckman estimator and in her case Y_1 is the value of one if preferences are requested, and the second step of this procedure captures how the probability of asking preferential treatment of exports is influenced by different factors. The first step instead shows how the value of preferential imports is affected by which preferences were requested.

they include variables measuring both similarity in relative size of trading countries and differences in relative factor endowments. Rose (2002) estimates the effect on international trade of multilateral trade agreements in a panel data set of 175 countries over fifty years. Besides the standard variables of a GM, common language, landlocked situation and colonial links were also included as explanatory variables. The basic model was estimated using ordinary least squares (OLS), computing standard errors that are robust to clustering by country-pairs. In order to control for global business cycles and other time factors, year-specific fixed effects were included. This setup of country-pair and time panel data was estimated using random effects (GLS) as well as fixed effects (OLS) estimators as robustness checks. Rose filtered his data in several ways. First, he ran simulations where no country is member of a PTA and then he ran a second set of simulations where partners are involved in PTAs. To estimate this particular case he used a maximum likelihood Tobit estimator.

Studies that look at the impact of EU preferences on Mediterranean zone are few. Miniesy et al (2004) study trade flows of East and North Africa Countries (MENA) using an unbalanced panel data. In this Panel the group sizes (time periods) differ between groups (countries), and estimation for fixed effects and random effects must be modified to reflect the structure of the unbalanced panel. The authors find that both intra-MENA and MENA trade with most non-MENA countries are lower than the level which is predicted on the basis of a gravity model. The MENA region is underdeveloped as regards trade with EU and Eastern Europe. Ferragina et al. (2005) assess the effects of EuroMed and CEECs Agreements. In this study the authors adopt different panel estimators of gravity and an out-of-sample methodology. Their study finds that there is still a large trade potential between EU and Euromed countries and a different conclusion respect to CEECs. In another paper the authors underline the fact that integration between EU and EuroMed countries is underdeveloped. Peridy (2005) investigates the effects of Mediterranean preferences with various panel data methods (generalized fixed-effect model, with exporter, importer, time and bilateral-specific effects, a Hausman and Taylor Random effect model, as well as a dynamic GMM model, as developed by Arellano

and Bond -1998) and OLS for comparison. He combines trade theory initiated by Helpman and Krugman, with theoretical developments related to trade costs of Anderson and van Wincoop and he finds that Mediterranean countries' exports to the EU have significantly increased thanks to successive preferential agreements

The effects of regional trade agreement have been investigated by De Santis and Vicarelli (2006); Vicarelli and De Benedicts (2004) and De Santis et al. (2005): the authors quantify the effect on EU members imports flows of agreements signed with third country. Using a system GMM dynamic panel data approach, the gravity equation is estimated to verify the effect of FTA. Their results show that FTA have a positive impact on trade flows. Helmers and Pasteels (2005) consider fitted value from a gravity equation to estimate export potential. Vicarelli and De Benedicts (2004) use a gravity equation to construct a trade potential index that compares the observed fitted values of trade, while accounting for country heterogeneity and time series effects. They show how the results of a gravity model in terms of potential trade change when country heterogeneity and dynamics are taken into account. In this study the authors limit their analysis to exports from France, Germany, Italy and Spain. Bun and Klaassen (2002a) estimate a dynamic Panel Model on Glick and Rose's work (2002), including OECD trade flows for 48 years. The authors find that the application of lagged dependent variable as regressor not only significantly increases the fit of the model but also allows to take into account the serial correlation.

Person and Wilhelmsson (2005) assess the effects of trade preferences offered by the EU to developing countries and the potential effect of EU enlargements. They analyze a large sample of EU and developing countries over the period 1960 to 2002 and use an augmented gravity model with a time trend for each country pair[19]. Their analysis shows that the preferences can increase exports from developing countries, but at the same time when a country becomes a EU member, it imports less than

[19] The gravity specification for country pair (*i,j*) is the following:

$$\ln X_{ij} = \omega_{ij} + \beta_1 \ln Y_i + \beta_2 \ln Y_j + \beta_3 \ln POP_i + \beta_4 \ln POP_j + \beta_5 \ln D_{ij} + \sum_h \delta_h P_{ijh} + \sum_k \gamma_k F_{ijk} + \varepsilon_{ij}$$

Where ω_{ij} indicated the country pair fixed effects, some authors assume that $\omega_{ij} = \gamma_i + \mu_j$ rather than consider separately country fixed effects γ_i, and μ_j.This is the case of Person and Wilhelmsson.

before from developing countries. Persson (2005) uses pooled data to examine whether the special preferences given to drug producing and LDC within the EU GSP scheme has had effects on the exports of these countries. The drug dummy variable proceeds with ordinary least square using yearly data of bilateral exports from 150 countries to EU countries for the period 1991-1999. The drug dummy is divided into two dummies in order to separate preferences on agricultural and agricultural/industrial products and an interaction dummy variable is used because LDCs are also given special preferences within the Lome' convention. The study finds that part of the preferences to drug producing countries is found to have a statistically significant effect of gross trade creation, but underlines that in the analysis many more variables should be included to control for historical, cultural or geographical factors and another set of dummies should be used to separate the effect of trade creation and trade diversion. Nouve and Staatz (2003) offer empirical evidence on the impact of AGOA on Africa exports to the US for the period 1999 to 2002. The authors use panel data regression using a fixed effects gravity trade model and they find small positive impact on agriculture Southern and South Africa countries' exports to the US. The results of this study show the possibility for African Countries to expand their exports to the US. Beladi and Koo (2004) attempt to estimate the agricultural trade creation and trade divertion of several PTAs, including NAFTA, EU, Andean Community and ASEAN.

Aiello et al. (2008) argue that non reciprocal trade policies alter the incentive of LDCs to export more preferred specific sector. They consider, total export, total agricultural export flows of ten groups of agricultural products and they employ a panel data specification of a gravity model and use different estimators to control for potential biases in the estimation. They consider the two-step Heckman procedure to take into account zero-trade flows and to verify problems of endogeneity of PTAs variables. The authors implemented the Wu-Hausman test. The results showed that the hypothesis of endogeneity is rejected in all regressions. Chen and Tsai (2005) estimate the effects of FTAs formation in a static panel data framework and consider the EU, NAFTA, LAFTA and MERCOSUR.

Carrere (2006) considers RTAs in a static panel data framework and uses a Vinerian specification of the integration effects. This study builds a general panel specification on a work of Baier and Bergastrand (2002) with the addition of a barrier to trade that replaces the traditional distance variable and common border dummy. Three dummy variables for each RTA are considered (intra-trade, imports and exports dummies) to allow for a correct identification of Vinerian trade effects.

Damian and Masten (2002) use both static and dynamic panel framework to explore the efficiency of FTA. Cipollina and Salvaticci (2005), use a Meta-Analysis approach to analyze trade creation effects in RTAs. Kandogan (2005) measures trade creation and trade diversion effect of major European Agreements through specified triple indexed gravity model with bilateral interaction fixed effects and analyzes the error terms to capture these effects. The study finds the majority of agreements are welfare improving for the EU and country partners with the exception of Central and East European Countries and Euro-Mediterranean Agreements. Coulibaly (2004) uses an extended gravity model to evaluate the effects of trade creation and trade diversion on seven developing countries (SubSaharan Africa, Asia and Latina America) and the impact of RTAs on individual members. He finds that SAPTA and ECOWAS are associated with net export creation while AFTA, MERCOSUR, SADC and Andean Community are associated with net export diversion. Rahmam (2005), through a gravity model, analyzes the determinants of Bangladesh's trade using a panel data estimation technique over the period of 1973 to 1999. This study covers a total of 35 countries, which have been chosen on the basis of importance of trading partnership with Bangladesh. Rahman (2006) uses a panel data approach with country-pair specific fixed effect and year specific fixed effects to identify trade creation and trade diversion effects in SAPTA and other RTAs. The regression is estimated in two stages following Couliblay's work. Neg and Nandi (2006) evaluate India trade flows, using a fixed effect panel data. In this work the multiplicative interactive forms for GDP and GDP per capita are considered to have constant cross influence by sample countries. Havem and Shatz (2003) analyse the market access in the Triad economies. In their gravity equation they consider trade reduction effects and tariff diversion effects, in addition to these variables the regression includes also

time dummies. Their estimation results show that preferential schemes promote LDCs exports.

Several studies use both cross section data and panel data. Among measures affecting agricultural trade such as, domestic support, tariff quotas, rules of origin, sanitary and phytosanitary measures (SPS) have been considered. Estevadeordal et al. or Robertson (2002) analyze the evolution of trade agreements in the Americas focusing on the ROO and on negotiations on tariff levels. In the gravity equation are used specific tariff data to estimate the effects of tariffs on trade. The dataset used in this study covers the period from 1985 to 1997 and the authors estimate both cross section data and panel data. Disdier et al. (2007) analyze the structure and the impact of SPS and Technical barriers to trade (TBT). This study measures the impact of regulation on agricultural trade focusing on measures used to control imports. The authors use gravity models based on Krugman's work (1980) and Venables (2004) using fixed effects and introducing in the model a bilateral measure of market access. Head and Ries (1998), Low et al. (2005) examine the effects of preference immigration on trade for Canada and US respectively. Head and Ries (1998) use country fixed effects at the national level, in this way they capture the effect on trade resulting from the presence of immigrants that come from trading partners. They find that immigrants have a larger impact on imports than exports. Low et al (2005) focus on the temporary movement of people, which affects bilateral trade both because it affects the demand of imports and both because it reduces overall trade costs. They find significant positive effects of temporary movements of persons on bilateral trade and provide insights into the determinants of temporary movements of people. Lesher and Miroudot (2006) analyze investment provisions in PTAs. In this work an index that quantifies the extensiveness of investment provision is calculated, dummy variables are redefined and an unbalanced panel data is used. The trade models are estimated using OLS regression and the FDI models are estimated with a Tobit approach. The results indicate that investment provision affect positively trade and investments flows.

Martinez-Zarzoso et al. (2006) evaluate the statistic effects of PTAs between several economic blocks and areas (EU, NAFTA, CACM, CARICOM, MAGREB,

MASHREK and Mediterranean Countries). The research is an extension of Sologa and Winters (2001) who introduced the Vinerian specification of integration effects with three different sets of dummy variables representing trade creation, export diversion and import diversion. These three integration effects are estimated in a dynamic panel data framework. The analysis consider the temporal evolution of the impacts of trade of the different variables considered, for this reason initially they consider a statistic panel model and in a second step a dynamic panel data model for two different sub-periods is estimated using the first difference estimator and the system GMM estimator.

3.6 Conclusion

The purpose of this third chapter was to introduce the gravity model. In particular we focused on the construction of the gravity equation, on its theoretical foundation and finally we proposed a brief survey of the literature on the gravity equation.

In the gravity model, the volume of trade between countries is proportional to the product of an index of economic size of the countries and the factor of proportionality depends on measures of trade resistance between them (Tinberger, 1962).

Gravity model became the main tool in empirical analysis of bilateral trade flows. In particular gravity model is used in empirical trade issues as trade policy decision making, effects of preferential trade agreements and currency unions, explaining trade patterns and cost of border, estimation whether the GATT/WTO's membership increases trade. At the beginning it had not any theoretical foundation (1960), but the development of theories of intra-industry trade made it possible to give theoretical justification for this equation. Today these are the following economic justifications to the gravity model: general equilibrium model with perfect competition and differentiated products; models with monopolistic competition and the model of Heckser-Ohlin. The gravity equation can be justified by almost any model in which countries specialize in the production of differentiated goods. This specialization can be due to "Armington" preferences (Anderson, 1979; Bergastrand, 1985) or to economies of scale (Krugman and Helpman 1985) or differences in the factors endowments (Deardoff, 1998) but the differentiation is not an essential condition to apply the gravity equation.

Over time, the empirical literature has contributed to specifying the gravity equation with relation to topics analyzed and it has become a very flexible tool. It can be augmented with a lot of additional regressors that permit to improve its performance. In the literature both the cross section and panel data approach are used. They are mainly static and refer to a long run relationship. Classical Gravity models generally use cross section data to estimate trade effects and trade relationship for a particular time period, but the recent literature suggest that the application of a fixed effects panel model appears to be a sufficient solution to capture the impact of unobservable

multilateral resistance effects (Anderson Van Wincoop, 2003). In our analysis we follow Anderson (1979) and Anderson and van Wincoop (2003) in order to construct the gravity equation.

Gravity equation can be derived from several different theories of international trade. According to Anderson Van Wincoop (2003) trade flows between two countries depend not just on the barriers between countries but also on the barriers between them and the rest of the world. Thus the fixed effects for importing and exporting countries are intended to capture the policy attitude of a country towards all its trading partners.

Due to its log linear form, the coefficients of the gravity model are in terms of elasticity, this allow us to compare the different size of countries and goods, moreover it give us a direct measure of the responsiveness of trade flows to potential trade variables, including preferential policies.

Chapter 4

The EU GSP Scheme

4.1 Introduction

Trade preferences are used to promote trade from developing countries. But their effectiveness has been long debated. Some critics have highlighted the tension between multilateralism and regionalism and have pointed to the welfare cost of such agreements. Others stress the shallowness of the preferences granted to developing countries, in particular, on agricultural sector and argue that preferences are often underutilised because of administrative costs, restrictive rules of origin and other conditions which limit their use (Demaria et al., 2008). In this chapter we review the most recent literature in order to assess the real effectiveness of preferences with a particular focus on the EU Generalised System of Preferences (GSP) scheme in the agro-food area. Furthermore we propose a briefly statistical analysis of the GSP in the agricultural sectors.

The EU GSP scheme has been recently restructured, in part in response to a critical WTO Appellate Body report on foot of a complaint brought by India against the discriminatory nature of the previous program. The EU claims that its new GSP, which entered into force on 1 January 2006, is both simpler and more generous than its predecessors. The GSP framework is intended to foster trade from developing and vulnerable countries. But a gradual dissatisfaction with the effectiveness of the scheme has spread in the literature.

The Generalised System of Preferences is a set of EU unilateral trade concessions in terms of tariff reductions exclusively granted to developing countries. This kind of agreements is based on the trade-development relation. It is multiregional and differentiates the concessions granted according to specific criteria and levels of development of the beneficiary countries.

The first scheme of GSP was adopted by the European Union in 1971 for a period of ten years and has been renewed periodically. On 1 January 1995 a new 10-year cycle EU GSP scheme entered in force. On June 2001, the European Commission (EC) adopted a proposal for revision of the GSP scheme for 2002-2004. This revision stipulated a simplification and an harmonisation of the previous arrangements principally reducing the number of product categories from four to two. The duty-free access is maintained for all non sensitive products, while all other products are now classified in one single category: sensitive products with a flat rate reduction of 3.5 percentage points from the MFN duty[1]. Finally on 23 June 2005, the EU member states agreed on a new GSP scheme which came into force on 1 January 2006.

First of all, in this chapter we present a review on the EU GSP scheme. Then we present a statistical analysis of the EU agricultural trade, in particular we focus on any changes of preferential trade agreement with particular emphasis on the EU GSP scheme. Even if our empirical analysis focuses on the period 2001-2004, in this chapter we present a statistical analysis of the agricultural sector for 2000-2006, as the COMEXT database allows us to verify the effectiveness of the preferential tariffs on that period. The picture that emerges from the analysis shows that DCs and LDCs have increased their exports under GSP scheme during that period. Referring to the tariffs, globally the average tariff faced by the GSP beneficiaries has not changed much (less than one percentage point between 2004 and 2006), nor all chapters have benefited from reductions.

[1] Only in the case of ad valorem duties. The reduction is 30% from the MFN rate in the sole presence of specific duty, 20% reduction for textiles and clothing and 15% reduction for ethyl alcohol.

4.2 A review of the literature

The GSP framework is intended to foster trade from developing and vulnerable countries. But a gradual dissatisfaction with the effectiveness of the scheme has spread in the literature. The earlier empirical analyses of the impact of trade preferences were conducted in the 1970's with the work of Cooper (1972), Murray (1973) and Finger (1975, 1976) who were rather critical of GSP schemes. Later, Baldwin and Murray (1977) and Sapir and Lundberg (1984) showed that trade creation is greater than trade diversion under a preferential scheme when it is not limited by ceilings and exclusions. Brown (1988)'s results, on the contrary, based on a general equilibrium framework showed that trade diversion is greater than trade creation as a result of preferences. Also preferences would be discriminatory as benefits would concentrate in a few developing countries.[2]

More recent critics address continuing loopholes in the preferences. In OECD (2005) Bureau and Gallezot highlight the various deficiencies of the preferential trade schemes granted to the developing world by the developed countries. Many factors limit the trade opportunities these schemes are intended to provide:

- The product coverage of preferences is limited and the most significant exports of developing countries are often excluded.
- The country coverage of preferences is also discriminatory excluding certain countries and diverting trade. This makes some authors think that preferences are more political than economic instruments (Ongluglo, 1999).
- The non reciprocity of preferences weakens the position of developing countries in the negotiations of the preferential scheme as the exclusion of very sensitive products or its implementation within tight quotas.
- Administrative costs and rules of origin (RoO) sometimes override the benefits of the preferential margins especially for the smallest or poorest countries.
- Many agreements lack transparency and stability as they are reviewed periodically.

[2] For a comprehensive review of the literature of the pre-2006 EU GSP scheme see Hoekman and Ozden (2005).

In this section, we review the main literature in order to assess these criticisms in the context of the European GSP scheme. The main focus is on the structure, utilisation and effectiveness of the preferences granted regarding agricultural and food products.

Structure: the EU's GSP is rather generous…

The European Union market is often described as an impenetrable 'fortress', built on a system of very high tariffs particularly in the agricultural and food sectors. Indeed, Brenton and Ikezuki (2005) have estimated the average MFN tariff for agricultural products at around 20% compared to 4% for industrial sector. Moreover, the tariff structure in the former sector is very complicated mixing ad valorem and specific tariffs, while the use of entry prices and seasonally-adjusted tariffs enhances even more the protection on these products. But the EU is also the largest importer of agricultural goods in the world. Indeed, the EU offers preferential access to its market under various reciprocal and non-reciprocal trade agreements to a wide range of countries. Candau and Jean (2005) count more than 50 regional trade agreements for the EU. Analysts agree that the preferences offered by the EU under its numerous preferential trade agreements are rather generous. For instance, the 2001-2005 EU GSP scheme offered tariff reduction or exemption on around 7,000 tariff lines (out of a total of 11,000) to a total of 178 countries. In 2003, EU imports under GSP totalled 52 billions euros while the American scheme which is the second largest in the world amounted to only 16 billions euros (European Commission, 2006). Agricultural and food imports from countries covered by EU trade preferences represented 82% of total EU imports in 2002. In the same period one third of agro-food imports entered the EU duty-free while 29% were not eligible for any of the EU's preferential schemes (OECD, 2005). Compared to other Quad markets (EU, Japan, US, Canada) the EU offers a larger preferential margin (around 2 percentage points) to developing countries even if the scope of the preferences granted by the EU to the latter is reduced as the specific part of a combined duty is not subject to reduction[3] (Candau and Jean, 2005; Wainio et al., 2005; Brenton and Ikezuki, 2005).

[3] Specific duties based on physical values rather than monetary values are reduced by 30% except when they are combined with ad valorem duties.

So the structure of the EU's GSP is rather generous but for a limited number of products and countries. In fact, the existence of high tariffs on agro-food products means that preferential arrangements are potentially valuable (Tangermann, 2002; Bureau et al. 2006). But for a number of countries this *special and differentiated treatment* failed to meet expectations. High tariffs generally affect agricultural products which developed countries still want to protect. The same protectionist policies that lead developed countries to erect high trade barriers also prevent them from granting generous preferences for agricultural imports from developing countries. As a result, agricultural products do not figure prominently in the GSP schemes of most industrialized countries. In particular, agricultural products which can be grown in the temperate zone have been largely excluded from preferential treatment, or receive such treatment only within tight quotas. For instance the European Commission as delayed to 2006 and 2009 the liberalization of trade for rice, sugar and bananas (products of particular importance for developing countries) under GSP or EBA initiatives. Thus, few recipient countries participated in 2001 to the Quad average preference margin. Only 18 countries had a margin greater than 5%. In many cases the recipients were small island economies, non LDCs or ACP countries (Brenton, 2003; Alexandraki and Lankes, 2004; Brenton and Ikezuki, 2005). Hoekman and Braga (2005) note that in 2000, duties still applied for 856 tariff lines of which 837 were agricultural products. For the majority of tropical products, developed countries' MFN tariffs are in any case zero or relatively low, and preferences are accordingly not of much help. Concerning the EU EBA initiative, of the 919 tariff lines liberalised in 2000, only 80 concerned imports from LDCs. Of these 80 tariff lines, 13 were not already fully liberalised in 2000 and 11 in 2001 due to the delay affecting rice, sugar and bananas (Brenton, 2003). Furthermore, the system of exclusion or graduation removes some countries from the benefits of preferences. Finally, the criteria necessary to benefit from the special arrangements for the protection of labor or environment were met by only two countries Moldova and Sri Lanka. As noticed by Shaffer and Apea (2005), "In light of the stringency of these criteria, developing countries generally did not even apply for additional preferences".

According to our calculations[4], in 2004, the number of agro-food tariff lines covered by the GSP, GSP PLUS and EBA preferences were 1658, 2489, and 3631 respectively out of a total of 3683 tariff lines and 3295 non-zero tariff lines. The average tariff rates for these three groups of beneficiaries were 17.7%, 14.6% and 1.4%. The calculations in percentage terms indicate that developing countries enjoyed preferences under the GSP scheme on 45%, 68% and 99% of tariff lines and 50%, 76% and 99% of non-zero tariff lines. Thus, the glass can be seen as half-empty or half-full. The number of tariff lines covered is quite high particularly for the GSP PLUS and EBA, but the number of countries benefiting from the special arrangements is quite limited (only 12 countries benefited from the 'drug' GSP and 49 from EBA while 116 benefited from the mainstream GSP). Moreover tariffs are still very high for some sensitive products like products from animal origin (40% on average), dairy products (50%) and vegetables (37%).

This discrimination was also reflected in the countries which benefited from the EU preferences under the GSP. In 2002, 86% of EU dutiable agro-food imports originating in Africa were eligible for some preference. This rate was 50% for Asia and 40% for Latin America. Concerning the general GSP, imports eligible for this scheme represented 41% of the EU's non-zero tariff agro-food imports. GSP-covered imports were more than half of European imports in 2002. But the scheme was highly concentrated on few countries and products. Argentina, China and India accounted for 43% of the imports using the GSP. Less than 10% of the countries benefiting from the GSP represented 90% of the total agro-food imports using this scheme (OECD, 2005).

About the utilisation of this preferential scheme the result is ambiguous. EU preferences are highly utilised…altogether.

A quick look at the utilisation rates of the GSP may lead to the conclusion that this scheme is poorly utilised by its beneficiaries. The rate of utilisation of the EU GSP for all products is estimated at around 50% between 1994 and 2001. While 63% of EU imports are covered by at least one preference only 16% are GSP-covered imports. In 2000, only 50% of eligible imports from non-ACP LDCs actually requested preferential access to the EU market (Inama, 2004; Candau and Jean, 2005). On this basis one can conclude that the GSP scheme is underutilised. The point is the GSP scheme often

[4] Our calculations are based on the databases DBTAR and TRADEPREF prepared by J. Gallezot (see section 4).

competes with other preferential agreements. Candau and Jean show that the utilisation rate of preference reaches 73% for a GSP country also eligible for another scheme and 86% when both schemes are taken into account. For instance, ACP countries do not request preferences under EBA because they prefer to export under Cotonou preferences. The Cotonou agreement displays rates of utilisation above 70% on average while under EBA only about 50% of the preferences available to non-ACP countries are used (Brenton, 2003). Similarly, Stevens and Kennan (2004) and Manchin (2005) underline the high degree of utilization of preferences. Only 2.4% of African exports to the EU eligible under the ACP scheme failed to use the preferences. In 2000, GSP preferences are well utilised by a few countries (mainly South Africa, Swaziland and Namibia) and only to a limited extent because ACP countries prefer to use the Cotonou preferences. In 2002, 62% of exports from African LDCs had requested an ACP or GSP preference this figure is 51% for African non-LDCs, 86% for Caribbean and 72% for Pacific countries. These figures are even greater for processed agricultural products being respectively of 78% for African LDCs, 84% for African non-LDCs, 92% for Caribbean but just 57% for Pacific countries (Brenton and Ikezuki, 2005).
Similar results are found in OECD (2005). Bureau and Gallezot compute that eligible imports and utilised preferences represented respectively 38% and 32% of total agricultural and food imports by the EU in 2002. Relative to imports under non zero MFN tariffs, 56% were eligible goods and 47% actually received the preference. Thus, the utilisation rate was 83% of the imports eligible for a preferential scheme. But the situation differs according to the scheme. Most of the EU's preferential schemes showed a rate of utilisation higher than 90% which was not the case for the mainstream GSP (50.1%) and the EBA initiative (17.4%). In terms of country coverage, 91% of EU imports originating in Africa entered under preferences, these rates were respectively 80% for Asia and 90% for Latin America.

African countries prefer to use the Cotonou agreement to export to the EU rather than the EBA, even if the latter provides deeper and broader preferences than the former. What could explain that? Many arguments have been put forward. The Cotonou agreement for ACPs seems to offer the same or greater advantages. This puts the mainstream GSP at the base of the pyramid of privileges granted by the EU. Thus a

developing country that receives only the GSP would tend to be relatively discriminated against rather than preferred (Brenton, 2003).

Another factor could be the level of the preferential margin. The GSP scheme is not requested for a margin lesser than 6 points and the margin must be greater than 9 points for non-African LDCs and non-LDCs only eligible to the GSP (Bouet et al. 2005). The latter suggests that RoO could be at the core of a low utilisation of the GSP. The cost and complexity of implementing a preference are principally due to the cost of compliance with administrative or technical requirements or rules of origin. These two "rigidities" can totally offset the benefits of a preferential tariff particularly if the preference margin is limited. Non eligibility of sensitive products, ceilings and quotas, graduation and administrative requirements are the key restrictions of these programs. But the main impediment to enjoying the preferences is the complexity of eligibility requirements. Amongst them, rules of origin seem to be the most restricting (Candau and Jean 2005; Machin, 2004; Waino et al. 2003). Thus three factors may dissuade countries from utilising the GSP: the existence of an alternative scheme, the weakness of the preference margin in association with the cost of compliance and the rules of origin.

Effectiveness: are preferences actually trade enhancing?

For Brenton and Ikezuki (2005) evidence suggests that "trade preferences have not enabled beneficiaries as a group to increase their market shares in the main preference-granting markets." The FAO (2005) states that preferences "have lost their usefulness due to preference margin erosion, the proliferation of preference schemes (AGOA, EBA, GSP, Cotonou) which have devalued existing preferences, free trade agreements that make some preferences obsolete and declining terms of trade that cause them to lose their value". These considerations are shared by a number of analysts but need to be qualified depending on the nature of the preferences.

For instance, based on the results of a gravity model, Nilsson (2002) shows that the EU's trade preference schemes have had positive effects on developing countries' exports. He shows that the export effects of the Lomé Convention were larger than the effects of the GSP throughout the 1973-1992 study period. Estimates on gross trade creation range between 34% and 59% of exports for GSP but 45% and 69% for Lomé.

A plausible explanation would be the less preferential character of the GSP compared to the Lomé Convention and an increased use of EU non tariff barriers[5] (NTBs) in the early and mid-1980s mainly directed at imports from the GSP countries. But the value of the preferences has been eroded during the period due to the completion of multilateral negotiations. Using both a computable general equilibrium model as well as a partial equilibrium analysis to evaluate the EU's EBA initiative, Cernat et al. (2003) show that its implementation would lead to moderate but useful gains in trade and welfare for LDCs. The largest gain would be obtained by sub-Saharan Africa and would come from the liberalisation of the sugar sector. Thus, the common belief that the EU preferential schemes are rather ineffective is questionable. For Nilsson (2005), the effects of EU trade policy are relatively larger for the poorest group of developing countries, which is dominated by LDCs enjoying the most preferential access to the EU market through the Cotonou Agreement and the EBA initiative. His analysis indicates that EU trade policy towards the poorest developing countries in relative terms has increased exports significantly more than US trade policy. Persson and Wilhelmsson (2005) compare different schemes and assess the effects of preferences on the value of EU imports from developing countries while taking into account the enlargement of the EU. Their gravity estimation shows that all country groups, with the exception of countries exporting to the EU under the drug regime, has benefited significantly from preferences. The largest effects appear for countries within the Lome convention. But countries that only benefit from the GSP preferences had no significant impact on their exports to the EU mostly because the enlargement of the EU adversely affected the trade potential of these countries.

Arguing to the contrary, Brenton (2003) stresses the failure of the EU's EBA to foster trade in the poorest countries because all exports were concentrated in products for which EU external tariffs were already zero. For some other countries the value of preferences is more significant because they have a higher export share of dutiable products and the size of available preferences is larger. Whereas agricultural preferences have provided large transfers to a small number of countries, they have failed to stimulate exports for a broader range of products. This reflects that most of EU imports from developing countries were already eligible for tariff and quota free access (Brenton

[5] Particularly under the Multi Fiber arrangement and Voluntary Exports Restraints.

and Ikezuki, 2005). Finally, Hoekman and Prowse (2005) stress that preferential access has become a key issue on the Doha Agenda, because it reflects both the increasing frustration of countries excluded from preferential trading and the fear of preferential erosion arising from multilateral liberalisation. They argue that preference-granting is discriminatory and moving to a more liberal WTO trade liberalisation would be welfare-improving as most developing countries have not benefited much from trade preferences. Addressing the fears of preference erosion could be done on a case by case basis by making the trading system more supportive of economic development.

Hudec (1987) makes a political economy argument about the perverse effect of non reciprocal trade preferences on beneficiary countries' trade policy. He shows how tariff preferences can have an adverse impact on the beneficiary country. GSP schemes reduce the beneficiary countries export sector's need to oppose their own government protectionist policies. When a country has achieved free access to its major trading partner markets, its incentive to liberalize its own market as an instrument to foster the partner's trade openness disappears. Alternatively, if exporters fear losing their preferential status when their exports cross a given threshold – as for the GSP scheme – they may be more accommodating of protectionist policies at home. In addition, when GSP eligibility is withdrawn, access to export markets becomes conditional on your own trade policy on the basis of reciprocity, which requires a country to reduce its own protectionist policies and reap associated gains in efficiency and competitiveness. This view is shared by Panagariya (2003); Ozden and Reinhardt (2003) and Ozden and Reinhardt (2004). The latter demonstrate empirically the Hudec (1987) finding. They estimate econometrically the effect that GSP removal has had on former beneficiaries of trade policies. They find that countries excluded from GSP consequently adopt lower trade barriers than countries that remain eligible. Thus participating in non-reciprocal preferences through institutional frameworks such as GSP discourages developing countries from liberalization. For the authors, full integration in worldwide trade based on reciprocity would benefit developing countries more than maintaining GSP preferences.

Another concern raised by developing countries – and particularly India – is that the discriminatory nature of the GSP weakens the competitiveness of countries not enjoying the broadest preferences. Grossman and Sykes (2005) examine the law and economics

of discrimination under the GSP scheme. The departure from the MFN principle is justified by the WTO members on the argument that tariff preferences generate benefits in the recipient countries. The issue is not "whether the gains generated by GSP justify the distortion that it creates, but rather what sort of discrimination within GSP schemes ought to be tolerated." According to them, the text in the Enabling Clause was not clear about that and was open to a large range of interpretations. But the Appellate Body ruling on India's GSP complaint has now settled this debate as discrimination can now be justified between countries based on explicit development criteria.

From an economic perspective, preferential tariffs can theoretically promote trade and development but the significance of tariff preference effects is questionable. First, there are many exclusions and limitations in the GSP scheme. Second, costs of compliance diminish in practice the utilisation and the benefits of the preferences. Evidence suggests that many goods imported from developing countries are eligible for preferences but do not use them. Third, quoting Ozden and Reinhardt (2003) preferential schemes may delay the implementation of full trade liberalisation which may provide more benefits for the recipient countries. Thus, they conclude that there is no evidence from a legal or economic perspective which can justify a case for actual discrimination.

Effectiveness: rules of origin are the main impediments to full benefits from GSP preference.

The debate on RoOs has taken on greater importance because the number of preferential trade agreements has increased over time and because RoOs prove to be the major impediment to the full utilisation of the preferences.

In the theory the most important function of RoOs is to prevent trade deflection by establishing the country of origin of goods. Another function is to foster industrial development within preference recipient countries. RoOS can encourage the shift of investment in the long-run. When this occurs, extra-Preferential Trade Agreement (PTA) producers locate plants within a PTA region in order to satisfy the RoOs. Finally, they encourage the development of integrated production structures within developing countries. But they also limit the benefits of preferences offered by the donor countries

to designated beneficiaries. Often, the RoOs create barriers to products that technically are eligible under the GSP because these products are not able to meet the requirements prescribed by the rules and raise investment diversion within the PTA (Rodriguez, 2001). RoOs can also affect trade by increasing firms' administrative and production costs. Production costs arise from the various technical criteria imposed by the RoO regime. The costs of production may be compounded by the fact that RoOs are formulated on the basis of the Harmonized System, which was not designed with a consideration of determination of origin. The administrative costs stem from the procedures required to ascertain compliance with the rules. Because there are different certification mechanisms, this imposes divergent cost on firms and governments alike, in particular when countries belong to several PTAs with different types of RoOs. Then, "firms need a period of investment or familiarisation during which they can bed in their operating routines with suppliers before they are capable of using preferences" Bureau and Gallezot (2004). RoOs also discriminate against the countries where the local resources are limited or nonexistent and then act as a protective tool. Brenton and Ozden (2005)

The existing empirical evidence on the effects of RoOs suggests that they have three implications:

- ✓ They can reduce the utilization rates of preferential trade agreements;
- ✓ They can hamper the trade creation the preference might have induced with looser rules;
- ✓ The relevance of RoO decreases with the lowering of MFN tariff barriers across PTA members.

This precludes exporters from reaping any substantial benefit provided by these agreements (Bouet et al. 2005).

Authors argue that the difficulties in obtaining preferential access to the EU are due to the rules of origin, costs of compliance and political and institutional changes. Thus, the favourable impact of tariff preferences on developing countries' exports has been contained by the rules of origin (Inama, 2004; Gallezot 2003.) The latter explores the issue of EU market access for agricultural products. He examines declarations by importers to consider the extent to which they prefer to use the MFN regime when they

could have requested preferences. He shows that if the utilisation rate of preferences was 100%, preferred trade would account for 36% of EU imports. It actually seems to account for only 24%. Focusing on imports where MFN duties are greater than zero, preferential imports account for a third of the European Union's agricultural and agro-food imports and 42% of developing countries' exports to the European Union. He notes that products covered by preferences are imported under MFN arrangements due to small preferential margins, administrative transaction costs or the inconvenience of complying with rules of origin.

The restrictiveness of European RoOs – which are similar throughout all preferential trade agreements – is also due to the fact that the annexes contain product-specific and often complex requirements what precludes the transparency of the process defining the origin. Some products require a change of tariff heading, some have a value-added requirement and others are subject to a specific manufacturing process requirement, but in some cases these criteria are combined. And in many cases the EU RoOs require a change of chapter, which is even more restrictive than a change of heading. Moreover, some of the EU rules exclude changes in tariff classification by proscribing the use of certain imported inputs. Finally, it is even argued that rules of origin can be and are chosen in ways that minimize the benefit of the preference to exporters and result in reverse preferences to producers in the donor countries (Brenton and Manchin, 2002; Panagariya, 2002; Candau et al., 2004; Brenton and Ikezuki, 2004).

The restrictiveness of RoOs would then explain why countries prefer to use the Cotonou agreement. A noticeable difference between the Cotonou and the GSP schemes is the cumulation rules (See Appendix). While Cotonou allows for full cumulation, the GSP only provides bilateral or diagonal cumulation within four regions (ASEAN, CACM, Andean Community, SAARC). This prevents ACP countries outside these regional blocks from benefiting from diagonal cumulation under the GSP scheme. Using gravity models, Augier et al. (2005) examine the possible impact of rules of origin and of cumulation of those rules on trade partner. They find evidence that when there is no cumulation between countries, trade is more than a third lower than the expected level of total trade.

Another difference between the two schemes lies in the minimum processing or tolerance rules. Under GSP non-originating inputs can be used given that their value

does not exceed 10% of the product ex-work price. Under the Cotonou agreement the value of non-originating materials can represent up to 15% of the ex-work price (Brenton, 2003; Manchin, 2004; Brenton and Ikezuki, 2004).

Studies on political economy agree that rules of origin are a key policy instrument for two main reasons. First of all, like tariffs, RoOs are a highly targetable instrument because they are often negotiated at the product level. Second, RoOs can be defined in technical and different terms, therefore they can be adapted differently to each individual good, and their potential protection can be deep since rules of origin are not immediately quantifiable as a tariff. Rules of origin can enable governments to balance the competing claims of export lobbies. They use the stringency of the RoO as a mean to capture a substantial part of the rent the importers were intended to, at a first place.
Why are rules RoOs so restrictive? One possibility is that the liberalizaion process and the growth of global trade have strengthened export lobbies while antagonizing import-competing interest. Another explanation is that the growing propensity to fragment global production presents a threat to import-competing intermediates providers, who see stringent rules of origin as an opportunity to discourage final producers from outsourcing or shifting production abroad. In conclusion, RoOs are acting as "a surrogate trade barrier rather than as a technical matter and US and EU need to simplify them". This would not only lead to the direct reduction of compliance costs, but also to take RoOs out of the reach of special interest pressures (Cadot et al., 2006).

4.3 Statistical analysis of the GSP preferential agro-food trade to the EU

In this section we drive an analysis both on the EU agricultural trade and preferential tariffs. First of all, we intend to verify the effects of the GSP scheme. Then we have downloaded data on EU agro-food imports for all GSP, GSP PLUS and EBA countries over the period 2001 to 2004 from COMTRADE database. We have analyzed both the EU Total Agricultural import value and EU Agricultural import value chapter by chapter for three GSP preferential schemes in order to understand whether EU imports have grown and in what extent.

Figure 1 shows EU imports from all DCs and LDCs over the period 2001-2004. The key message of the figures is that, after a few years of stagnation in 2004 there was a strong growth with a 17% increase in DCs exports already started in 2003. This overall strong performance is not equal among EU trade pattern but there are different trends for the different DCs actors.

In order to differentiate between the different actors, the trends in imports from different country groupings are presented below. These are ACP and GSP countries, the LDCs (EBA and GSP PLUS), the Mediterranean countries with which the EU has a strong evolving trade relationship, and, finally, the rest of developing countries. The total number of tariff lines is equal to 3.683, about 973 tariff lines have a tariff greater than 20%, 958 tariff lines have a level of duty between 10% and 20%, 603 have a duty between 5% and 10%, 602 have a level of duty between 1% and 5% finally only 547 tariff lines have a duty less than 1%.

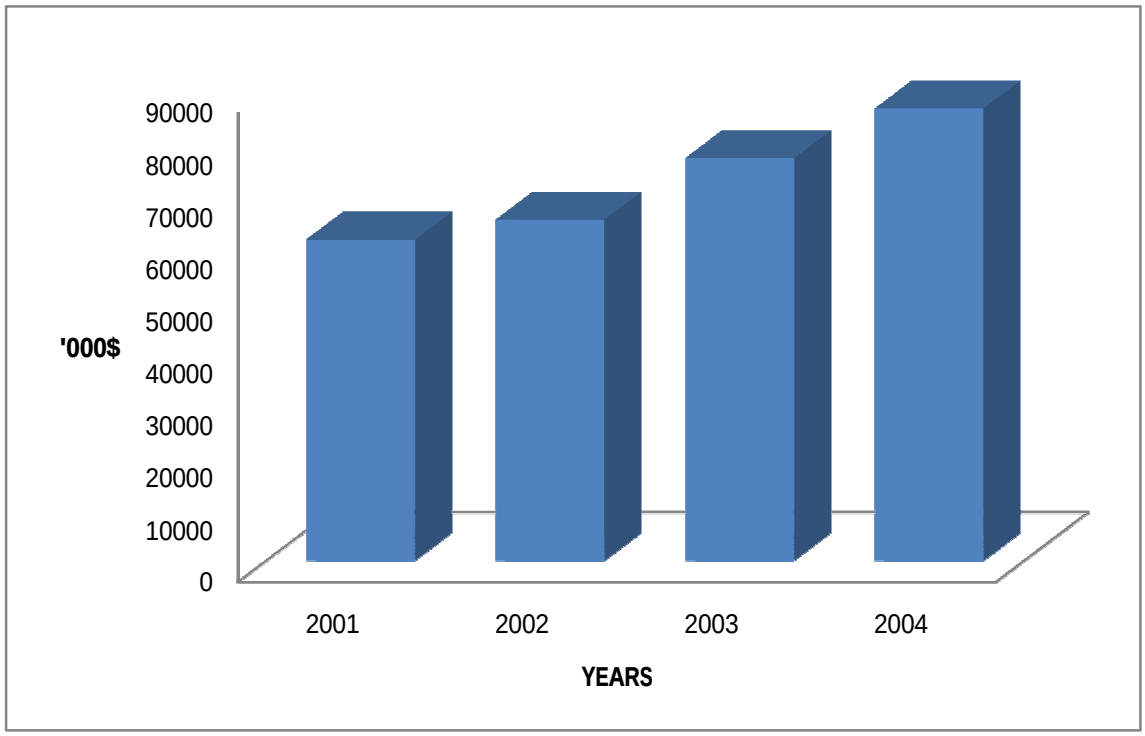


Figure 1: EU TOTAL AGRICULTURAL IMPORTS FROM ALL DCs COUNTRIES TO THE EU IN '000 $ 2000-2004

SOURCE UN COMTRADE DATABASE

Figure 2 shows the evolution of the position of EU Agricultural trade in the world over the period 1995-2004. After 1995 EU imports from rest of the world have decreased, while at the same time imports from DCs and LDCs have increased. Mercosur, ACP, Mediterranean area and China are the regions that present the strongest growth, while the EU imports from NAFTA fall. With reference to the exports we note that the exports from ACP, NAFTA, Australia – New Zealand and EU-N10 increase. Developing countries and least developed countries have played an increasingly important role in world trade.

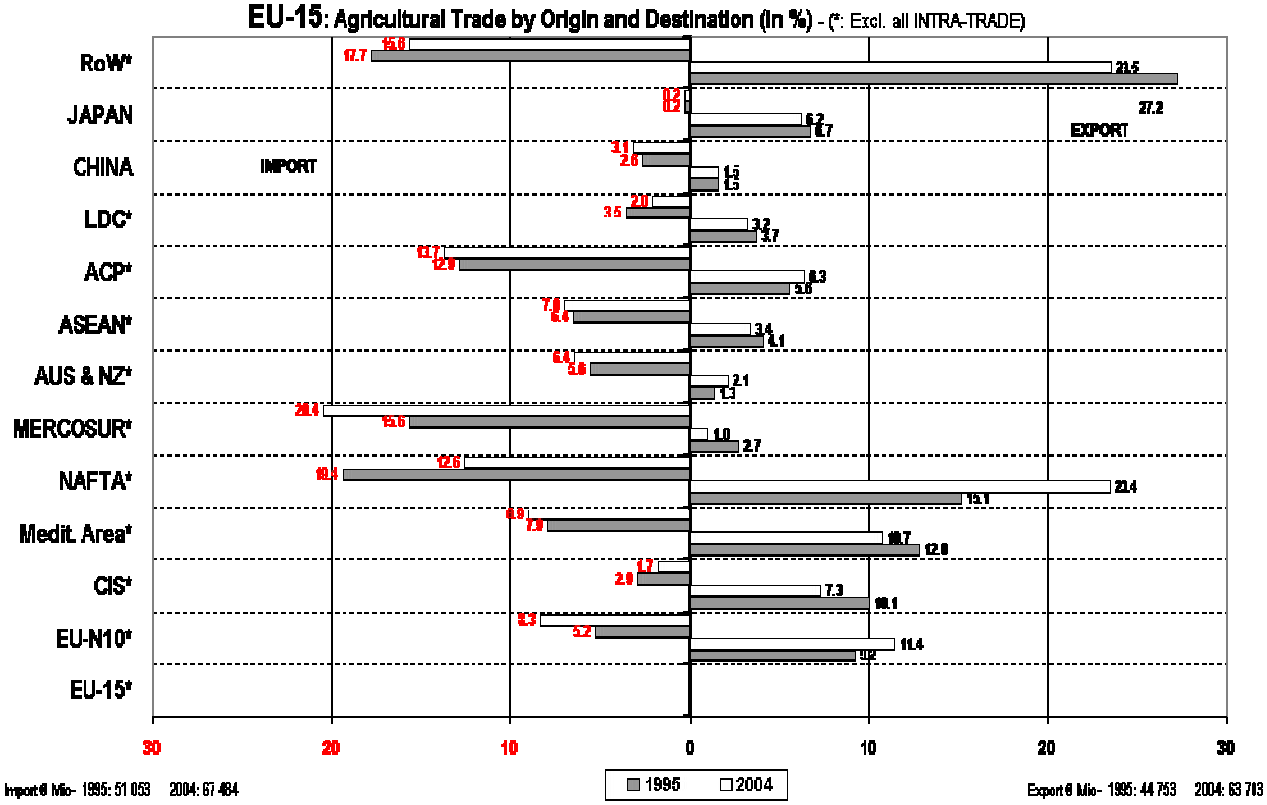


Figure 2: EU AGRICULTURAL TRADE IN THE WORLD -1995-2004 – Source EUROSTAT

Figure 3 shows EU agro-food imports as a share of Total World Trade.

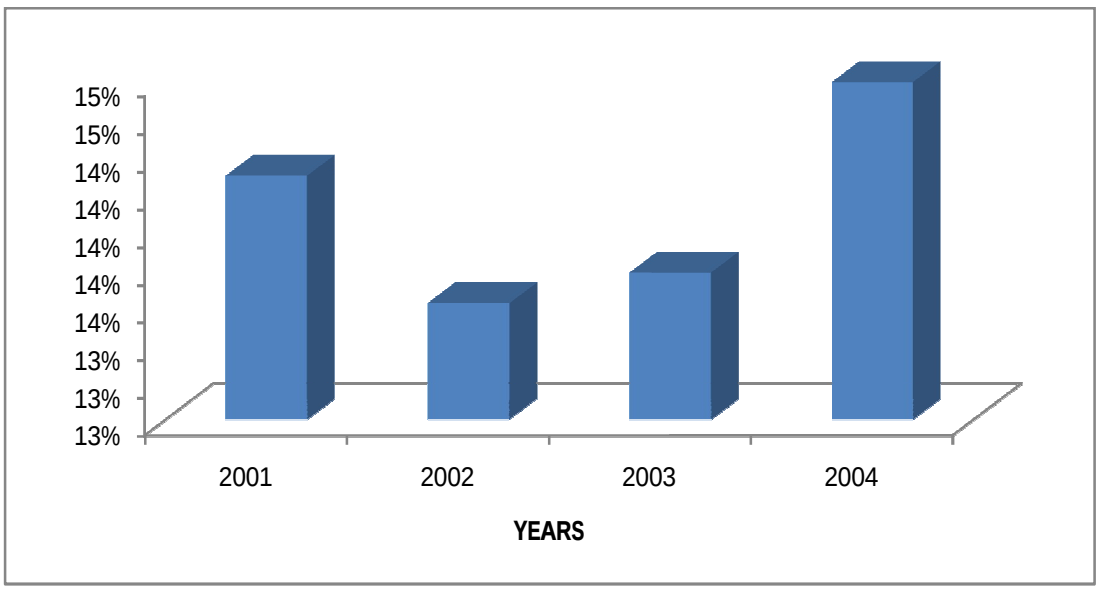


Figure 3: TOTAL AGRO-FOOD TRADE TO THE EU IN % OF TOTAL WORLD TRADE -2001 - 2004

Source UN COMTRADE Database

Under the EU GSP between 2000 and 2004 developing countries' share in total EU imports grew from 33% to 40%.

We are interested in knowing if the EU imports of agro-food products from DCs and LDCs increased and if their growth was uniform. For this reason we divided the sample by four main preferential schemes (GSP, ACP, MED and other). Figure 4 provides EU's imports of agricultural products by main preferential schemes in 2001 and 2004. We can observe that EU imports from GSP scheme decreased over time; imports from ACP countries present mixed trend but compared to the GSP scheme ACP present a positive impact; Mediterranean countries' trend is constant and finally trade from other schemes present changing between 2003 and 2004. We can say that the preferences may work better, in particular if we think about the objective of the creation of a PTA. In fact their aim is to create the necessary stimulus to promote trade from developing countries and the figures seem to not confirm that.

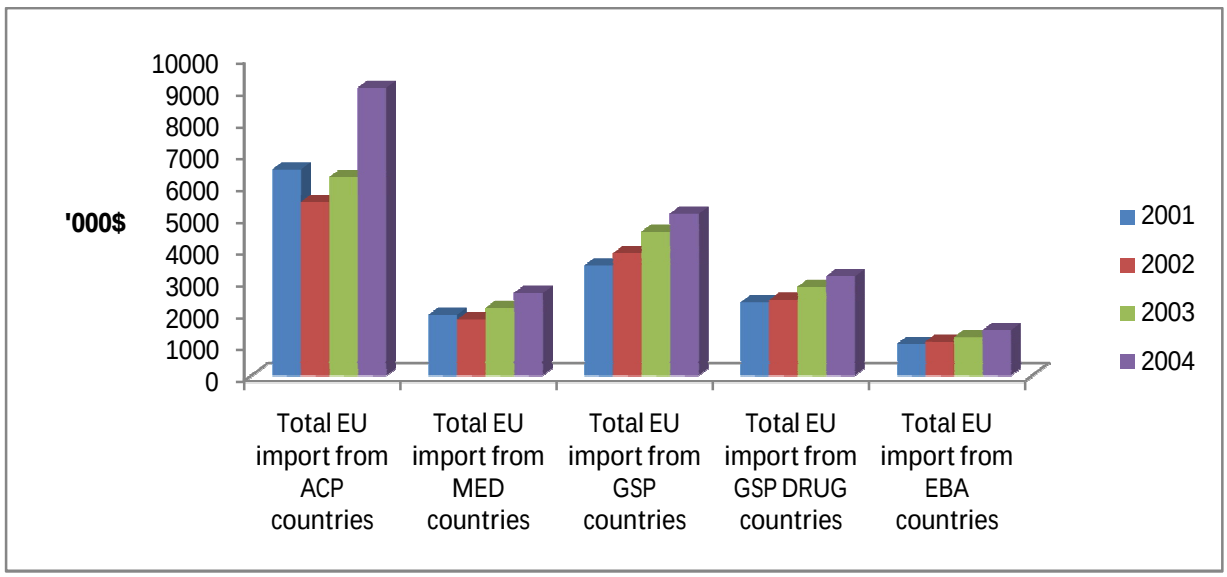


Figure 4: TOTAL EU AGRICULTURAL IMPORTS UNDER FOUR MAIN PREFERENTIAL – SCHEMES – 2001 – 2004
Source: UN COMTRADE Database

In Figure 5 we present trends of all GSP preferential schemes (GSP, EBA and GSP PLUS). It appears that trade flows grow under GSP, in particular meat, fisheries, live trees and plant, vegetables, oil and fats, preparation of meat and fish, cocoa, waste from food industry. An explanation could be found in the fact that developing countries

enjoyed the preferences the EU gave to them in trading products were they are the more competitive.

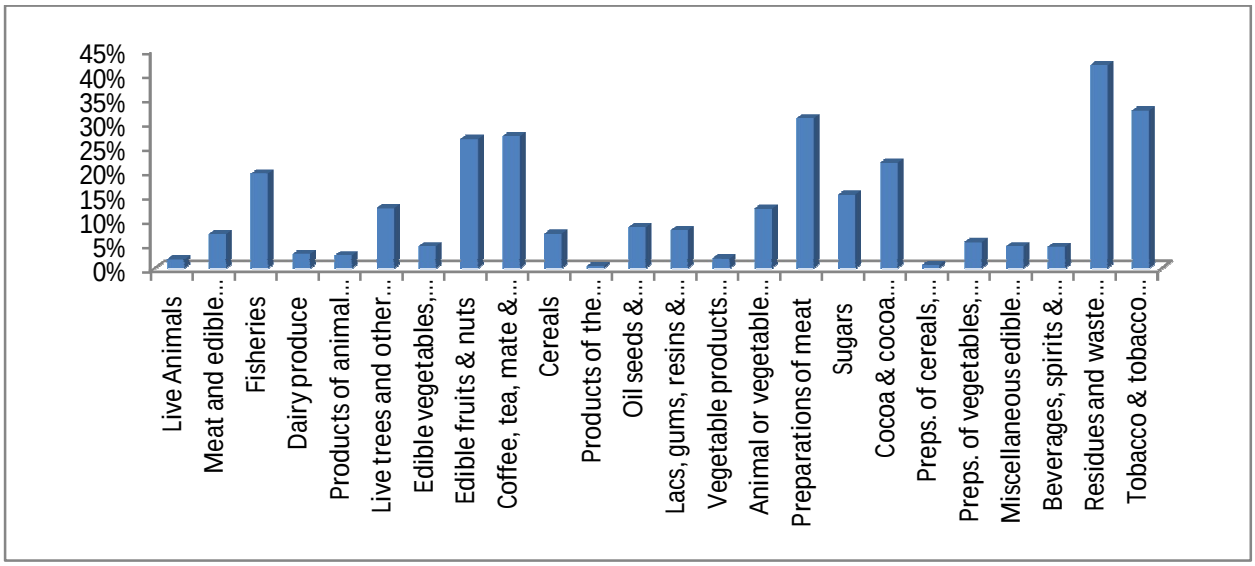


Figure 5: TOTAL AGRICULTURAL TRADE BY CHAPTER UNDER GSP, GSP DRUG AND EBA SCHEMES IN %

Source: UN COMTRADE Database

Obviously these agricultural products display a different trend in each of the three different GSP preferential schemes, (see figures 6, 7, 8 in appendix). Referring to the EU GSP imports (Table 1) we find a small increasing of meat, vegetables, oils, waste from food industry, and coca. But while meat, beverages and oils has increased over the time, the other products show a mixed trend (increasing and decreasing trend). A possible explanation could be found in the fact that the majority of GSP countries can also export under ACP, and since ACP offers a better EU market access all countries prefer to use this scheme. At the same time in the GSP DRUG only three products have effectively grown: meat, preparation of meat, tobacco, waste from food industry. Finally we want to concentrate on EBA, because it provides different and discordant results. The EBA regime gives full and free access to the EU market for LDCs, table 3 shows that, this regime did not increase LDC exports significantly except for cereals, fruits, lacs, gums, other vegetables, meat and tobacco. Maybe this could be due to the lack of dynamism of LDCs exports but also to the fact that LDCs enjoy already very high levels of access to the EU even without EBA. Another possible explanation can be attributed to the stringent ROOs (see Bureau et al, 2005).

We note that for both unilateral and bilateral preferential schemes, vegetable products (fruits, vegetables, cereals, coffee etc.) are the largest group of imports, followed by prepared foodstuffs (meat preparations, cereal based foods, sugar confectioner, beer, wine, spirits, tobacco). Whereas the high level of protection in the EU market for agricultural and food products, the EU is the largest importer of agri-food from these countries. The reasons may be twofold:

1) tariffs are low or zero on non-competing commodities such as tropical products which the EU does not itself produce;
2) preferential access given to imports from developing countries is very large. According to WTO statistics, 43% of EU agricultural imports in 1999 were eligible for preferential access, and a further 24% of imports entered under MFN at a tariff rate of 0%. Another study (Gallezot 2003) estimated that 33% of EU imports, where the MFN duty is greater than zero, enter under preferential arrangements. For developing countries the rate is even higher, 42%. For ACP countries the figure is 83%, while LDCs, under the Everything but Arms scheme, the figure is 100%.

Table 1: GSP AGRO-FOOD IMPORTS INTO THE EU IN % OF EU'S TOTAL AGRO-FOOD IMPORTS 2001-2004 –

Agro-food HS chapters	2001	2002	2003	2004
Live Animals	2%	1%	1%	1%
Meat and edible meat offal	7%	6%	6%	8%
Fisheries	5%	4%	5%	4%
Dairy produce	1%	1%	1%	1%
Products of animal origin	2%	2%	2%	2%
Live trees and other plants	2%	2%	2%	2%
Edible vegetables, roots & tubers	2%	2%	1%	2%
Edible fruits & nuts	4%	4%	4%	4%
Coffee, tea, mate & spices	4%	3%	3%	3%
Cereals	5%	6%	5%	5%
Products of the milling industry	0%	0%	0%	0%
Oil seeds & oleaginous fruits	6%	5%	6%	6%
Lacs, gums, resins & other veg. saps	1%	1%	1%	1%
Vegetable products n.e.s.	1%	0%	0%	1%
Animal or vegetable fats & oils	5%	5%	5%	6%
Preparations of meat	6%	6%	6%	7%
Sugars	5%	4%	4%	4%
Cocoa & cocoa preparations	9%	11%	14%	10%
Preps. of cereals, flour, starch, etc.	1%	0%	1%	1%
Preps. of vegetables, fruits, nuts & plants	2%	2%	2%	2%
Miscellaneous edible preparations	1%	1%	1%	1%
Beverages, spirits & vinegar	3%	3%	2%	2%
Residues and waste from food industry	21%	24%	21%	23%
Tobacco & tobacco products	6%	5%	5%	4%

SOURCE UN COMTRADE DATABASE

Table 2: GSP DRUG AGRO-FOOD IMPORTS INTO THE EU IN % OF EU'S TOTAL AGRO-FOOD IMPORTS 2001-2004 –

Agro-food HS chapters	2001	2002	2003	2004
Live Animals	0%	0%	0%	0%
Meat and edible meat offal	0%	0%	0%	0%
Fisheries	5%	5%	5%	5%
Dairy produce	1%	1%	2%	1%
Products of animal origin	0%	0%	0%	0%
Live trees and other plants	8%	9%	8%	8%
Edible vegetables, roots & tubers	1%	1%	1%	1%
Edible fruits & nuts	18%	20%	20%	24%
Coffee, tea, mate & spices	21%	16%	14%	14%
Cereals	0%	2%	0%	0%
Products of the milling industry	0%	0%	0%	0%
Oil seeds & oleaginous fruits	1%	1%	1%	1%
Lacs, gums, resins & other veg. saps	0%	1%	0%	1%
Vegetable products n.e.s.	0%	1%	0%	0%
Animal or vegetable fats & oils	1%	2%	3%	5%
Preparations of meat	12%	13%	14%	15%
Sugars	1%	1%	1%	1%
Cocoa & cocoa preparations	2%	3%	4%	3%
Preps. of cereals, flour, starch, etc.	0%	0%	0%	0%
Preps. of vegetables, fruits, nuts & plants	3%	3%	3%	3%
Miscellaneous edible preparations	3%	3%	2%	2%
Beverages, spirits & vinegar	1%	1%	2%	2%
Residues and waste from food industry	16%	15%	17%	10%
Tobacco & tobacco products	3%	3%	2%	3%

SOURCE UN COMTRADE DATABASE

Table 3: EBA AGRO-FOOD IMPORTS INTO THE EU IN % OF EU'S TOTAL AGRO-FOOD IMPORTS 2001-2004 –

Agro-food HS chapters	2001	2002	2003	2004
Live Animals	0.55%	0.18%	0.19%	0.19%
Meat and edible meat offal	0.06%	0.30%	0.20%	0.07%
Fisheries	9.72%	10.35%	10.20%	10.05%
Dairy produce	0.12%	0.30%	1.06%	0.50%
Products of animal origin	0.27%	0.30%	0.21%	0.16%
Live trees and other plants	2.11%	2.49%	2.04%	2.00%
Edible vegetables, roots & tubers	1.61%	1.66%	1.61%	1.46%
Edible fruits & nuts	1.77%	1.52%	1.56%	3.02%
Coffee, tea, mate & spices	9.17%	9.10%	8.41%	7.06%
Cereals	0.35%	0.74%	0.63%	0.76%
Products of the milling industry	0.25%	0.20%	0.22%	0.21%
Oil seeds & oleaginous fruits	2.66%	2.09%	2.13%	2.05%
Lacs, gums, resins & other veg. saps	6.38%	5.25%	5.32%	7.03%
Vegetable products n.e.s.	0.80%	0.97%	1.21%	1.00%
Animal or vegetable fats & oils	5.59%	5.40%	4.14%	2.38%
Preparations of meat	9.30%	10.69%	11.05%	12.73%
Sugars	9.20%	9.32%	12.48%	9.96%
Cocoa & cocoa preparations	4.17%	9.40%	8.96%	9.62%
Preps. of cereals, flour, starch, etc.	0.07%	0.05%	0.07%	0.09%
Preps. of vegetables, fruits, nuts & plants	0.30%	0.45%	0.47%	0.46%
Miscellaneous edible preparations	1.26%	1.34%	1.12%	0.86%
Beverages, spirits & vinegar	0.08%	0.07%	0.08%	0.07%
Residues and waste from food industry	5.76%	5.08%	3.78%	3.02%
Tobacco & tobacco products	28.46%	22.78%	22.86%	25.25%

SOURCE UN COMTRADE DATABASE

4.3.1 Some descriptive statistics on tariffs

In this paragraph we present an analysis of the evolution of the protection under the GSP scheme using the results displayed in De Maria et al. (2008) which is the most recent study on the topic.

They show that the average MFN tariff (in AVE terms) on agro-food commodities, is around 19-20% for 2004 and 2006 but that GSP beneficiaries, however, enjoy a lower tariff (14-18%) and an almost zero tariff in the case of LDCs.

Table 4: Comparison of some indicators under MFN and GSP regimes for year 2006

Regime	No. of lines	No. of preferred lines	No. of zero lines	Average tariff faced by the beneficiaries	Preferential Margin (% points)
MFN	3,447	0	388	19.04%	0
GSP	3,453	1,998	553	16.95%	2.10
GSP+	3,453	2,178	2,161	13.97%	5.07
EBA	3,453	3,390	3,389	0.38%	18.66

Source: DeMaria et al. (2008)

Table 5: Comparison of some indicators under MFN and GSP regimes for year 2004

Regime	No. of lines	No. of preferred lines	No. of zero lines	Average tariff faced by the beneficiaries	Preferential Margin (% points)
MFN	3,677	0	405	19.61%	0
GSP	3,683	1,658	522	17.68%	1.93
GSP+	3,683	2,489	2,236	14.58%	5.03
EBA	3,683	3,631	3,629	1.36%	18.25

Source: DeMaria et al. (2008)

Table 6: Comparison of tariff level under the 2004 and 2006 GSP and GSP+ regime (by chapters, in %)

Chapters (HS2)	GSP 2004	GSP 2006	GSP+ 2004	GSP+ 2006
01- Live animals	40.17	40.17	40.04	40.04
02- Meat	43.85	43.45	43.47	43.31
03- Fisheries	6.51	8.73	0.04	0.04
04- Dairies	52.40	50.23	51.92	50.12
05- Other animal products	0.08	0.08	0	0
06- Live trees and plants	3.33	3.56	0	0
07- Vegetables	38.79	37.67	37.76	36.15
08- Fruits	18.54	19.08	17.38	17.71
09- Coffee, tea, spices	1.09	1.09	0	0.12
10- Cereals	18.85	36.60	18.84	36.58
11- Products of the milling ind.	22.29	22.22	21.89	21.78
12- Oilseeds	1.66	1.31	0.87	0.86
13- Lac, gums, resins	5.11	5.24	0	0
14- Other vegetable products	0	0	0	0
15- Oils and fats	5.61	5.73	2.79	2.86
16- Preparations of meat, fish	12.80	13.75	4.21	4.34
17- Sugar	19.94	21.18	18.78	20.19
18- Cocoa	22.99	22.92	21.27	21.37
19- Preparations of cereals	26.34	27.67	23.45	24.35
20- Preparations of fruits and veg.	18.19	18.18	4.25	3.98
21- Miscellaneous edible preparations	11.03	11.46	5.97	6.28
22- Beverages	11.98	11.16	7.74	7.42
23- Waste from food industry	15.01	12.76	14.71	12.51
24- Tobacco	10.15	10.15	0	0

Source: DeMaria et al. (2008)

They use various indicators to measure the level of preferences offered by the EU to GSP countries as the number of lines that present a preference, the level of the AVE preferential tariff and the preferential margin. They show that for the mainstream GSP the number of 'preferred' lines and the number of products bearing a zero tariff increased but decreased for the GSP DRUG and hardly changed for EBA. They also analyse the level of the preferential tariff and find out that the tariff faced by the GSP general scheme beneficiaries has not changed much as a result of the introduction of the new GSP scheme (less than one percentage point between 2004 and 2006), nor have all chapters benefited from reductions. Concerning the percentage preference margin it increased slightly between 2004 and 2006 (see Table 5 and Table 6). But in terms of the value of the preference margin the picture is different. They show that for the GSP beneficiary countries it has evolved positively during the period, suggesting that the preferences offered by the EU are better utilized by their recipients.

4.4 Conclusion

Trade preferences are used to promote exports from developing countries. However, the literature discussed on their effectiveness. In this chapter we presented the most recent literature on the effectiveness of EU GSP preferential scheme and we proposed a briefly statistical analysis of this scheme in the agricultural sectors.

The EU GSP program has been recently restructured and it is intended to foster trade from developing and vulnerable countries.

The GSP is a set of EU unilateral trade concessions in terms of tariff reductions exclusively granted to developing countries. This kind of agreements is based on the trade-development relation. It is multiregional and differentiates the concessions granted according to specific criteria and levels of development of the beneficiary countries.

The first scheme of GSP was adopted by the European Union in 1971 for a period of ten years and has been renewed periodically. On 1 January 1995 a new 10-year cycle EU GSP scheme entered in force. On June 2001, the European Commission (EC) adopted a proposal for revision of the GSP scheme for 2002-2004. This revision stipulated a simplification and an harmonisation of the previous arrangements principally reducing the number of product categories from four to two. The duty-free access is maintained for all non sensitive products, while all other products are now classified in one single category: sensitive products with a flat rate reduction of 3.5 percentage points from the MFN duty. Finally on 23 June 2005, the EU member states agreed on a new GSP scheme which came into force on 1 January 2006.

First of all, in this chapter presents a review on the literature on the EU GSP scheme and two analysis of the EU agricultural trade. In general the picture that emerges from the analysis shows that preferential regimes which are not well utilised even if DCs increased their exports. With referring to the tariffs, globally the average tariff faced by the GSP general scheme beneficiaries is not changed much (less than one percentage point between 2004 and 2006), not all chapters have benefited from reductions. Three chapters (04, 07 and 23) experienced increases in the GSP and GSP PLUS AVEs between 2004 and 2006. One chapter experienced a drastic decrease of its average tariff. The chapter 10 (cereals) dropped by 17 percentage points from 36% on average in 2004 to 19% in 2006. Accordingly to the literature available on the topic, the pre-2006 GSP scheme was rather generous and if we compare this scheme to similar schemes granted

by other developed countries, such us, Japan and United States. We have calculated the relative benefits of the GSP scheme to beneficiary countries and we examined the tariff changes. But the value of GSP preferences is also influenced by the eligibility rules. In addition the analysis does not consider the implications of possible market changes in the future; however, the GSP scheme seems to offer good opportunities to developing countries even different factors lower the impact of the GSP.

Chapter 5

Empirical analysis on the impact of the EU GSP scheme on the agricultural sector

1. Introduction

The EU provides preferential access to its agricultural markets under reciprocal and non reciprocal (preferential) trade agreements for various country groups. In recent years, the EU has been involved in numerous trade agreements with DCs and LDCs in order to promote their economic development and integration into the world economy[1]. The agricultural sector is a crucial resource for most poor countries and, for this reason, preferential trade policies can play a fundamental role in their economies. Yet, at the same time developed countries support their own agricultural sector through subsidies to producers, high tariffs and non tariff barriers without taking into account implications of this protection for DCs and LDCs.

Between all preferential trade agreements we have focus our attention on the EU GSP scheme. The effect of the EU GSP preferential scheme in the literature is controversial. Some studies claim that this scheme does not seem to have a large impact (see Nilsson 2002, Persson and Wilhelmsson 2005, Verdaja 2006, Cipollina and Salvatici 2007, Demaria et al. 2008), because of the numerous exceptions, exemptions and specific requirements the impact of the GSP, while other studies find that it has a negative impact on bilateral trade (Oguledo and Macphee 1994, Subramanian and Wei 2005, Pishbahar and Huchet-Bourdon 2007).

The literature has then revealed that even if EU preferences have a positive impact on the developing countries' exports this effect is limited because:

[1] Actually there are 380 RTAs some of 380 RTAs have been notified to the GATT/WTO up to July 2007. Of these, 300 RTAs were notified under Article XXIV of the GATT 1947 or GATT 1994; 22 under the Enabling Clause; and 58 under Article V of the GATS. At that same date, 205 agreements were in force.

- many agricultural products (tropical products) from developing countries already face zero duties in developed countries; primary agricultural products of the temperate zone and processed products are excluded from preferences or have a small preferential margin;
- rules of origin are be to strong;
- the maximum value of a preference is limited by the size of MFN tariff. As the MFN tariff decreases, the size of preferential margin declines and reduces the importance of the preferences this phenomenon (the so called preference erosion).

Some studies highlight the fact that limited product coverage, administrative costs and domestic supply-side problems have limited the number of effective beneficiary countries. In fact, the utilization of preferential schemes is often costly because beneficiary countries are not always able to meet the technical requirements. Thus the greater the cost is, the less the benefit of any given preferential margin.

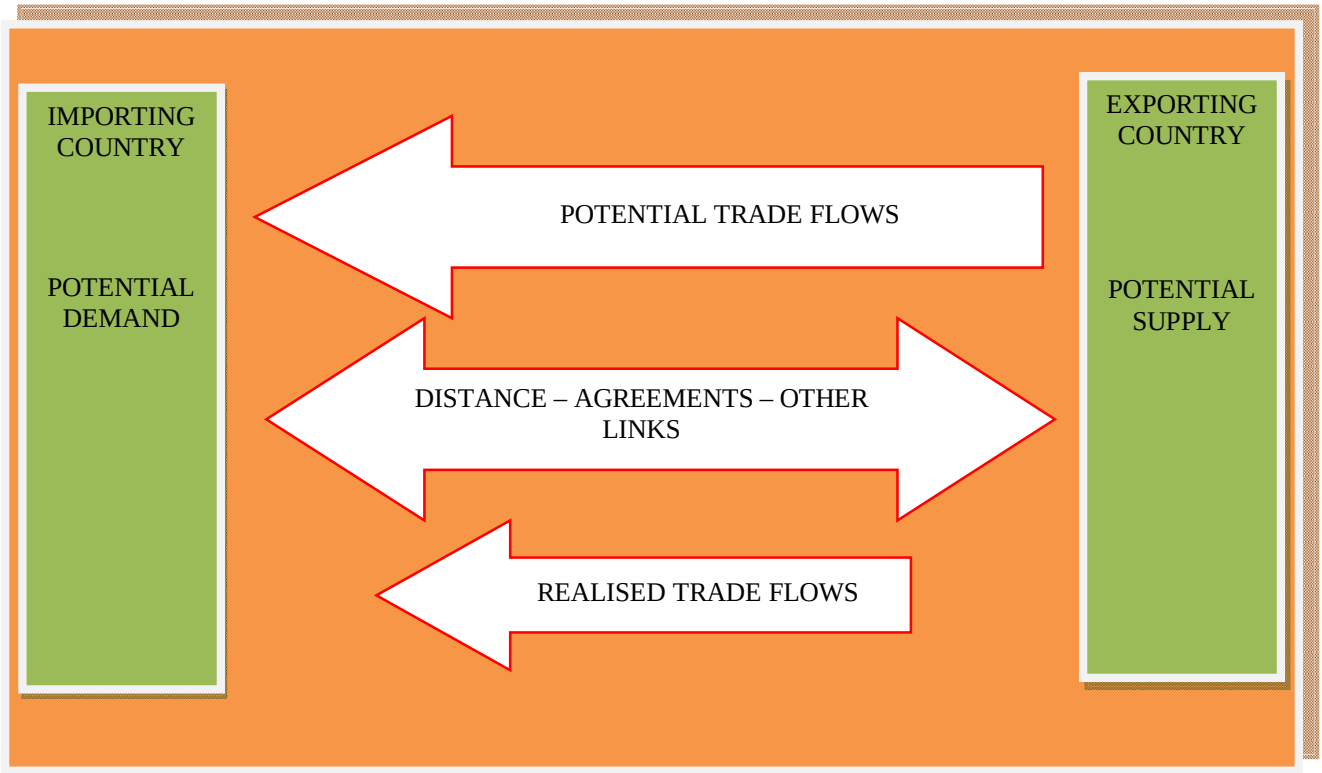
The impact of preferences has been assessed in different ways, for example, by using CGE modeling, gravity modeling, or simply by focusing on trade flows by using indicators such as product coverage and preferential margin. This highlights the fact that different quantitative methods have been used to estimate the changes in preferential trade regimes (for a comprehensive and exhaustive review see Nielsen 2003).

In this chapter we carry out an empirical analysis on the impact of the EU GSP scheme on the agricultural sector. We focusing on the impact of the non reciprocal preferential schemes (GSP, GSP DRUG and EBA) of the EU and try to estimate the impact of the GSP preferential margin on the export flows of beneficiary countries using gravity modeling. In particular we shall try to answer the following questions:

Is there an effective incidence on the trade of beneficiary countries and if so for which products?

The gravity model explains the pattern of bilateral trade among nations and its evolution over time considering the impact of some fundamental variables. It has been used to study various trade issues linked to policy decisions, trade agreements or currency unions, or to verify the link between growth, trade and the environment.

Figure 1:GRAVITY MODEL



The basic idea of the gravity model is presented graphically in Figure 1. It shows that potential supply and demand, determined by the size of the economies, can be used to predict, the potential trade flows between the trading partners. These flows are subject to trade resistance factors which can be improved by trade arrangements. The final result is the actual trade flows.

For the purpose of our analysis we must address two important issues: the measure of preferential trade agreements, and the presence of zero trade flows in the data. Usually, in Gravity Models, the impact of preferential trade agreements is captured through dummy variables. We choose to use a quantitative variable[2] to take into account the size of the preference offered to developing countries. We introduce preferences in the model through the value of the preferential margin. To that purpose we make use of databases on ad-valorem tariffs disaggregated at the HS6 digit level.

[2] To the best of our knowledge only Emlinger et al (2006), Cipollina and Salvatici (2007) and Cardamone (2008) investigate the effects of the EU PTAs granted to LDCs on the agricultural products. While Emilger et al. (2006) use tariff data to evaluate the impact of the EU PTAs, Cipollina and Salvatici (2007) and Cardamone (2008) take into account preferential margin. Moreover Cipollina and Salvatici (2007) use just a only preferential margin for all preferential schemes, while Cardamone (2008) distinguishes among different preferential margins.

If the presence of zero trade flows impedes the utilisation of OLS in its usual form, then the use of a log linearized regression is needed but it may result in biased elasticities. The question of consistent estimation of model parameters in presence of zero flows has been widely addressed in the literature on gravity modelisation. In particular Santos Silva and Tenreyro (2006) contribute to the discussion on which estimator provides the most reliable results by assessing the potential bias of the elasticities in a log linearized regression. They show that the consistency of an OLS estimator depends on a restrictive assumption on the error terms. They suggest that the gravity equation could be estimated in its multiplicative form by using the Pseudo Quasi Maximum Likelihood Method (PQML) based on a Poisson Model. Thus following Santos Silva and Tenreyro (2006), we evaluate the preferences for agro-food products (HS01 to HS24) granted by the EU under its GSP scheme from 2001 to 2004 using PQML.

This chapter also provides empirical evidence on the performance of our PMQL (Santos Silva and Tenreyro, 2006). OLS estimator compared to those of other studies (Nilssson, 2002; Verdeja, 2006). It allows us to investigate the size and signs of the elasticities of preferential margins for on the European agricultural market.

This chapter is organized as follows. Section 1 presents the methodological issues. Section 2 presents the data. Section 3 deals with the Poisson modelisation. Section 4 reports the OLS and Poisson results. Section 5 presents some economic considerations. Section 6 presents the instrumental variables estimates. Section 7 offers some conclusive remarks.

2. Dummies versus Preferential Margin

The EU is the largest importer of agricultural goods in the world. But at the same time the EU's agricultural market is usually considered as an impenetrable fortress based on a system of very high duties. Moreover, the EU agricultural tariff's structure has more than 2000 tariff lines, which reflect the differentiation by product. Another important issue is that tariffs are expressed in different ways:

- Ad valorem tariff when the duty is paid as percentage of the import price;
- Specific duty when a fixed amount is paid per physical unit i.e. kilos, litres, % of alcohol content, etc.;
- Mixed tariff is the combination of the two precedent tariffs.

Specific tariffs, mixed tariffs and ad valorem tariffs cannot be compared directly if they are not converted first in an Ad Valorem Equivalent. In the EU approximately 44% of agricultural tariff lines are expressed in non ad valorem terms.

As previously mentioned, EU imports are subject to different preferential regimes, the coverage of preferences varies between the agreements. The extent to which preferential access is actually granted to trading partners depends on the structure of their exports and even on the depth of the preferences in the particular agreements. Preferences are valuable on the basis of the benefit they provide in terms of a more favorable market access (lower tariffs) for some countries compared to others. The potential value of a tariff preference is the difference between the EU price gap and the preferential tariff. The EU price gap is calculated as the difference between the world price and the EU price. If we don't take transport cost and other distording measures into account, the EU price gap can be approximated by the bound tariff[3].

Usually dummy variables are used to capture the impact of Preferential Trade Agreements (PTA). Dummies take a value of 1 if the importer grants a PTA and zero otherwise. Their coefficients are expected to be positive because benefiting countries is expected to export more than in the absence of a PTA. But this approach is not totally satisfactory because:

[3] Tariff bound is the maximum rate of tariff allowed by WTO to any member state for imports from another member state.

- Dummies treat all countries in the same way, as a homogeneous group, without taking into account their particular characteristics;
- dummies do not consider that PTAs may have different impacts on trade in different products;
- dummies do not distinguish between different preferential instruments, such us preferential margins, quotas and entry prices;
- dummies do not consider the rate of utilization of the preference and the cost of compliance.

Usually studies (Emingler et al., 2007; Cipollina and Salvatici, 2007; Cardamone, 2008) that use a quantitative variable to measure the value or the impact of the PTA, adopt the actual preferential or non preferential tariff. The preferential margin can be thought as a quantitative indicator of potential benefits deriving from the trade agreement. We will define the percentage preferential margin (hereafter called preferential margin) as the difference in percentage between the MFN and the preferential tariff at the tariff line. There is in the literature a certain consensus that a preferential margin has limitations. The preferential margin does not always effectively help the recipients, in the sense that, if the MFN is high, a large preferential margin may not be sufficient to allow trade in that sector; or tariff rate quotas may limit the benefit of the preference. Moreover, the simple difference between MFN and Preferential Margin is not a reliable measure because it does not take into account the size of the actual tariff barriers in place for a particular product. Some works for example, Cipollina and Salvatici (2007) and Cardamone (2008), have calculated the preferential margin as the difference between the highest tariff applied by the EU and the duty paid by an exporter for a given product. Low et al. (2005) have calculated the trade-weighted value of the preference margin as the value of the preference, that is, the preferential margin is given by the preference margin per unit of imports.

We determine the preferential margin for agricultural exports from developing countries as the result of different EU Preferential Trade Agreements (ACP, GSP including EBA and GSP-PLUS, European Mediterranean Agreements). In a first step we calculate the preferential margin as the difference between the MFN and the preferential tariff:

(4.1)

$$PMar_{ijt}^{l} = MFN_{ijt}^{l} - PREF_{ijt}^{l}$$

Where *i* refers to importers, *j* to exporters *l* to the tariff line and *t* is the time, MFN and PREF are the MFN and the preferential tariffs respectively, by country *i (EU)* to country *j* (DCs and LDCs) for product *l*.

If we consider the preferential margin as the absolute difference between the MFN tariff and the preferential tariff, we do not take account of the size of the actual tariff barrier for a particular product. If we assume a market with two products, apples and oranges; for apples, the MFN is 100% and the ACP tariff is 90%, the preference under ACP scheme is 10 percentage points. For oranges, the MFN tariff is 15% and the ACP tariff is 5%, here the preference is also 10 percentage points. But at the same time it lower trade is reported for apples and high trade for oranges. This is not surprising because apples have an applied tariff of 90% while oranges have an applied tariff of 5%. This implies that the preferential margin only makes sense when it is combined with the size of the original MFN tariff. In fact a 10 percentage point difference in the protection for apples is not the same as a 10 percentage point in the protection for oranges. The initial level of protection being different, the meaning of 10 percentage point preferential margin is different when the MFN tariff is 100% than when it is 15%, for this reason, we calculate the preferential margin as:

(4.2)

$$PM_{ijt}^{l} = \frac{MFN_{ijt}^{l} - PREF_{ijt}^{l}}{MFN_{ijt}^{l}}$$

DBTAR database allows us to distinguish different tariff regimes. An alpha numeric ISO code is used to identify the specific preferential scheme or geographic group that enjoys the preferential regime. The MFN regime is identified under the code 1011; 2005 is the numeric code identifying EBA regime; 2027 is the code for GSP Drug preferential scheme; 2020 is the code for GSP general agreement; 1031 is the number code for ACP regime[4].

[44] For Mediterranean countries DBTAR returns an alphabetic code

We extract tariff data at the 10-digit level. Then we consolidate them at the 6-digit level for each partner and for each year, with a simple average of the 10 digit lines. Fruits and vegetables are a particular issue because they are subject to a seasonalized tariff with entry prices. For each preferential scheme, for each product line and for each year we generate the mean of preferential tariffs and compute the preferential margin.

To assign the preferential margin we start by creating dummies for the country groups belonging to different preferential schemes. For each country, and each preferential scheme we construct a dummy that takes a value of 1 if the country benefits from that particular scheme and zero otherwise.

Some countries enjoy more than one scheme for a given product at the same time. The country can find it worthwhile to export under the scheme that offers the greatest advantage in terms of preferential margin. To have a better idea of what can happen, let us assume that Morocco can export citrus both under GSP and Euromed, the preferential margin under Euromed is 5 while under GSP is 3. Thus Morocco will export through the Euromed rather than through GSP, the former offers better access to the EU market. In order to take this into account we have verified for each agricultural product line and every year, which preferential scheme offers the best margin for countries. Then we assign this value to the given country for the specific agricultural line.

In order to carry out a closer analysis of the various sub-categories of product line, we have divided agricultural products into fifteen different commodity groups (live animals, animal products, fruits, vegetables, live trees, tropical products, cereals, oils and fats, beverages, sugar, tobacco, fish, preparation of food industry, lacs, gums and dairy products) and we have calculated for each commodity group the beneficial treatment. In addition, we have evaluated the preferential margin not only for the GSP scheme (GSP DRUG and EBA) but also for the other two EU preferential schemes (ACP and Euromed).

3. The gravity equation and Data description

In this section we present the gravity equation and the data description. We use the PQML to quantitatively assess the determinants of bilateral trade flows. In the gravity equation we introduce the following sets of variables: 1) Standard gravity variables, 2) controls for heterogeneity, 3) preferential margin (PM). This lead to the following equation:

(4.3)

$$\ln X^{t}_{ijl} = \alpha + \beta_1 \ln(GDP^{t}_{i}) + \beta_2 \ln(GDP^{t}_{j}) + \beta_3 \ln(POP^{t}_{i}) + \beta_4 \ln(POP^{t}_{j}) + \beta_5 \ln DIST_{ij} +$$

$$+ \beta_6 \ln PMGSP^{t}_{ijl} + \beta_7 \ln PMGSPDRUG^{t}_{ijl} + \beta_8 \ln PMGSPEBA^{t}_{ijl} + \beta_9 \ln PMACP^{t}_{ijl} +$$

$$\beta_{10} \ln PMMED^{t}_{ijl} + \beta_{11} Colony_{ij} + \beta_{12} Com\_off\_lang_{ij} + \beta_{13} Border_{ij} + u^{t}_{ijl}$$

Where subscript *i* refers to the importing county, *j* to the exporting country, *l* to the product line finally *t* is the time and the notation is defined as follows:

- X_{ij} are the imports from DCs to the EU ;
- GDP_i and GDP_j represent the economic size of the two locations;
- POP_i and POP_j are the populations of the two countries;
- $DIST_{ij}$ is the distance between the locations measured from capital to capital;
- PM_{ij} represents the preferential margin by product line and by partner;
- *Com_off_lang* is a dummy that takes value 1 if countries share the same language, and 0 otherwise;
- *Colony* is a dummy that takes value 1 if there exist (or existed) colonial links between the two countries, and 0 otherwise;
- *Border* is a binary variable assuming the value 1 if *i* and *j* share a common land border, and 0 otherwise.
- u_{ijl} is a composite error term.

To build the final database we used five different databases, UN COMTRADE,FAOSTAT AGRICULTURAL DATA, MACMAP, WBDI and DBTAR. Our analysis covers the imports of 769 agricultural products from 156 Least Developed Countries (LDCs) and Developing Countries (DCs)[5] by the 15 EU members. The product coverage is from chapter 1 to chapter 24 of the Harmonized System (HS, see appendix for a description of the chapters). There are about 2.500.000 observations in total, including zero trade flows, and 3 169 pairs of countries are used to calculate the pair-specific effects. The dataset covers a period of 4 years (2001-2004), and this time coverage is due to the constrained concerning by the availability of data on tariffs. Since UN COMTRADE does not consider zero trade flows we have adapted our database to include zero trade observations. As regards missing trade values we assume that they are equal to zero. Zero trade flows are important and omitting zero flow observations would imply a loose of information.

We focus on EU imports from all LDC and DC trading partners. Trade flows are from UN COMTRADE (United Nations Trade Database is available at http://unstat.un.org/unsd/comtrade/). COMTRADE provides trade statistics for 275 countries, flows are provided by products and by country and data are available on a yearly basis from 1962. Commodities are classified according to different international classifications. We use net imports for the EU15 members and EU15 as whole at HS 6 digit level. We consider import trade flows rather than total trade flows (imports+exports),because total trade can be used to measure the impact of PTAs when there is a mutual reduction in tariffs. Since the EU GSP scheme is non-reciprocal a total trade variable is not appropriate. Moreover imports are used as a dependent variable rather than exports because imports are much more reliable, as it is easier to check for incoming flows of goods. Pavia (2005) uses data from DOT database, which has the advantage of considering zero trade flows. Distance and dummy variables are drawn from MAcMap[6]. Geographical distance is used as proxy for transport costs. Distance is often a measure of "remoteness"; moreover, this is complemented with additional

[5] A list of the countries is given in Appendix A.

[6] Market Access Map (MAcMap) is a database developed jointly by ITC (UNCTAD-WTO, Geneva) and CEPII (Paris). It provides with a disaggregated, exhaustive and bilateral measurement of applied tariff duties, taking regional agreements and trade preferences exhaustively into account.

regressors capturing other country pair specific trade costs. The sign of the coefficient of the distance is expected to be negative.

A set of dummy variables are included in the model (Contiguity, Colony, and Common Language) affecting bilateral trade[7]. The additional indicators of size or trade cost are: Common Language, Common Border, Colonial History, Preferential Trade Agreements. Contiguity is a dummy variable for the country pairs which share a land border. Colony is a dummy variable for country pairs which had or still have colonial links. Language is a dummy indicating that countries share a common language. Tariffs come from DBTAR[8], which is a database on European Agricultural tariffs which provides applied tariffs over the period 2001-2004. The main source of this database is TARIC (Integrated Tariff of the European Community - TARIC contains about 15.000 tariff lines). In DBTAR specific or complex duties are transformed into ad-valorem equivalents (AVE) by using an estimation of unit values based on EU import statistics from COMEXT database[9]. We calculate for each product line the preferential margin as the difference between the MFN and EU preferential tariff by scheme. We introduce in the gravity equation preferential margins related to the following five schemes: the African Caribbean and Pacific Group of States (ACP), the Generalized System of Preferences (GSP), the Generalized System of Preferences DRUG (GSP DRUG), the Everything But Arms (EBA) and the European Mediterranean Agreements (EuroMed). We include as MFN trade, value of imports facing a zero MFN tariff.

Production data are from FAOSTAT database, which provides information on production of agricultural and processed food commodities the database is available at http://faostat.fao.org/. Data are recorded in physical units. There are few gravity studies on agricultural trade, some of which include the physical area, rural population density and the share of agricultural trade in GDP of both importers and exporters. We use

[7]MACMAP is a database developed by the Centre d'Etuds Prospectives et d'Informations Internationales (CEPII) and UNCATD. It is available at http://www.cepii.fr/anglaisgraph/macmap/form_macmap/access.asp, and it provides information on tariffs applied at the tariff level, distance and other variables by 165 countries.

[8] DBTAR is a tariff database by J. Gallezot developed under the TRADEAG project, available at http://www.tradeag.eu/. It focuses on the EU's applied tariffs at the 10 digit level. And it gives various tariffs under preferential regimes and it includes entry price for fruits and vegetables over the period 2001-2004. All tariffs in DBTAR are converted into ad-valorem equivalents with a convention slightly different from the one agreed upon under the WTO.

[9] COMEXT database is the database provide by EUROSTAT. It covers trade flows within the EU members and outside the Union. The good declared in customs are classified according to the combined nomenclature (CN).

production because we think that it is the most reliable measure to use on agricultural products. The physical production of each specific line is considered as the most suitable proxy of the output capacity for the exporting country, while the production for importing country is a proxy of a potential demand of developed countries. The sign of the production of the exporting countries is expected to have a positive effect on trade, because, a high level of production is indicative of a high level of exports. While the sign of production of importing countries is expected to have a negative impact on trade: a low level of production suggests that imports will be high.

Gross Domestic Product and the Population, are from the World Bank Development Indicators (WDI) http://www.worldbank.org/data. The GDP of the importing country (GDP_i) is used to control for demand, while the GDP of the exporting country (GDP_j) controls for the supply side. Both variables are expected to have a positive effect. A high level of income in the exporting country is indicative of a high level of production, and at the same time, a high level of income in the importing country suggests that imports will be higher. But when GDP is used for the agricultural sector, Engel's Law allows for GDP in the destination country to have a small influence on demand for imports: as incomes rise, the percentage of income spent on food, in aggregate, declines. The signs of the coefficients of the populations of the exporter (POP_i) and importer country (POP_j) may be either positive or negative. In the past, they were expected to be positive because it was believed that larger countries trade more. Recently it has been shown that if the exporter is big in terms of population it may either need its production to satisfy domestic demand, so it will export less, or it may export more than any other small country. The same reasoning can be applied to the case of the importing country. If it is big, it may either import less because it is more self-sufficient or it may import more because it cannot satisfy the domestic demand with its own production. Alternatively, it is possible to use GDP per capita instead of population, according to the correlation between the variables.

Due to its log-linear structure, the coefficients of the gravity model are given in terms of elasticity or ratio of percentage changes. These measures are comparable across countries and goods and give us direct measures of the responsiveness of trade flows to the potential variables trade. For GDP and Distance the estimated elasticity tends to be

close to 1. The coefficients of the preferential policies help to understand the impact of these policies on trade flows.

In many cases the preferential margin is equal to zero, thus, to avoid problems with the use of the log-linear form, we take the log of the preferential margin plus a constant, , e.g. PM + 0.0001. We take into account all tariff lines at the HS 6-digit level for chapters 01 to 24. The HS 6-digit level product classification offers the advantage of a common standard structure shared by all countries. Since the GDP is an aggregated measure, when the gravity equation is used to explain agricultural trade sector, the agricultural production is preferred. Then we are able to capture the impact of comparative advantage on agricultural trade flows[10]. In the next section we will present methodological issues concerning the estimation of the gravity equation and the problems related to the sample selection.

[10] There are few gravity studies that focus on agricultural trade, for example Pavia (2005) which includes physical area of both importer and exporter, rural population density of both importer and exporter and share of agriculture in GDP of both importer and exporter and Koo, Kennedy and Skripnitchenko (2006) which uses arable land area in both importer and exporter. Cardamone (2008) considers production of importers and exporters.

4. Some methodological issues

In this section we focus our attention on the contribution that this dissertation gives to the literature. In the first section we have explained why preferential margins are a good measure to capture the impact of trade preferences; but other two important issues must be considered: a) disaggregated data,; b) zero trade flows and problems related to the estimation of the gravity model.

4.1 Disaggregated data

The recent literature on preferential trade is generally based on aggregated data and used dummy variable to capture the impact of trade preferences[11] (Nilsson 2002; Persson and Wilhelmsson 2005; Verdaja 2006; Martinez-Zarzoso, 2003; Manchin, 2005; Ozden and Hoekman 2005).

The use of aggregated data permits to simplify the analysis, however it does not allow to a) to distinguish which is the EU protection for each product lines; b) to understand which kind of products are included in a given group; c) to check which are the trade flows between different categories of products; d) to verify if a country has productivity capacity for agricultural product lines. In fact in this data the level of tariffs is established at 10 digit level, this implies that with aggregated data the preferential tariff is the mean of the preferential tariffs included in a group of given products.

Moreover, aggregated data do not consider zero flows: the value of the chapter (group) is equal to the sum of all agricultural lines included in it which generally leads to a positive value. Nevertheless zero trade flow may play an important role understanding the effect of preferential margin.

As a consequence to overcome these problems in this dissertation we use disaggregated data at HS6 digit level[12].

[11] See section 1.

[12] It is the Harmonized Commodity Description and Coding System – commonly known as the Harmonized System or HS - is an internationally standardized nomenclature for the description, classification and coding of goods. The HS consists of around 1200 four-digit headings and 5000 six-digit subheadings, which are organized in 21 Sections and 97 Chapters, which theoretically cover all commodities in international trade.

4.2 Zero trade flows

The recent developments in the literature on gravity models have lead to important improvements allowing gravity equations to become a reliable tool to analyze bilateral trade patterns. But even if many issues have been solved[13], the treatment of zero value still presents some problems.

Disaggregated data on trade flow are usually characterize by the presence of large number of zero values. Trade flows equal to zero are important because they contain relevant information which help us understand bilateral trade relationships. A country may presents zero exportations for some product as it is not able to produce because of factors such as the weather conditions, geographical and cultural factors or scarce productive capacity. On the other hand trade flows equal to zero may be the result of an economic decisions based on the *potential profitability of engaging in bilateral trade at all* (Linders and Groot, 2006; p. 10). If we omit zero trade observations we lose the possibility to capture this second aspect.

In the source database UN COMTRADE most of trade flow values are recorded as missing, others are recorded as zero. Since zero trade are important and since we are not able to know whether the trade flows reported reflect errors, omissions and rounding errors[14], we assume that all missing observations are equal to zero. This hypothesis is confirmed by Martin and Pham (2007) who confirm that missing value reflect a true absence of trade.

However the existence of observations for which the dependent variable is zero creates some problems for the use of the log-linear form of the gravity equation given that the log of zero is undefined. Several approaches have been applied to address this problem (Frankel 1997). Some authors confine the sample to non-zero observations to avoid problems related to zero flows (Verdeja, 2006; Nilsson, 2002; MacPhee and Ongolulu, 1994), while others (Wang and Winters, 1991; Linnemann ,1996) substitute zero values with a small constant, so the double-log model can be estimated without throwing away

[13] For example the specification of panel gravity equation, the estimation of cross-section gravity model, the interpretation of the effects of the distance between countries.

[14] Zeros should reveal the true absence of trade, but sometimes they reflect errors and omissions, and they can also be the consequence of a rounding up process, since they are not registered if the rounded value of trade is below a certain threshold.

these countries. However, the value attributed to the constant is arbitrary and does not reflect the expected value.

To take into account zero trade flows between any two countries, most authors use ad-hoc methods: the Tobit model, the Heckman sample selection model. In this work following Santos Silva and Tenreyro (2006) we use a Poisson Model.

4.3 Tobit, Heckman and Poisson model

As previously mentioned we can encounter potential problems with the gravity model when zero trade is present. In this section we focus on Tobit, Heckman and Poisson model, which have been used by the literature to handle this kind of issue.

4.3.1 The Tobit and the Heckman model

The censored regression or Tobit model is employed to analyse data sets in which a part of the observations is zero. Rose (2004) and Soloaga and Winters (2001) use this approach to estimate a gravity model. In the Tobit model a part of the observations of the dependent variable is censored and represented by values that are generally zero.
The Tobit model assumes that the observed dependent variables y_i for the observations i=1, 2, ...,n satisfy:

(4.4)

$$y_i = \max(y_i^*, 0)$$

where *y* is the latent bilateral trade generated by the classical linear regression model

(4.5)

$$y^* = X\beta + u$$

and X is a vector of covariates, possibly including 1 for the intercept, and β the corresponding vector of parameters. The model errors *u* are assumed to be independent and $N(0,\sigma^2)$ distributed, conditional on the *X*'s. The conditional distribution of y_i given y_i >0 and X is continuous:

$y_i = y_i^*$ if $y_i^* > 0$
$y_i = 0$ if $y_i^* \leq 0$

y=y* when y*≥0. We are interested in both E(y|X) and E(y|X, y>0). y* satisfies the classical linear model assumption, in particular it has a normal homosckedastic distribution with a linear conditional mean. According to the law of iterated expectations, the relationship between them can be written as follows:

(4.6)

$$E(y|X) = P(y>0|X) * E(y|X, y>0)$$

Where P(y>0|X) is the conditional probability of a positive trade. If the conditional probability of positive trade follows a probit model, that is:

(4.7)

$$\Pr(y > 0 \mid X) = \Phi\left(\frac{X\beta}{\sigma}\right)$$

Then we can have:

(4.8)

$$E(y \mid X, y > 0) = X\beta + \sigma\left[\frac{\phi\left(\frac{X\beta}{\sigma}\right)}{\Phi\left(\frac{X\beta}{\sigma}\right)}\right] = X\beta + \sigma\lambda\left(\frac{X\beta}{\sigma}\right)$$

(4.9)

$$E(y \mid X) = \left(\frac{X\beta}{\sigma}\right)X\beta + \sigma\phi\left(\frac{X\beta}{\sigma}\right)$$

this method will lead to an inconsistent estimator of β. Thus also the Tobit model presents heteroschedasticity problems or non normal residuals. There are three cases for which we do not consider the Tobit model analysis: a) if the dependent variables take negative values; b) if the dependent variables take only positive values; c) if the dependent variables are non-negative, and they have some zero value, but all the dependent variables' integer valued. T

The Heckman selection model is specified by two equations, the first one considers the selection mechanism and the second one deals with the regression. The selection equation determines whether or not we observe bilateral trade between two countries in the sample, that is it describes the decision to export, instead the regression model determines the size of bilateral trade. The outcome is given by:

(4.10)

$$y_i^* = X'\beta + \varepsilon_i$$

$$z_i^* = X'\gamma + \varsigma_i$$

but only observe y such that

$z_i = 1$ if $z_i^* > 0$ $\quad$ $z_i = 0$ if $z_i^* \leq 0$

$y_i = y_i^*$ if $z_i = 1$ $\quad$ y_i not observed if $z_i = 0$

therefore y* is not observed because of the choice based on z. If we consider the expected value of y_i we have:

(4.11)

$$E(y_i \mid z_i = 1) = X'\beta + E(\varepsilon_i \mid z_i = 1) = X'\beta + E(\varepsilon_i \mid z_i > 0) = X'\beta + E(\varepsilon_i \mid \xi_i > -X'\gamma)$$

If ε_i and ζ_i are correlated then $X'\beta + E(\varepsilon_i \mid \xi_i > -X'\gamma) \neq 0$ This implies that the estimates obtained disregarding this correlation are biased[15].

Another important issue is the specification of the models. The chosen model variables (w) should differ from the outcome model variables (x), so if the same variables are used, the second equation is only specified by the non-linearity of the Probit selection equation.

[15] To solve this problem Heckman (1978) estimator could be used.

4.3 Pesudo Maximum Likelihood Method

Santos Silva and Tenreyro (2006) resolve the problem of undefined value of dependent variables by using a different specification of the gravity models. They use the dependent variable in level rather than in logarithm. In their paper Santos Silva and Tenreyro argue that the standard empirical methods used to estimate gravity models are inappropriate because the linearization of the empirical model in the presence of heteroskedasticity leads to inconsistent estimates because the expected value of the logarithm of a random variable depends on higher-order moments of its distribution. If the errors are heteroskedastic then the transformed errors will be correlated with the covariates; in addition the log linearization is incompatible with the presence of zero in trade data.

They proposed the Pseudo Maximum Likelihood (PML) estimation technique which has it proved useful to address these issues. First, PML allows to estimate the gravity equation and more generally constant elasticity models in their multiplicative form. Second, the log-linear gravity regression and even the Tobit regression are questionable in the presence of heteroskedasticity and normal residuals. PML also allows us to deal with problems of heteroskedasticity in bilateral trade flow data. Moreover, in PML the conditional variance is proportional to the conditional mean in the Poisson Model. Finally, PML also provides a natural way to deal with zero values of the dependent variable. It is important to underline that to apply the Poisson Model, the dependent variable - in our case bilateral trade flows, does not have to be count data (see Wooldridge 2002 p. 676).

The PML estimator is obtained by maximizing the same log-likelihood. In more detail, in its multiplicative form gravity equation is:

(4.12)

$$y_{ij} = \alpha_0 Y_i^{\alpha_1} Y_j^{\alpha_2} D_{ij}^{\alpha_3}$$

Where y_{ij} are the exports from county *i* to country *j* and they are proportional to the product of GDPs' countries ($Y_i^{\alpha_1} Y_j^{\alpha_2}$) and inversely proportional to the distance ($D_{ij}^{\alpha_3}$), finally $\alpha_0, \alpha_1, \alpha_3$ are the parameters that have to be estimated.

The stochastic version of the gravity has the following form:

$$y_{ij} = \alpha_0 Y_i^{\alpha_1} Y_j^{\alpha_2} D_{ij}^{\alpha_3} \eta_{ij} \tag{4.13}$$

Where η_{ij} is the error term with $E(\eta_{ij} \mid Y_i, Y_j, D_{ij}) = 1$ and η_{ij} is statistically independent of the regressors. If we log-linearized the previous equation we obtain:

$$\ln y_{ij} = \ln \alpha_0 + \alpha_1 \ln Y_i + \alpha_2 \ln Y_j + \alpha_3 \ln D_{ij} + \ln \eta_{ij} \tag{4.14}$$

But if η_{ij} is not statistically independent of the regressors, but only mean independent or uncorrelated then a) the variance of η_{ij} could depend on GDPs or Distance (Conditional Heteroskedasticity[16]); b) the mean of $\ln \eta_{ij}$ depends on the variance of η_{ij} (Jensen's inequality); c) OLS on log-linearized is biased and inconsistent. The authors interpret the gravity equation as the expected value of trade for a given value of explanatory variables. Let *y* be the trade volume and *x* a set of covariates, the gravity equation is interpreted as:

$$E(y_i \mid x) \tag{4.15}$$

which is positive. For this reason a multiplicative model can be written as:

$$E(y_i \mid x) = \exp(x_i \beta) \tag{4.16}$$

The error term associated with each observation is equal to:

$$\varepsilon_i = y_i - E(y_i \mid x) \tag{4.17}$$

So the stochastic model can be written as:

$$y_i = \exp(x_i \beta) + \varepsilon_i \tag{4.18}$$

where:

- y_i represents bilateral trade and y ≥ 0;

[16] Conditional Heteroschedasticity is a typical feature of gravity regressions: the residual variance increases with the size and proximity of trading partners.

- $E(y_i \mid x) = 0$;
- x_i is a vector of explanatory variables,
- β is a vector of coefficients and ε is an error term

The previous equation can be log-linearized and estimated by the OLS method, but log-linearization presents one important problem: trade cannot be equal to zero. In our case we have:

(4.19)

$$E(y_{ij} \mid Y_i, Y_j, D_{ij}) = \exp\left[\ln(\alpha_0) + \alpha_1 \ln(Y_j) + \alpha_3 \ln(D_{ij})\right]$$

The estimation technique proposed by Santos Silva and Tenreyro (2006) is a Pseudo Maximum Likelihood estimator based on assumptions on the functional form of the conditional variance. In Poisson regression it is necessary (customary) to specify that:

(4.20)

$$E(y_i \mid x) = V(y_i \mid x) = \exp(x_i \beta)$$

under the assumption that the conditional variance is proportional to the conditional mean, β can be estimated by Maximum Likelihood Methods. This estimator is defined by:

(4.21)

$$\breve{\beta} = \arg\max_b \sum_{i=1}^{n} \{y_i (x_i b) - \exp(x_i b)\}$$

Or solving a set of first-order conditions:

(4.22)

$$\sum_{i=1}^{n} \left[y_i - \exp(x_i \breve{\beta})\right] = 0$$

where y_i is the dependent variable, x_i are the explanatory variables, and β are the parameters to be estimated. The estimator based on the previous equation gives the same weight to all observations and it is numerically equal to the Poisson Pseudo-Maximum Likelihood (PPML) estimator which is often used for count data.

As aforementioned, estimates are obtained by Maximum Likelihood estimation, the log-likelihood function is globally concave so that maximization routines converge rapidly.

When the likelihood function does not converge it is possible to specify how the likelihood function can be maximized[17].

If we suppose that Y is strictly positive we can estimate the previous equation by taking the logarithms. The coefficients can be explained as elasticity if the dependent variable $(y_i = y_{ij})$ is in level and covariates (x_{ij}) are in logarithms[18].

Recently, Martin and Cong S. Pham (2008), have re-examined Santos Silva and Teneyro's paper reconsidering the gravity model when zero trade flows are prevalent. Using Monte Carlo simulations they assess the performance of different limited-dependent variable estimators concluding that "while the Poisson Pseudo-Maximum Likelihood estimator "*solves the heteroskedasticity bias problem when it is the only problem, it appears to yield severely biased estimates when zero trade values are frequent"*.

Another issue is the endogeneity of explanatory variables, for example GDP and PTA variables. Under endogeneity of regressors a) the instrumental variable (IV) and b) the two-step IV method can be employed (section 6).

[17] Precisely the techniques are: technique(nr) specifies Stata's modified Newton-Raphson (NR) algorithm; Technique(bhhh) specifies the Berndt-Hall-Hall-Hausman (BHHH) algorithm; technique(dfp) specifies Davidon-Fletcher-Powell (DFP) algorithm and finally technique(bfgs) specifies the Broyden-Fletcher-Goldfarb-Shanno (BFGS) algorithm. The default is technique(nr). We can switch among algorithms by specifying more than one in the technique option.

[18] There are other ways to estimate the gravity equation multiplicatively, such us Nonlinear Least Square (NLS) and the Gamma Quasi Maximum Likelihood estimator (GQMLE). Martinez-Zarzoso et al. (2007) employ the Feasible Generalised Least Squares estimator (FGLS).

5. OLS Results

In this section we summarize the results from the application of the OLS, LSDV and PQML procedures. Since there is a lot of information, this section is divided into two sub-sections taking into account different level of disaggregation. At first, we consider trade flows at HS6 digit level, and then, we consider following homogenous group of products: animal products, beverages and spirits, cereals, coffee and tea, dairy products, fisheries, fruits and vegetables, lacs and gums, live trees, oils and fats, other plants, residues food industries, sugar, tropical fruits and tobacco.

We estimate the gravity equation starting from the OLS estimator. To evaluate the impact of preferential margins on bilateral trade flows, the preferential margin is calculated as preferential margin over MFN. Our aim is to compare our results with those of other authors and then to compare OLS with LSDV estimates to control for unobservable country heterogeneity and with those of Poisson estimates. First of all, we estimate the gravity equation by using disaggregated data. Table 5 reports these results.

The coefficient of the GDP of importing country is negative and significant while the impact of GDP of exporting countries is positive and statistically not significant, in addition they are similar in size. The effect of Population of importing countries on trade is positive and statistically significant, while the effect of population of exporting countries is negative and statistically significant, in addition they are different in magnitude. The Distance and Common Language variables have an estimated coefficient which sign is negative and significant. The coefficients for Border and Colony is positive and statistically significant. Concerning Preferential margins we find positive and statistically significant coefficients for GSP and ACP, while the coefficients for GSP PLUS, EBA and MED are positive and not significant.

TABLE 5: OLS estimates

	TRADE AT HS6 DIGIT LEVEL
GDP IMPORTER	-0.363***
	[0.031]
GDP EXPORTER	0.248***
	[0.013]
POP IMPORTER	0.708***
	[0.032]
POP EXPORTER	-0.112***
	[0.010]
DISTANCE	-0.133***
	[0.013]
BORDER	0.242***
	[0.056]
LANGUAGE	-0.367***
	[0.040]
COLONY	0.331***
	[0.035]
GSP	0.072***
	[0.003]
DRUG	0.000
	[0.003]
EBA	0.001
	[0.004]
ACP	0.020***
	[0.004]
MED	0.008
	[0.006]
Constant	-1.315***
	[0.389]
Observations	87065
R-squared	0.034
Robust standard errors in brackets * significant at 10%; ** significant at 5%; *** significant at 1%	

6. LSDV Results

The OLS method does not properly control for country heterogeneity. Heterogeneity bias is due to the likely correlation between country pair specific effects and some explanatory variables. In particular this kind of bias may be due to observable and unobservable factors, such as the propensity of a country to export more than others, or cultural and historical links, or business cycle effects, and/or to other several aspects which define the country-pair background (i.e., common language, colonial past, common border, religion). While observable factors can be handled using a set of dummy variables , (i.e., common language, colonial past, common border) to correct for heterogeneity depending on them, it is necessary to use model with country fixed effects allows us to control for non observable factors (Serlenga and Shin 2004).

More precisely we use the Least squares Dummy Variables (LSDV) methods. The heterogeneity bias has been solved by decomposing the error term of the equations (4.3) as follows:

$$u^{t}_{ijl} = \alpha_i + \alpha_j + \alpha_l + \varepsilon^{t}_{ijl} \tag{4.23}$$

where α_i and α_j are the time-invariant importer and exporter-country fixed effects, respectively, and α_l is the commodity fixed effects, finally ε^{t}_{ijl} is the idiosyncratic error term.

This decomposition of the error term is less general than the two-way model employed by Carrere (2006) and Egger and Pfaffermayr (2003). The fixed effects are meant to capture all unobserved factors that influence export flows; while the time variable allows us to control for macro-economic factors that may have occurred over our sample period.

The results of the LSDV estimator are reported in table 6. Even in this case we use disaggregated data at HS6 digit level. Moving from OLS to LSDV leads to different results especially in magnitude. Focusing on the goal of this work, we note that all preferences are positive and not significant with the exception of EBA countries, whose sign is negative and not significant. However, the coefficients change in magnitude, in fact, they are higher in LSDV compared to OLS estimations. If we focus on gravity standard variables we find that the elasticity of the GDPs per capita of importing country is greater than that for the exporting country. Distance, Language and Colony

have the correct sign, while Border changes in sign and in significance. All regressions include a trend variable term.

Table 6: LSDV estimates

	TRADE AT HS6 DIGIT LEVEL
GDP IMPORTER	-1.677***
	[0.413]
GDP EXPORTER	0.087
	[0.074]
POP IMPORTER	0.757
	[1.728]
POP EXPORTER	0.420
	[0.865]
DISTANCE	-0.484***
	[0.059]
BORDER	0.157*
	[0.092]
LANGUAGE	-0.199***
	[0.059]
COLONY	0.165***
	[0.053]
GSP	0.114***
	[0.032]
DRUG	0.052
	[0.043]
EBA	-0.066
	[0.067]
ACP	0.417***
	[0.145]
MED	0.140*
	[0.077]
Constant	33.561
	[28.286]
Observations	87065
R-squared	0.107

Robust standard errors in brackets * significant at 10%; ** significant at 5%; *** significant at 1%

7. Poisson Results

OLS and LSDV approaches are problematic because they assume that the dependent variable is strictly positive, but in our case this is not always the case. In fact, trade data can sometimes be zero. So a common solution to solve this problem is to drop all observations equal to zero. Some authors add a constant factor to each observation on the dependent variable. Others treat zero trade flows as missing values. However, the techniques that eliminate the zero values induce a bias in the OLS estimator. An alternative way is to estimate the gravity model in its multiplicative form. We employ the Poisson Model estimator which removes the need to log-linearize the model. In fact since this estimator does not require the dependent variable to be nonzero, it is expected to produce better results than, the OLS estimator.

Table 7 reports outcomes from the Poisson model. All regressions include a trend variable. The value of the GDP coefficient for importing countries is still negative but higher than that obtained by the OLS method, while the exporting countries' GDP coefficient is positive and lower that deriving from OLS estimations. The population signs are positive but they are different in significance: we find a positive and not significant coefficient for exporting countries and a positive and significant coefficient for importing countries. Distance, Language and Colony have the expected signs, while Border presents a negative and significant coefficient. GSP, GSP DRUG, EBA and ACP have positive coefficients, even if they change in magnitude. Whereas MED presents a negative and not significant coefficient. The role of preferential trade agreements seems to be higher under PQML than OLS.

To better understand the effects of the EU membership we divide disaggregated trade data into 15 groups. The strong positive effects are found in the following agricultural lines: fisheries, animal product, oils and fats and cereals; on the contrary, strong negative effects are found in dairy products, coffee, beverages, fruit and tobacco.

Comparing the results between agricultural groups we find that in all regressions the GDP coefficient for importing countries is negative and statistically significant, while the GDP coefficient for exporting countries is ambiguous. Population, Distance, Border, Colony and Language have the expected signs.

With respect to the Preferential Margin variables, GSP presents a positive coefficient for five agricultural groupings (fisheries, fruits and vegetables, oils and fats, coffee and

tea) and a negative coefficient for four groupings (dairy products, beverages, tobacco, live trees). GSP DRUG presents negative coefficients in all regressions. EBA has a positive coefficient for six subgroups (animal products, live trees and other plants, dairy products, coffee and tea, cereals and beverages) and negative coefficients for oils and fats, tobacco, fisheries, and fruits and vegetables. ACP presents a negative coefficient for the following products: coffee and tea, fisheries, fruits and vegetables and tobacco. The Mediterranean preferential margin is negative and significant in all regressions except for fruits and vegetables and cereals. Nothing can be said for other products since the PQML does not converge.

As for result for homogenous groups of products are concerned, it emerges that Poisson estimates reveal puzzling asymmetries in the coefficients on importing and exporting countries' GDPs. The estimated GDP elasticities vary between different pairs of countries and this asymmetry can reflect the country pair dimension. Focusing on the population, an increase in the importing countries' population could suggest an increase in the imports of agricultural products. While an increase in the population of the exporting countries could suggest a decrease of exports. The distance is a proxy for transportation cost, the negative sign of this coefficient implies that the greater the distance between two countries the lower the level of trade between them. With respect to the effects of Border, Colony and Language, where the coefficient is positive we find a positive influence on trade, in particular a common border is not just a proxy of geographical location, but also of other factors: similitude, migration flows, etc. which have a certain effect on trade. The same consideration can be made for the preferential schemes: preferential margins are different in magnitude, in addition they have a different size for different sub-groups, this result may depend on many factors among which the different size of the margin of trade preferences.

We provide additional details about the impact of preferential trade agreements[19].

[19] As a first measure of robustness we replace the general measure of economic size represented by GDP by production in each agricultural sector. Then we use both GDP and Productions and the signs of preferential margin are confirmed. Furthermore, when we replace GDP and Production with GDP per capita and Production per capita the results are the same. In our regressions if we include intra-EU trade, the results are confirmed. The sign of the coefficient of preferential margins continues to be positive and significant for GSP general scheme, GSP DRUG, EBA and ACP agreements. While the sign of MED is ambiguous.
Moreover, when we consider separately preferential margins and dummy variables the results change. The sign of the preferential margins are positive for GSP general scheme, GSP DRUG, EBA and ACP

Table 7: Poisson estimates

GDP IMPORTER	-2.948***
	[0.751]
GDP EXPORTER	0.101
	[0.098]
POP IMPORTER	16.601***
	[2.233]
POP EXPORTER	0.025
	[2.090]
DISTANCE	-1.737***
	[0.215]
BORDER	-0.488*
	[0.258]
LANGUAGE	0.363**
	[0.159]
COLONY	0.526***
	[0.128]
GSP	0.359**
	[0.153]
DRUG	0.038
	[0.080]
EBA	0.224**
	[0.112]
ACP	1.786**
	[0.834]
MED	-0.088
	[0.152]
Constant	-160.168***
	[31.015]
Observations	2188925

Robust standard errors in brackets * significant at 10%; ** significant at 5%; *** significant at 1%

and negative MED. At the same time, the sign of dummies is positive and significant for the GSP and ACP, while it is negative for GSP DRUG , EBA and MED.

TABLE 8: Poisson on sub groups

	Live Animals	**Fisheries**	**Prod. Animal Origin**	**fruits**	**Lacs, gum**
GDPIMPORTER	-0.473	-5.019***	-2.008***	-2.836***	-8.541***
	[4.347]	[0.731]	[0.563]	[1.019]	[1.791]
GDPEXPORTER	0.150	-0.096	0.037	0.025	-2.499*
	[0.314]	[0.131]	[0.049]	[0.266]	[1.359]
POPIMPORTER	9.897	21.709***	14.110***	23.472***	29.703***
	[9.018]	[1.906]	[1.828]	[5.291]	[5.048]
POPEXPORTER	9.008***	1.011	-1.270	3.170	-43.303
	[1.728]	[2.384]	[6.205]	[3.448]	[39.633]
DISTANCE	-1.602	-3.090***	-0.655	-2.083***	1.161
	[0.976]	[0.616]	[1.046]	[0.330]	[1.043]
BORDER	-2.891***	-1.113*	1.308	-0.841**	0.916
	[1.035]	[0.638]	[1.183]	[0.363]	[1.079]
LANGUAGE	-1.028	-0.065	0.746**	0.642***	-1.856
	[0.732]	[0.150]	[0.330]	[0.198]	[1.207]
COLONY	1.965***	0.676***	0.017	0.736***	1.062
	[0.661]	[0.253]	[0.239]	[0.143]	[0.862]
GSP	0.232*	1.575**	0.326	0.186	1.260***
	[0.124]	[0.708]	[0.248]	[0.402]	[0.467]
GSPPLUS	1.384	0.131	0.055	0.567	-0.349**
	[1.158]	[0.094]	[0.120]	[0.615]	[0.141]
EBA	-0.185**	-0.102	-1.560	-3.236*	-38.135
	[0.072]	[0.342]	[7.646]	[1.868]	[.]
ACP	5.159**	-0.136	-0.454	0.854	-50.951
	[2.519]	[2.303]	[0.510]	[0.653]	[.]
MED	0.337	-0.414*	-0.691	-0.376	
	[1.141]	[0.229]	[0.588]	[0.349]	
Constant	-179.140	-209.175***	-179.584	-366.459***	-119.576
	[0.000]	[19.152]	[0.000]	[114.668]	[705.936]
Observations	168936	286766	56200	567438	18347

Robust standard errors in brackets * significant at 10%; ** significant at 5%; *** significant at 1%

TABLE 9: Poisson on sub groups

	Oils and Fats	**Sugar**	**Dairy produce**	**Tropical fruits**	**Vegetables**	**Beverage & spirits**	**Residues food industry**
GDPIMPORTER	-3.139**	-2.379***	10.685	0.220	-0.194	3.397*	-2.200
	[1.597]	[0.775]	[21.177]	[2.241]	[2.029]	[1.784]	[1.950]
GDPEXPORTER	-1.219***	0.667*	-4.221***	-0.179	-0.444	-0.084	0.201
	[0.189]	[0.364]	[0.891]	[0.347]	[0.590]	[0.329]	[0.777]
POPIMPORTER	23.340***	20.528***	-93.156*	3.896	6.350	-9.180	23.150
	[4.074]	[2.828]	[54.638]	[11.535]	[10.693]	[13.381]	[17.153]
POPEXPORTER	-9.570**	-9.164***	-83.818***	-12.459	-4.977	10.030	6.575
	[4.094]	[1.087]	[31.171]	[9.911]	[5.170]	[14.964]	[6.631]
DISTANCE	-0.714	-1.803***	-0.542	-1.475***	-1.706***	0.568	-1.223***
	[0.973]	[0.263]	[0.384]	[0.325]	[0.335]	[0.415]	[0.356]
BORDER	1.759*	-1.270***	1.199	-0.007	-1.007*	2.915***	-0.320
	[0.953]	[0.339]	[0.736]	[0.487]	[0.573]	[0.766]	[0.212]
LANGUAGE	0.382	0.291	3.645***	0.683***	-0.187	1.285**	2.783***
	[0.304]	[0.200]	[1.064]	[0.185]	[0.657]	[0.639]	[0.711]
COLONY	0.067	0.421***	-0.946***	0.455**	1.590***	-0.074	-1.194**
	[0.137]	[0.024]	[0.308]	[0.223]	[0.197]	[0.257]	[0.573]
GSP	1.060	0.101	1.746**	0.142*	-0.058	0.522	-0.170***
	[0.804]	[0.142]	[0.860]	[0.080]	[0.092]	[0.586]	[0.045]
GSPPLUS	0.278***	-7.360*	-23.137**	-10.156	-0.012	-4.872	2.808
	[0.101]	[3.781]	[10.528]	[30.486]	[0.100]	[6.184]	[4.833]
EBA	20.458***	-7.917***	3.984	0.402*	0.395	1.561	1.629
	[4.484]	[0.613]	[3.327]	[0.210]	[0.381]	[2.450]	[31.678]
ACP	17.286***	-1.607***	0.339	2.662**	-0.606	-0.729	-0.085
	[3.796]	[0.526]	[0.472]	[1.120]	[0.969]	[1.310]	[0.449]
MED	-0.026		-21.304	0.334	-0.741		
	[0.233]		[46.663]	[0.381]	[0.751]		
Constant	-147.695	-230.311	1,746.735	148.679	24.285	-99.553	-403.527
	[112.702]	[0.000]	[0.000]	[0.000]	[152.564]	[161.027]	[0.000]
Observations	242818	18344	30860	193568	108027	58171	24484

Robust standard errors in brackets * significant at 10%; ** significant at 5%; *** significant at 1%

8. Some Economic considerations

In this section we try to provide some economic considerations on the results of this thesis work.

We start by OLS estimation to arrive at the Poisson regression model.

In OLS results we find that the overall value of the EU preferences are positive. In particular, the GSP general scheme and ACP have a strong effect on exports of DCs. The results for GSP PLUS, EBA and MED are positive but the magnitude of elasticity of the preferential margin is very low. In fact, if we analyze each preferential scheme we find that:

- if the preferences for GSP countries increase by 1% the EU imports increase by 7.2%, at the same time if the preferences for ACP countries increase by 1% EU imports from these countries increase by 2%.
- if we look at GSP PLUS, EBA and MED schemes, it emerges a very small effect on trade flows. In fact, if the preferences for GSP PLUS increase by 1% the EU imports rise by 0.001%, while the EU imports from EBA countries increase by 0.01% and finally EU imports from MED countries increase by 0.08%.

When we consider LSDV, the result change in magnitude: the increasing of preferential margins elasticity is more than in OLS estimates. Moreover only the EBA scheme has a negative but insignificant impact on trade flows.

Finally, looking at Poisson results we note that the growth of tariff elasticity is more than double the OLS coefficients:

- if the preferences for GSP countries increase by 1% the EU imports increase by 35.9%, at the same time if the preferences for ACP countries increase by 1% EU imports from these countries increase by 178.2%.
- if we look at GSP PLUS, EBA and MED schemes, the results in magnitude are different, in the sense that, even if the sign of the coefficients is positive their impact on the trade flows is almost insignificant. In fact, if the preferences for GSP PLUS increase by 1% the EU imports rise by 0.8%, while the EU imports from EBA countries increase by 22.4% and finally the EU imports from MED countries decrease by 0.08%.

These results suggest that regardless of: a) small domestic market of exporting countries; b) limited natural resources; c) the high level of EU protection; d) the

stringent rules of origin; d) the costs of trade preferences; e) the fact that many products DCs have zero MFN duties in EU market; f) the fact that some products have a small preferential margin; preferential trade does have some positive impact on trade. Obviously the nature of the impact differs from one preferential schemes to another.

A different picture of the agricultural sector emerges when we consider each individual preferential treatments. We start by making some consideration on the GSP preferential scheme.

In a general way, it (GSP DRUG and EBA included) has a positive impact on trade. In all regressions the GSP general scheme has a positive impact on the exports of DCs countries, this implies that preferential policy increases the exports to the EU market, even if the ACP agreement has an higher impact than the GSP scheme. Evidence can be found in some works, for example, Verdeja (2006), find that the GSP scheme positively affects the exports of DCs, although its impact is lower than ACP agreement. Similar results can be found in Nilsson (2002) and Subramanian and Wei (2007). In particular Subramanian and Wei (2007) find a significant and positive impact of the GSP treatment on total trade and a negative impact on disaggregated data (agro-food sectors). Aiello et al. (2008) find positive impact on total exports, even if the significance of GSP is small. Moreover when they analyze agricultural sector they find that GSP scheme has a strong effect. Persson and Wilhelmsson (2007), find that the largest effects come from ACP treatment while countries benefiting from the GSP preferences had no significant impact on their exports. The same result can be found in Cipollina and Salavatici (2007).

If we move on GSP DRUG we find that its impact on trade is small (3.8%), but if compared with other works our evidence is positive. In fact, our results are different from Persson and Wilhelmsson (2007), who find that GSP DRUG has a negative impact on exports of beneficiary countries.

Finally, referring to the EBA initiative our analysis suggests that it has a positive effect on the exports of LDCs. This result is in contrast to the recent literature on EBA treatment. Persson (2005) studies the impact of preferences to least developed countries within the GSP scheme between 1991 and 1999 and finds a negative influence of LDCs special arrangements on the export volumes of beneficiary countries. Brenton (2003) and Inama (2002a) arrive at the same conclusion and the commonly evoked explanation

of this result is the well documented underutilization of the LDCs schemes, mostly due to stringent rules of origin and other requirements, which make the costs of utilization greater than the corresponding benefits. Pishbahar and Huchet-Bourdon (2007) consider a panel data over the period 2000-2005 in order to measure with a gravity model the impact of Regional Trade Agreements on EU agricultural imports. They find that EBA scheme have a negative effects as regards agricultural exports of LDCs countries to EU and underline that EU agricultural imports from EBA countries decreased over the period 2000-2004

If we consider the commodity group we find positive and significant coefficient of the GSP general scheme on Animal Products (0.23), Fisheries (1.57), Lacs and Gums (1.26), Dairy Products (1.74) and Tropical Fruits (0.14). Aiello et al. (2008) find a positive impact of the GSP scheme only on the Meats sector, while the GSP for LDCs has a positive impact on Fruits and Vegetables. Finally, Cardamone (2008) examines Apples, Pears and Grapes and find that GSP has not effects on the exports of DCs.

Nevertheless unlike the literature, our evidence suggests that GSP preferential scheme is effective in promoting the exports of beneficiary countries.

9. Problem of Endogeneity

A Fundamental hypothesis of the linear regression is that $E(\varepsilon \mid X) = 0$, that is, the variables are exogenous and independent from the error. So the OLS estimator is consistent if and only if all of the regressors are uncorrelated with the errors. The exogenous variables are assumed to be statistically independent from all stochastic disturbance. But in some cases, it can be argued that some of the explanatory variables are correlated with the error term, so that the OLS estimator is biased and inconsistent.

A relevant problem for our analysis is represented by simultaneity. This refers to the possibility that not only the explanatory variable has an impact on dependent variables, but at the same time the dependent variables have an impact on the independent variable. Now if one or more explanatory variables in regression are endogenous, that is correlated with the error terms, the OLS estimator is biased and inconsistent. The correlation implies failure of both conditional independence and mean independence or orthogonality, so there is need for an alternative estimator. Instrumental Variables (IV) technique offer a possible solution to the endogeneity problem, brcause they enable us to obtain a consistent estimator when some regressors are correlated with the disturbances. The Instrumental Variable for endogenous variable *x* is an observable variable *z* that satisfies the following requirement:

- the instrument must be exogenous, that is $\text{cov}(z, \varepsilon) = 0$;
- the instrument must be correlated with the endogenous variable: $\text{cov}(z, \varepsilon) \neq 0$.

The instruments are variables that, in general terms, affect the endogenous variable but do not affect the outcome variable other than through its effect on the endogenous variable.

Consider the following model:

$$= {}_1 + {}_2 +$$

method is a general approach to estimate a single equation in a system of equations. When we have many variables the most efficient way to choose an instrumental variable is to use 2SLS. At the first stage we project the endogenous regressor on all exogenous variables; at the second stage we use the fitted value in place of x in the structural equation. Since the assumption $\text{cov}(z, \varepsilon)$ can be observed we have to use an alternative way to test the previous assumption. The most commonly used test is the Hausman Test based on a comparison of the OLS and IV estimates. Under the null hypothesis of no

endogeneity, OLS is consistent and efficient while IV is consistent but inefficient, the difference between OLS and IV estimates should be normally distributed with zero mean. If endogeneity exists only IV is consistent.

In our gravity equation there could be an endogeneity problem: the trade flows between two countries may affect the probability of signing a PTAs. In order to verify if the Preferences are endogenous we use the Hasuman endogeneity test.

We use the following instruments: POLITY[20], Empix and Workers Right[21], Fiscal Freedom, Investment Freedom, Financial Freedom, Governament Size, Freedom of Corruption[22]. Table 10 reports Hausman test: the p values allow us to reject the hypothesis of no endogeneity of the preferential margin.

As coefficients from both OLS and IV estimates are not significantly different, we cannot reject the null hypothesis that additional instruments are valid.

[20] The polity score is drawn from the POLITY IV database. It is available at http://www.cidcm.umd.edu/inscr/polity/. It has a range from -10 (high autocracy) to +10 (high democracy).

[21] Workers Right is drawn from the Cingarelli-Richards Human Right (CIRI database 2006). Workers Right variable assume following values: several restricted (0), somewhat restricted (1) and fully protectd (2).

[22] Economic freedom index is available at http://www.heritage.org/Index/. Fiscal freedom is a measure of the burden of government from revenue side. It includes both the tax burden in terms of the top tax rate on income and the overall amount of tax revenue as a portion of gross domestic product. The fiscal freedom is composed of three quantitative components in equal measure: a) the top tax rate on individual income, b) the top tax rate on corporate income, c) total tax revenue as a percentage of GDP. Government Size includes all government expenditure. Investment Freedom is an assessment of free flow capital. Financial Freedom is a measure of banking security as well as independence from government control. Freedom from corruption is based on quantitative data that asses the perception of corruption in the business environment, including level of governmental, judicial and administrative corruption.

Table 10: Hausman test

COEFFICIENTS

	(b) iv	(B) ols	(b-B) Difference	sqrt(diag(V_b-V_B)) S.E.
GSP	-2.787519	.0130684	-2.800587	5.027994
GSPP	1.249796	.0427565	1.20704	2.870192
EAB	-119.2307	.0614316	-119.2921	245.7936
ACP	-4.121271	.0024707	-4.123742	15.76175
MED	-.7029799	-.0018632	-.7011167	4.068847
GDPIMP	-3.901606	-.2951571	-3.606449	8.369525
GDPEXP	-4.219888	.2137161	-4.433604	10.49325
POPIMP	4.180563	.6573408	3.523222	8.354072
POPEXP	2.791263	-.0709167	2.86218	6.465209
DIST	1.550102	.05469	1.495412	3.122264
BORDER	.2591588	.415486	-.1563272	1.739564
LANGUAGE	.180223	-.1570396	.3372625	2.426247
COLONY	1.626304	.2050625	1.421242	1.520422

b = consistent under Ho and Ha; obtained from ivreg2
B = inconsistent under Ha, efficient under Ho; obtained from regress

Test: Ho: difference in coefficients not systematic

chi2(13) = (b-B)'[(V_b-V_B)^(-1)](b-B)
= 4.44
Prob>chi2 = 0.9855

10. Conclusions

The EU grant preferential access to its agricultural markets under preferential trade agreements for different country groups. The agricultural sector is a crucial resource for most poor countries and, for this reason, preferential trade policies can play a fundamental role in these economies.

In this chapter we have investigated the effects of the GSP, with the aim to verify if this particular scheme has encouraged the growth of exports from GSP beneficiary countries.

In the economic literature, the effect of the EU GSP preferential scheme is controversial, even if many authors also agree that the EU GSP scheme is rather generous when compared to similar schemes granted by other developed countries, for example Japan or United States. Some studies show that this scheme does not have a large impact on exports of DCs (Nilsson 2002, Persson and Wilhelmsson 2005, Verdaja 2006, Cipollina and Salvatici 2007, Demaria et al. 2008). From other works it emerges a negative effect on bilateral trade flow (Oguledo and Macphee 1994, Subramanian and Wei 2005, Pishbahar and Huchet-Bourdon 2007). Moreover some authors point out that limited product coverage, administrative costs and domestic supply-side problems have limited the potential benefits of preferences.

The impact of preferences has been assessed by CGE modeling, gravity modeling, or simply by focusing on trade flows using indicators such as product coverage and preferential margin.

In this chapter we have carried out an empirical analysis on the impact of the EU GSP scheme on the agricultural sector. We have focused on the impact of the non reciprocal preferential schemes (GSP, GSP DRUG and EBA) and we have estimated the impact of preferential margin of these schemes on the export flows of beneficiary countries by using a gravity equation.

The gravity model explains the pattern of bilateral trade among nations and its evolution over time considering the impact of some fundamental variables. For the purpose of our analysis we have addressed issues related to the presence of zero trade flow and to the measure of preferential trade agreements. Generally, Gravity Models capture the impact

of preferential trade agreements through dummy variables, we used a quantitative variable to take into account the size of the preference offered to developing countries. We introduced preferences in the model through the value of the preferential margin. In addition we have used disaggregated data at the HS6 digit level. Our gravity model includes trade among 169 exporting countries and EU-15 members for 763 agricultural product lines.

Following Santos Silva and Tenreyro (2006), we model the preferences for agrifood products (HS01 to HS24) granted by the EU under its GSP scheme from 2001 to 2004 using PQML in order to measure the effective impact of this scheme and to compare it with other EU preferential schemes (ACP, Med).

This chapter also provides empirical evidence on the performance of the PMQL in comparison with the OLS estimator, the estimation of parameters by both OLS and PQML allows us to investigate the extent, magnitude and appearance of DCs and LDCs on the agricultural market.

We considered both total agricultural trade and trade for sub group of products. Our results show that the sign of the preferential margin coefficients are positive and statistically significant for the GSP general scheme, GSP DRUG, and EBA, but the magnitude among them is different. In terms of commodity groups we find positive and significant coefficients of the GSP general scheme on Animal Products, Fisheries, Lacs and Gums, Dairy Products and Tropical Fruits. While GSP DRUG has a positive impact on Oils and Fats; finally EBA preferential scheme has positive impact on following products: Oils and Fats, Tropical Fruits.

The pictures is completely different from the literature and our evidence suggests that GSP preferential scheme is effective in promoting the exports of beneficiary countries. Thus, according to our evidence, the GSP scheme does have some positive effect in terms of growth of exportations of DCs.

CONCLUSION

The aim of this thesis has been to provide an evaluation of the GSP of the European Union. Through an empirical analysis we have been able to show that this scheme has had a positive influence on the exports of developing countries.

The PTAs produce important effects both from the point of view of the welfare of the member countries but also on those countries that remain outside, even if the debate on the effectiveness of the agreements is still open in the literature. Even today there are discussions on whether preferential schemes lead to trade creation or trade diversion and the studies conducted on this theme have, in fact, produced contrasting results (Krugman, 1991; Baldin and Venables, 1995; Krueger, 1999; Winters, 1993; Bhagwati, 1998; Panagariya, 1998; Cadot et al., 2001). The increase of trade tends to increase the welfare of the countries that have sign up to an agreement, while trade diversion leads to the inefficient allocation of resources.

In the ambit of the GSP, the research has concentrated on the agricultural sector, since preferential tariffs on agricultural goods have a particular status; on one hand, many MFN tariffs are excessively high, while on the other, because of the sensitive nature of their agricultural policies, many developed countries have always shown a certain reluctance to concede more meaningful tariff cuts.

There is no consensus in the literature on the GSP on the effects the scheme produces on the exports of developing countries. While a number of studies emphasize how the GSP has a negative effect on the exports from the said countries (Nilsson, 2002; Persson and Wilhelmsson, 2005; Verdeja, 2006); others have shown how its impact on the economies of developing countries has been positive, even if these effects in terms of growth of exports could be greater than what has been seen so far (Bureau, Chakir, Gallezot, 2006; Cardemone, 2007, OECD, 2007; Demaria et al., 2008).

The gravitational equation is the instrument used by most studies in the literature to capture the effects of PTA (Manchin, 2005; Aiello et al., 2008; Martinez-Zarzoso, 2003; Nilsson, 2002; Verdeja, 2006; Ozden, Hoekman, 2005).

The present study has tried in part to overcome the limits that have hindered scientific efforts so far, limits connected with the use of aggregated data, that have the drawback of providing insufficient information, and in the use of dummy variables to measure the impact of trade preferences that, nevertheless, have the drawback of gathering a series of special effects of the countries in question.

Only recently have certain authors decided to use specific measures, these are preferential tariffs and preferential trade margins in order to assess the effect of ACPs (Emingler et al., 2007; Cipollina and Salvatici, 2007; Cardamone, 2008).

In order to identify different agricultural product lines we have used in this study the harmonized system (HS) for the designation of goods that allows us to obtain a six-figure level of data disaggregation (HS6). On the one hand, this system allows us to identify the protection and the preferences that the EU applies at product level, on the other it gives us the opportunity to observe the trade flow between different agricultural goods benefiting from different levels of protection. Moreover, as tariffs are set at a 10 digit level of disaggregation, the use of HS6 offers the chance to obtain information that would otherwise be invisible at any other level of disaggregation.

In the study the impact of trade preferences is captured through the use of the preferential trade margin. This measure, which is calculated as the ratio between the preferential trade margin and the MFN tariff, is unlike dummy variables insofar as it allows us to take account of the different levels of protection that the EU grants not only to different individual products, under the various preferential regimes, but also to different groups of countries.

Finally, as regards methodology, this analysis is able to control for certain potential causes of distortion in the econometric estimates, i.e., non observed heterogeneity, zero trade flows and the possible endogeneity of the regressors. The work makes use of the following econometric techniques: OLS, LDVS and the Poisson model. The first two techniques were used to compare the results of the study with those

found in the literature, while the Poisson model was used to verify its performance and to control for zero trade flows. Poisson's model was first used to analyze the impact of PTAs by Santos Silva and Tenreyro (2006), albeit only for aggregated trade flows.

As regards non observed heterogeneity, we took into consideration factors that vary between the units and are constant over time (i.e., individual non observed characteristics of each country, such as a country's export capacity). With reference to zero trade flows, most studies in the literature do not take into consideration the possibility that some countries may not produce a certain agricultural lines. Last, we controlled for the possibility of endogeneity between developing country exports and different preferential trade margins.

The final database is the result of the employment of five different databases: UN Comtrade, FAOSTAT Agricultural data, MACMAP, DBTAR and World Bank WDI.

The sample considered in the analysis was made up of 169 developing and least developed countries, 763 agricultural product lines with reference to the temporal period 2001-2004. The research is confined to this period because the DBTAR database only covers these years.

The econometric analysis was conducted through the use of both disaggregated data (763 agricultural lines) and homogeneous product categories (animal products, beverages and spirits, cereals, coffee and tea, dairy products, fisheries, fruit and vegetables, lac and gums, live trees, oils and fats, other plants, food industry residues, sugar, tropical fruits and tobacco).

The econometric tests based on the two samples illustrated the positive effects of PTAs and the GSP in particular.

Turning attention to the analysis of the 763 agricultural product lines, we can see that the results show that the GSP generates positive effects, even if the impact of this scheme is less that in the case of the Cotonau agreement. Our result is in line with that found in the literature (Verdeja, 2006; Nilsson, 2002; Manchin, 2005) and can be attributed to various factors: the rules of origin, the dearth of infrastructure, the lack of innovation, minimum quality standards in the private and public sector, all of which

hinder developing and least developed countries to take full advantage of the potential benefits of the scheme considered.

Positive effects were also recorded in the case of GSP DRUG and EBA, even if the results for the latter are conflicting. Finally, a negative sign was found for countries of the Mediterranean basin. The analysis conducted on 14 homogeneous product categories shows that the GSP produces positive and significant effects for the following agricultural products: fisheries, fruit and vegetables, oils and fats, coffee and tea; while for dairy products, beverages, tobacco and live trees the effect was positive but not significant. In the remaining categories the effect was positive but not significant.

As regards GSP DRUG the impact was negative on all the agricultural products considered, whereas EBA had a positive influence on the following: animal products, live trees and other plants, dairy products, coffee and tea, cereals and beverages; on the other hand, a negative impact was found for oils and fats, tobacco, fisheries, and fruit and vegetables. EBA countries do not benefit as regards the following products: coffee and tea, fisheries, fruit and vegetables and tobacco; while positive effects were found for live animals, oils and fats and tropical fruits. Finally, for the countries of the Mediterranean basin positive effects were recorded for fruit and vegetables and cereals.

In conclusion, the countries treated in this paper have: small economies and limited resources; and, even when the preferential concessions are taken into account, protection barriers are still high; moreover, there are various factors, such as rules of origin administrative costs and so, that have a negative impact on take up. Nevertheless, the analysis presented in this thesis on the impact of ACP on the exports of developing countries would suggest that, SPG produces an albeit limited positive effects on the exports of these countries.

CONCLUSIONI

L'obiettivo che si è voluto perseguire con questo lavoro di tesi è di fornire una valutazione del SPG dell'UE. Mediante l'analisi empirica si è verificato se tale schema ha positivamente influenzato le esportazioni dei PVS.

Il dibattito sugli effetti prodotti dagli APC è tutt'ora aperto in letteratura. Ancor oggi, si discute se i regimi preferenziali creino flussi di commercio (*trade creation*) o devino quelli preesistenti (*trade diversion*); gli studi condotti sull'argomento contengono, infatti, risultati contrastanti (Krugman, 1991; Baldwin e Venables, 1995; Krueger, 1999; Winters, 1993; Bhagwati, 1998; Panagariya, 1998; Cadot et al., 2001). L'aumento degli scambi commerciali tende ad aumentare il benessere dei paesi aderenti all'accordo; mentre la diversione del commercio comporta un'inefficiente allocazione delle risorse.

Nell'ambito della valutazione del SPG, la ricerca si è soffermata ad analizzare l'impatto sulle importazioni agricole dell'UE. Questa scelta è in parte dovuta al fatto che le preferenze tariffarie dei beni agroalimentari godono di uno status particolare. Da un lato molti dazi MFN sono eccessivamente alti; mentre dall'altro lato, molti paesi sviluppati hanno, da sempre, manifestato una certa ritrosia a concedere preferenze tariffarie più incisive in molti comparti agricoli. Questo è da ricondurre alla natura delle politiche agrarie prevalentemente finalizzate a proteggere gli interventi dei produttori.

La letteratura che si occupa del SPG non è concorde sugli effetti che produce sulle esportazioni dei PVS. Infatti, mentre una parte di essa sottolinea come il SPG abbia un effetto negativo sui flussi commerciali dei paesi beneficiari delle tariffe preferenziali (Nilsson 2002; Persson and Wilhelmsson 2005; Verdeja 2006), altri studi evidenziano come il suo impatto sulle economie dei PVS sia positivo, sebbene gli effetti in termini di crescita delle esportazioni potrebbero

essere maggiori rispetto a quanto prodotto sino ad oggi (Bureau, Chakir, Gallezot, 2006; Cardamone, 2007; Oecd, 2005; Demaria et al., 2008).

L'equazione gravitazionale è lo strumento che la maggior parte degli studi presenti in letteratura utilizza per cogliere gli effetti degli APC (Manchin, 2005; Aiello et al. 2008; Martinez-Zarzoso, 2003; Nilsson 2002; Verdeja, 2006; Ozden, Hoekman 2005).

Il presente studio intende fornire un'ulteriore evidenza empirica sull'efficacia del SPG utilizzando il modello gravitazionale e cercando di superare una parte dei limiti che la produzione scientifica corrente presenta. Questi limiti consistono nell'utilizzo di dati aggregati (che presentano l'inconveniente di fornire limitate informazioni sui flussi oggetto del trattamento preferenziale, e sulla corrispondenza tra politiche preferenziali e settori che ne beneficiano) e nell'uso di dummy variables per misurare l'impatto delle preferenze commerciali (che, tuttavia, presentano l'inconveniente di cogliere, anche, una serie di effetti specifici dei paesi considerati).

Solo recentemente, alcuni autori hanno utilizzato di misure specifiche del trattamento preferenziale, basato sulle tariffe preferenziali e il margine di preferenza commerciale (Emingler et al., 2007; Cipollina e Salvatici, 2007; Cardamone, 2008).
Per individuare le differenti linee agricole, in questo studio, si è utilizzato il sistema armonizzato (HS) di designazione delle merci, che permette di ottenere un livello di disaggregazione dei dati pari a 6 digit (HS6). Tale sistema, da un lato consente di individuare la protezione e le preferenze che l'UE applica a livello di prodotto, dall'altro permette di conoscere il flusso tra i diversi beni agricoli beneficianti di differenti livelli di protezione. Inoltre, poiché le tariffe vengono fissate ad un livello di disaggregazione dei dati pari a 10 digit, l'utilizzo di HS6 offre l'opportunità di ottenere informazioni che sarebbero, al contrario, non visibili qualora venissero utilizzati dati a livello aggregato.

Nello studio l'impatto delle preferenze commerciali viene colto attraverso l'impiego del margine di preferenza commerciale. Tale misura, che per definizione è la differenza tra la MFN e la tariffa preferenziale accordata per prodotto, viene calcolata come rapporto tra il margine di preferenza commerciale e la tariffa MFN. Esso a differenza delle variabili dicotomiche consente di tener conto del diverso grado di protezione che l'UE accorda non solo ai singoli prodotti, sotto i differenti regimi preferenziali, ma anche ai diversi gruppi di paesi.

Infine, da un punto di vista metodologico, questa analisi controlla per alcune potenziali cause di distorsione nelle stime econometriche, cioè, si tiene conto dell'eterogeneità non osservata, della presenza dei flussi commerciali pari a zero e dell'eventuale endogeneità dei regressori. Nel lavoro si è ricorso alle seguenti tecniche econometriche: OLS, LDVS e il modello di Poisson. Le prime due tecniche sono state impiegate per comparare i risultati del presente studio con quelli ottenuti dalla precedente letteratura, mentre l'ultimo metodo è stato usato per tener conto della selezione del campione. Il modello di regressione di Poisson è stato, per la prima volta, utilizzato per analizzare l'impatto degli APC da Santos Silva and Tenreyro (2006), i quali, però, si sono limitati ad utilizzare flussi commerciali aggregati.

Con riferimento all'eterogeneità non osservata, si sono presi in considerazione i fattori, cioè le caratteristiche individuali non osservate dei singoli Paesi (per esempio la capacità di esportare di un paese), che variano fra le unità e sono costanti nel tempo. Per quanto riguarda la presenza di flussi commerciali pari a zero, la maggior parte degli studi presenti in letteratura non tiene conto della possibilità che alcuni paesi possano non produrre una certa linea agricola. Grazie all'impiego del modello di regressione di Poisson, nel lavoro di tesi si tiene conto dei flussi commerciali nulli. Infine si controlla per l'eventuale endogeneità tra le esportazioni dei PVS e i differenti margini di preferenza commerciale.

La banca dati finale è il risultato dell'impiego di cinque differenti banche dati: UN Comtrade; FAOSTAT Agricultural data; MACMAP; DBTAR ed infine

World Bank WDI. Il campione preso in analisi risulta così essere costituito da 169 paesi tra PVS e paesi meno sviluppati (PMS), da 763 linee agricole e il periodo temporale di riferimento è il 2001-2004. La ricerca è limitata a questi anni perché la banca data utilizzata per calcolare il margine di preferenza commerciale fa riferimento a questo periodo temporale (DBTAR).

L'analisi econometrica è stata condotta utilizzando sia dati disaggregati (763 linee agricole) che categorie omogenee di prodotto (animal products, beverages and spirits, cereals, coffee and tea, dairy products, fisheries, fruits and vegetables, lac and gums, live trees, oils and fats, other plants, residues food industries, sugar, tropical fruits and tobacco).

Le verifiche econometriche derivanti dall'uso dei due campioni, mette in luce l'effetto positivo degli APC e del SPG, in particolare.

Focalizzando l'attenzione sull'analisi condotta sulle 763 linee di prodotti agricoli, i risultati ottenuti dimostrano che il SPG genera effetti positivi, anche se l'impatto che tale schema produce è minore rispetto a quello fornito dall'accordo di Cotonou. Tale risultato è in linea con quello della prevalente letteratura (Verdeja, 2006; Nilsson 2002, Manchin, 2005) e può essere attribuito a diversi fattori, quali per esmpio: le regole dell'origine, la carenza di infrastrutture, la mancanza di innovazioni, gli standard qualitativi minimi pubblici e privati, che impediscono ai PVS, così come ai PMS, di sfruttare i potenziali benefici dello schema.

Anche per il SPG DRUG e per L'EBA si registrano effetti positivi, tuttavia i risultati ottenuti per quest'ultimo schema sono controversi. Infine si riscontra, un segno negativo per i paesi appartenenti all'area del bacino del mediterraneo.

L'analisi condotta sulle 14 categorie omogenee di prodotto evidenzia che il SPG produce effetti positivi e significativi per le seguenti produzioni agricole: fisheries, fruits and vegetables, oils and fats, coffee and tea, mentre per: dairy products, beverages, tobacco, live trees si manifesta un impatto negativo; infine per le restanti categorie si riscontra un impatto positivo ma non significativo. Il GSP DRUG presenta un impatto negativo su tutte le produzioni agricole

considerate. L'EBA ha un influenza positiva sui seguenti prodotti: animal products, live trees and other plants, dairy products, coffee and tea, cereals and beverages, al contempo si riscontra un impatto negativo per oils and fats, tobacco, fisheries, and fruits and vegetables. I paesi ACP non beneficiano di effetti postivi per i seguenti prodotti: coffee and tea, fisheries, fruits and vegetables and tabacco; mentre si mostrano effetti positivi per: live animals, oils and fats and tropical fruits.

Infine i paesi appartenenti all'area del bacino del mediterraneo usufruiscono di effetti positivi solo per fruits and vegetables and cereals.

L'analisi presentata in questa tesi suggerisce che il SPG dell'UE ha determinato un aumento delle esportazioni de paesi che, che periodo 2001-2004, hanno beneficiato del trattamento preferenziale. Questo risultato è particolarmente importante, anche perché è avvenuto in uno scenario internazionale in cui la tendenziale liberalizzazione degli scambi sta determinando l'erosione dei margini di preferenza commerciale che i PVS godono sui mercati di destinazione delle loro esportazioni.

References

Achterbosch T., Tongeren F. van, and de Bruin S. (2003). *"Trade preferences for developing countries"*. Agricultural Economics Research Institute (LEI), The Hague.

Adam, R., Dee, P., Gali. J., McGuire, G. (2003). "The Trade and investment effects Of Preferential Trading Arrangements: Old and New Evidence". Staff Working Paper Productivity Commission.

Aggarwal V. and Fogarty E.A., (2004). "EU Trade *Strategies, Between Regionalism and Globalism"*. Palgrave Macmillan Press.

Agostino M., Aiello F. and Cardamone P., (2008). "Evaluating the Impact of Non-Reciprocal Trade Preferences Using Gravity Models". *Applied Economics vol. p. 1-16.*

Aiello, F. (1997). "Is it so important to be preferred? The Effects of Trade Preferencial policies Granted to ACP under the Lome' Convention", in *Rivista di Coltura Tropicale e Sub-Tropicale*.

Aiello, F. (2002). "Financial Stabilization System, Economic Growth of Developing Countries and EU's STABEX", *in Journal of Agricultural and Environment for International Development, vol. 96, no. ½, pp. 23-51*.

Alexandreki K. and H.P. Lankes (2004). "*Estimating the impact of preference erosion on Middle- Income countries"*, IMF Working Paper, July.

Anania, G. (1989). "Welfare Implications of a Preferential Tariff Reduction for Agricultural Exports from Less Developed Countries vs. a Generalized Tariff Reduction". *Agricultural Economics, 3. Elsevier Science Publishers B.V., Amsterdam, pp. 23-48*.

Anderson J.E. and E. Van Wincoop (2003). "Gravity with gravitas: a Solution to the Border Puzzle)", *American Economic Review, 93, 1, pp.170-192*.

Anderson J.E. and E. Van Wincoop (2003). "Gravity with gravitas: a Solution to the Border Puzzle)", *American Economic Review, 93, 1, pp.170-192.*

Anderson, J., and van Wincoop, E. (2004). "Trade Costs". *Journal of Economic Literature, 42(3), 691–751.*

Anson J., Cadot O., Estevadeordal A., De Melo J., Suwa-Eisenmann A. And Tumurchudur B., (2005). "Rules of Origin in North-South Preferential Trading Arrangements with an Application to NAFTA.

Augier P., Gasiorek M., Lai Tong C., Martin P., Prat A., (2005). "The impact of rules of origin on trade flows". *Economic Policy, vol. 43, pp. 567-624.*

Baldwin, R. and Venables, A. (1995). "Regional economic integration", In G. Grossman e K. Rogoff, eds., *Handbook of international economics, Vol. III, Elsevier Science BV, pp.1597-644.*

Baltagi, B.H., Egger, P. and Pfaffermayr. M. (2003). "A generalized design for bilatera1 trade flow models". *Economic Letters, 80.*

Bhagwati, J. and Panagariya A. (1996a). "Preferential Trading Areas and Multilateralism: Strangers, Friends or Foes?" . *The Economics of Preferential Trade Agreements pp. 1-78*. Washington, DC: AEI Press.

Bhagwati, J. and Panagariya A. (1996b). "The Theory of Preferential Trade Agreements: Historical Evolution and Current Trends". *American Economic Review 86:2, pp. 82-87.*

Bhagwati, J., Greenaway, D., and Panagariya A., (1998). "Trading Preferentially: Theory and Policy". *The Economic Journal 108:449, pp. 1128-48.*

Bianchi, E., Rozada, M.G., Sanguinetti, P., (2005). "*Market Access Gains in US and EU's Agricultural Import Market: Estimates Based on Bilateral Trade*". Working Paper.

Bora, B., Cernat, L. and A. Turrini (2002). *"Duty and Quota-Free Access for LDCs: Further Evidence from CGE Modelling"*. UNCTAD, New York.

Bouët A., S. Jean and L. Fontagné (2005). *"Is erosion of preferences a serious concern?", in Agricultural Trade Reform and the Doha Development Agenda*, edited by K. Anderson and W.

Brenton P. (2003). "Integrating The Least Developed Countries into the World Trade System: The Current Impact of EU Preferences Under Everything But Arms". *Journal of World Trade, june, Vol. 37, no. 3; p. 623-46.*

Brenton P. and M. Manchin (2002). "Making EU Trade Agreements Work: The Role of Rules of Origin", CEPS Working Paper 183.

Brenton P. and C. Ozden (2005). "Trade Preferences for Apparel and the Role of Rules of Origin" *The World Economy 26(5), p. 755-69.*

Brenton P. and T. Ikezuki (2005). "*The Impact of Agricultural Trade Preferences, With Particular Attention to the Least-Developed Countries", in Global Agricultural Trade and Developing Countries*, M. Ataman Aksoy and John C. Beghin (eds.), World Bank, Washington, DC.

Brenton, P. (2003). *"Integrating the Least Developed Countries into the World Trading System: The Current Impact of EU Preference under Everything But Arms"*. Working Paper no. 3018, World Bank, Washington, D.C.

Brown D. (1988). "Trade Preferences for Developing Countries: A Survey of Results." *The journal of Development Studies vol. 24, No. 3, p.335-63.*

Bun M.J.G., Klaassen F. J.G.M. (2006). "The Euro Effect on Trade is not as Large as Commonly Thought". *Oxford Bulletin of Economics and Statistics. CAM working paper n. 2005-14* Department of Economics, University of Copenhagen.

Bureau J-C. and J. Gallezot (2004). "Assessment of Utilisation and Motives for Under-Utilisation of Preferences in Selected Least Developed Countries", *COM/AGR/TD/WP(2004)12/REV2, OECD, Paris.*

Bureau J-C., S. Jean and A. Matthews (2006). "The consequences of Agricultural trade liberalization for developing countries: distinguishing between benefits and false hopes". *World Trade Review.*

Burfisher, M., Pick, D., Pompelli, G., Zahniser, S., (2001). "North American trade in an Era of Multiple Trade Agreements: A Gravity Analysis". Paper presented at the annual meeting, American Agricultural Economics Association and Canadian Agricultural Economic Society, Chicago, August 5-8.

Cadot O., J. De Melo and A. Portugal-Perez (2006). "Rules of Origin for Preferential Trading Arrangements: Implications for the ASEAN Free Trade Area of EU and US Experience." *World Bank Policy Research Working Paper N°4016.*

Candau F. and S. Jean (2005). "*What are the EU preferences worth for Sub-Saharan Africa and other developing countries."* CEPII working paper 2005-19.

Cardamone, P., (2007), *"A Survey of the Effectiveness of Preferential Trade Agreements using Gravity Models"*, TRADEAG Working Paper

Cardamone, P., (2008), "*Preferential Trade Agreements for European imports of apples, pears and graphes: an application of the gravity model using monthly data*", TRADEAG Working Paper.

Carrere C. and J. de Melo (2004). "*Are Different Rules of Origin Equally Costly? Estimates from NAFTA", CEPR Discussion Paper, No. 4437.*

Carrère C., (2006). "Revisiting the Effects of Regional Trade Agreements on Trade Flows with Proper Specification of the Gravity Model". *European Economic Review*

Cernat, L., S. Laird., L. Monge-Roffarello and A. Turrini (2003). *"The European Union's Everything But Arms Initiative and Least Developed Countries."* UNU/WIDER Discussion Paper No. 2003/47.

Chaney, T., (2005). "Distorted Gravity: Heterogeneous Firms, Market Structure and the Geography of International Trade, *Job market paper, MIT.*

Cheng I., Wall, H. J., (2004). "Controlling for Heterogeneity in Gravity Models of Trade", *Working Paper 1000-010C , Federal Reserve Bank of St. Louis.*

Cipollina M. and Salvatici L. (2007). *"EU and Developing Countries: the Impact of Preferential Margins on Agricultural Trade"*. Working Paper. University of Molise.

Cipollina, M., and Salvatici, L., (2005), "Reciprocal Trade Agreements in Gravity Models: A Meta-Analysis". European Commission, TradeAg Project Working Paper

Corden, W. M. (1972). "Economies of scale and customs union theory", *Journal of Political Economy, 80, pp. 465-75.*

Crawford, J.A. and Laird S. (2003). "Regional Trade Agreements and the WTO"; *Credit Research Paper 00/3.*

De Benedictis L. and Vicarelli C., (2004). *"Trade Potentials in Gravity Panel Data Models"*. WP No. 44

De Benedictis, L., De Santis, R., Vicarelli C. (2005). "Hub-and-Spoke or Else? Free Trade Agreements in the Enlarged EU A Gravity Model Estimate". *ENEPRI Working Paper No. 37/June 2005*

Demaria, F., Droguè. S., Matthews, A., (2008). "Agro-food Preferences in the EU's GSP Scheme: an Analysis of Changes Between 2004 and 2006". *Development policy review vol. 26 an.6 p. 693-712.*

De Melo, J.A., Paganariya, A. and Rodrick D. (1993). *"The New Regionalism: a Country perspective"*. Chapter 6 in De Melo J.A., Paganariya, A. (eds) New Dimension in Regional Integration. Centre for Economic Policy Research, Cambridge University Press.

De Santis, R., Vicarelli C., (2006). "The European Union Trade Strategy. An Empirical Evaluation of Preferential Trade Agreements effects on EU import Flows".

Deardoff A.V. (1998). "Determinants of Bilateral Trade: Does Gravity Work in Neoclassical World?" in Jeffrey A. Frankel (ED) *The Regionalisation of the World Economy, Chicago, University of Chicago Press for NBER, pp.7-22.*

Deardorff, A.V. (1999). "Economic Implications of Europe-Maghreb Trade Agreements". Recent RSIE Discussion Papers No. 442.

Disdier, A.C., Fontagné, L., Minouni, M. (2006), *"The Impact of Regulations on Agricultural Trade: Evidence from SPS and TBT Agreements,"* Working Paper, Centre d'Etudes Prospectives et d'Informations Internationales, Paris.

Egger P., (2002). "An Econometric View on the Estimation of Gravity Models and the Calculation of Trade Potentials" *World Economy, vol.25, pp.297-312*

Egger, P., (2004). "On the Problem of Endogenous Unobserved Effects in the Estimation of Gravity Models". *Journal of Economic Integration, 19(1), 182–191.*

Egger, P., (2005). "Alternative Techniques for Estimation of Cross Section Gravity Models". *Review of International Economics, vol. 13 n. 5 pp. 881-891*

Egger, P., & Pfaffermayr, (2003). "The proper panel econometric specification of the gravity equation: A three-way model with bilateral interaction effects". *Empirical Economics, 28(3), 571–580. 138*

Emlinger C., Chevasuss Lozza E., Jacquet F. (2006). "EU Market Access for Mediterranean fruit and vegetables: A gravity mode assessment". Paper presented at the ETSG 2006 – 8th Annual Conference, 7-9 September 2006, WiW Universität, Wien.

Estevadeordal A and Robertson R., (2005). "Do Preferential Trade Agreements Matter for Trade? The FTAA and Pattern of Trade."

Estevadeordal A., Frantz A.B. and Taylor A (2003). "The Rise and Fall of World Trade, 1870-1939", Quarterly Journal of Economics 118, (2), 359-407Evenett S.J. and Keller W., (2002), "On Theories Explaining the Success of Gravity Models", *Journal of Political Economy, vol.110, pp.281-316.*

EU Commission (1999a), Official Journal L 311, 04/12/1999, pp. 0003–0415, Agreement on Trade, Development and Cooperation between the European Community and its Member States, of the one part, and the Republic of South Africa, of the other part - Protocol 1 concerning the definition of the concept of 'originating products' and methods of administrative cooperation - Protocol 2 on mutual administrative assistance in customs matters - Final Act – Declarations.

EU Commission (2000a), Official Journal L 317, 15/12/2000, pp. 0003–0353, 2000/483/EC: Partnership agreement between the members of the African,

Caribbean and Pacific Group of States of the one part, and the European Community and its Member States, of the other part, signed in Cotonou on 23 June 2000 - Protocols - Final Act – Declarations.

EU Commission (2000b), Official Journal L 276, 28/10/2000, pp. 0045–0079, Economic Partnership, Political Coordination and Cooperation Agreement between the European Community and its Member States, of the one part, and the United Mexican States, of the other part - Final Act – Declarations.

EU Commission (2000c), Official Journal L 157, 30/06/2000, pp. 0010–0029, Decision No. 2/2000 of the EC-Mexico Joint Council of 23 March 2000 - Joint Declarations.

EU Commission (2001a), Official Journal L 346, 31/12/2001, pp. 0001–0060, Council Regulation (EC) No. 2501/2001 of 10 December 2001 applying a scheme of generalised tariff preferences for the period from 1 January 2002 to 31 December 2004 - Statements on a Council Regulation applying a scheme of generalised tariff preferences for the period from 1 January 2002 to 31 December 2004.

EU Commission (2001c), Official Journal C 260, 17/09/2001, pp. 0067–0078, Opinion of the Economic and Social Committee on the "European Union negotiations with MERCOSUR and Chile: economic and social aspects".

EU Commission (2001d), Official Journal C 270 E, 25/09/2001, pp. 0024–0076, Proposal for a Council Regulation applying a scheme of generalised tariff preferences for the period 1 January 2002 to 31 December 2004, COM/2001/0293 final - ACC 2001/0131.

EU Commission (2002a), The European Community's Rules of Origin for the Generalised System of Preferences - A Guide for Traders.

EU Commission (2002b), Official Journal L 352, 30/12/2002, pp. 0003–1450, Agreement establishing an association between the European Community and its Member States, of the one part, and the Republic of Chile, of the other part - Final act.

EU Commission (2003b), European Community Rules of Origin.

European Commission (2003a*). "Green Paper on the Future of Rules of Origin in Preferential Trade Arrangements."* Commission of the European Communities, Brussels, (COM(2003)787final).

European Commission (2003b). "*Green Paper on the Future of Rules of Origin in Preferential Trade Arrangements - Questionnaire*." Commission of the European Communities, Brussels.

European Commission (2005). *"Communication from the Commission to the Council, The European Parliament and The European Economic and Social Committee: The Rules of Origin in Preferential Trade Arrangements Orientations for The Future."* Commission of the European Communities, Brussels, (COM(2005)100final).

Evenett and Keller (2002). "On Theories Explaining the Success of the Gravity Equation. *Journal of Political Economy. 110, pp. 281-316*

FAO (2005). "Agricultural Preferences: Issues for Negotiation". FAO Trade Policy Technical Notes on issues related to the WTO negotiations on agriculture No. 7.

Feenestra, R.C., (2002). "Border Effects and the Gravity equation: Consistent Methods of Estimation". *Scottish Journal of Political Economy, vol.49.*

Feenstra, R., Markusen, J., & Rose, A. (2001). "Using the Gravity Equation to Differentiate Among Alternative Theories of Trade". *Canadian Journal of Economics, 34(2), 430–447.*

Ferragina, A., Giovannetti, G., Pastore, F., (2005), "EU Actual and Potential Trade with Mediterranean and Central and Eastern European Countries. A Gravity Study". Working Paper.

Ferragina, A., Giovannetti, G., Pastore, F., (2005), "EU Integration with Mediterranean Partner Countries vis a vis CEE-10. A Gravity Study".

Gallezot J. (2003). *"Real access to the European Union's agricultural market"*, INRA.

Gallezot J. and J-C. Bureau (2004). *"Utilisation of EU non-reciprocal preferences"*. Paris

Garcia-Alvarez-Coque J.M, Marti Selva M.L., (2006). A Gravity Approach to Assess the Effects of Association Agreements on Euro-mediterranean Trade of Fruits and Vegetables, European Commission, *TradeAg Project Working Paper 2006-12.*

Glick R., and Rose A. K. (2002). "Does a currency union affect trade? The time series evidence" . *European Economic Review, 46, pp. 1125–1151.*

Greenaway, D. and Milner C., (2002). *"Regionalism and Gravity"*, GEP Research Paper Series No. 20, University of Nottingham.

Grether J. M. and M. Olarreaga (1998). "Preferential and Non Preferential Trade Flows in World Trade". In R. Mendoza, P. Low e B. Kotschwar (eds), *Trade Rules in the Making (Washington, D.C.: Brookings Institution Press).*

Grossman G. M. and A.O. Sykes (2004). *"A Preference for Development: The Law and Economics of GSP"*. University of Chicago.

Haveman, J., & Hummels, D. (2004). "Alternative Hypotheses and the Volume of Trade: The gravity equation and the extent of specialization. *Canadian Journal of Economics, 37(1), 199–218.*

Haveman, J.D., and Shatz, H., (2003). *"Developed Country Trade Barriers and Least Developed Countries. The Economic Results of Freeing Trade."* WIDER Discussion Paper No.2003/46.

Head, K., and Ries, J., (1998). "Immigration and Trade: Econometric Evidence from Canada". *Canadian Journal of economics, vol. 31.*

Hinkle, L. E. And Schiff, M. (2004). "Economic Partenrship Agreements Between Sub-Saharan Africa and the EU: A Development perspective." *World Economy 27(9) pp. 1321 33*

Hinkle, L. E., Hoppe, M. And Newfarmer, R. (2005). "*Beyond Cotonou: Economic Partnership Agreements in Africa"*. Working Paper.

Hoekman B. and S. Prowse (2005). "Policy Responses to Preferences Erosion: From Trade as Aid to Aid for Trade". Paper presented at the International Symposium Preference erosion: Impacts and Policy Responses, Geneva 2005

Hoekman B., F. NG and M. Olarreaga (2001). "Eliminating Excessive Tariffs on Exports of Least Developed Countries", *World Bank Policy Research Working Paper 2604.*

Hoekman, B. and S. Djankov (1997). "Determinants of the Export Structure of Countries in Central and Eastern Europe". *World Bank Economic Review vol. 11. no. 3, p. 471-87.*

Hoekman, B., Martin, W., and C.A. Primo Braga (2006). "Preferences Erosion The Terms Of The Debate". *World Bank Policy Research*

Hudec, R. E. (1987). "Developing Countries in the GATT Legal System". Thames Essays, London: Trade Policy Research Centre.

Inama, S. (2003). "Trade Preferences and the World Trade Organization Negotiations on Market Access". *Journal of World Trade, 37(5).*

Jansen, M., and Piermartini, R., (2005). "*The Impact of Mode 4 Liberalization on Bilateral Trade Flows"*. Staff Working Paper ERSD-2005-06

Kandogan, Y., (2005). *"Trade Creation and Diversion Effects of Europe's Regional Liberalization Agreements"*. William Davidson Institute Working Paper No. 746

Kofi, N., and Staatz, J., (2003). "Has AGOA Increased Agricultural Exports from Sub-Saharan Africa to the United States?"

Krishna, P. (2004). "The economics of preferential trade agreements". *Handbook of international trade.*

Krueger, A. O. (1999). "Are preferential trading arrangements trade-liberalizing or protectionist?" *Journal of Economic Perspectives, Vol. 13, no. 4, pp. 105-24.*

Krugman, P. and M. Obstfeld (1994). *"International Economics. Theory and Policy"*.

Kurzwell, M., Ledebur, O. Von and Salamon, P. (2003). "Review of Trade Agreements and Issues". Enapri, Brussels.

Ledebur, O. Von, Huan-Niem, E., Nielsen, C.P., Niemi, J., Salamoi , P. and Jensen, H.G. (2006). *"Introduction and Issues: General Trade Agreements"*. Conference Paper, Enapri, Brussels.

Lesher, M., and Miroudot, S., (2006). *"Analysis of the Economic Impact of Investment Provision in Regional Trade Agreements"*. OECD Trade Policy Working Paper No. 36

Low, P., Piermartini, R., and Richtering, J. (2005). *"Multilateral Solution to the Erosion of Non-Reciprocal preferences in Nama"*, WTO Working Paper ERSD-2005-05.

Low, P., R. Piermartini, and J. Richtering (2005). *"Non Reciprocal Preferences Erosion Arising From MFN Liberalization in Agriculture: What Are The Risk?"* WTO Working Paper ERSD-2006-02.

Manchin M., (2005). "Preferences Utilization and Tariff Reduction in EU Imports from ACP Countries", *The World Economy Vol. 29 no. 9 September*

Martinez-Zarzoso, I. (2003). "Gravity model: An Application to Trade Between Regional Blocs". *Atlantic Economic Journal, 31(2), 174–187.*

Martinez-Zarzoso, I. and NowakLehmann, F. (2003). "Augmented Gravity Model: an Empirical Application to MERCOSUR-European Union Trade Flows". *Journal of Applied Economics Vol. VI No.2 pp. 291-316*

Matyas L., (1997), "Proper Econometrics Specification of the Gravity Model". *The World Economy Vol. 20 No. 3*

McCallum, J., (1995). "National Borders Matter: Canada-U.S. Regional Trade Patterns". *The American Economic Review, Vol. 85, No. 3. pp. 615-623.*

Meade, J. E. (1955). *"The Theory of Customs Union"* (Amsterdam: North Holland).

Micco A., Stein E., Ordoñez G. (2003). "The currency union effect on trade: Early evidence from EMU". *Economic Policy, Vol. 37, pp. 316–356.*

Miniesy, R.S., and Nugent, B.J., (2005). "Are There Shortfalls in MENA Trade? If so, What Are Their Sources and What Should be done About Them?" Economic Reaserch Forum 12th Annual Conference.

Mold, A. (2004). *"Trade Preference and Africa - The State of Play and the Issue at State."* Mimeo, The African Trade Policy Centre of the Economic Commission for Africa, United Nation, Economic Commission for Africa.

Nielsen, C. P. (2003). *"Regional and preferential trade agreements"*. Food and Resource Economics Institute, Copenhagen, Report No. 155.

Nilsson L. (2002).*"Is The Roadmap from Lome to Cotonou Correct ?"* Applied Economics, 2002, 34, p. 439-52.

Nilsson L. (2005).*"Comparative effects of EU and US trade policies on developing country exports"* ETSG paper.

Nilsson L., (2002). "Trading Relations: is the roadmap from Lome' to Cotonou Correct" *Applied Econometrics, Vol. 34*

Oguledo V.I. and MacPhee C.R. (1994). "Gravity Models: a reformulation and an application to discriminatory trade arrangements" *Applied Econometrics, Vol.26 No. 2*

Ozden, C., and B. Hoekman (2005). "Trade Preferences and Differential Treatment of Developing Countries Introduction". *World Bank Policy Research*

Ozden, C., and Reinhardt, E., (2004). "The Perversity of Preferences: GSP and Developing Country Trade Policies, 1976-2000. *Journal of Development Economics No.78.*

Panagariya, A. (1997). "The Meade Model of Preferential Trading: History, Analytics and Policy Implications*", in International Trade and Finance: New*

Frontiers for Research, Essays in Honor of Peter B. Kenen, ed. B. Cohen (New York: Cambridge University Press).

Panagariya, A. (1998). "Rethinking the New Regionalism", in J. Nash and W. Takacs, eds., *Trade Policy Reform. Lessons and Implications* (Washington, D. C.: The World Bank).

Panagariya, A. (2000). "Preferential trade liberalization: the traditional theory and new developments". *Journal of Economic Literature Vol. XXXVIII pp. 287-331.*

Panagariya, A. (2002). *"Aid through Trade: An Effective Option?"* Columbia University.

Panagariya, A. e R. Duttagupta (1999). "The Gains from preferential trade liberalization in the CGE models: where do they come from?". *Regionalism and Globalization: Theory and Practice.* Sajal Lahiri, ed. London: Routledge.

Pavia, C., (2005). *"Assessing Protectionism and Subsidies in Agriculture: A Gravity Approach"*. IMF Working Paper.

Peridy, N. (2005). "The trade effects of the Euro–Mediterranean partnership: what are the lessons for ASEAN countries? *Journal of Asian Economics*

Persson M., (2004). *"Everything But Drugs. Export Effects of the European Union Trade Preferences for Drug producing and Least Developed Countries"*. Working Paper

Persson M., Wilhelmsson F., (2005). "Revisiting the Effect of EU Trade Preferences", *Mimeo, Lund University.*

Persson, M. and F. Wilhelsson (2005). "Assessing the Effects of EU Trade Preferences for Developing Countries." Paper presented at the ETSG annual meeting, Dublin, Ireland.

Piermartini R., The R., (2005). "Demystifying Modelling Methods for Trade Policy", World Trade Organization, *Discussion Paper 10, Geneva, Switzerland.*

Pomfret, R. (1997). *"The Economics of Regional Trade Agreements"*. Oxford University Press.

Pusterla F., (2007) . "Regional Integration Agreements: impact, Geography and Efficiency". IDB-SOE Working Paper, January 2007.

Rahman, M. M., (2006). "A Panel Data Analysis of Bangladesh's Trade: The Gravity Model Approach". Working Paper.

Ricchiuti G., (2003). *"Empirical evidence on North-South Trade Flows: an Augmented Gravity Model"*. Working Paper.

Rose A. and E. van Wincoop (2001). "National money as a barrier to international trade: The real case for currency union", *American Economic Review, 91, 2, 386–390.*

Rose A.K., (2000). "One Money, One Market: the Effect of Common Currencies on Trade*", Economic Policy, 30, April, pp.7-45*

Rose A.K., (2002). *"Do We Really Know that the WTO Increases Trade?"*, NBER Working Paper n. 9273, October.

Schiff, M. and Winters, L. A. (2003). *"Regional Integration and Development."* World Bank, Washington, D.C.

Serlenga L., Shin Y., (2004). "Gravity Models of the Intra-EU Trade: Application of the Hausman-Taylor Estimation in Heterogeneous Panels with Common Time specific Factors", *ESE Discussion Paper n. 105.*

Shaffer, G. and Y. Apea (2005). *"Institutionnal Choice in the General System of Preferences Case: Who decides the Conditions for Trade Preferences? The Law and Politics of Rights."* Journal of World Trade, Vol. 39:5, pp. 977-1008, Dec. 2005.

Sologa, I., and Winters, A., (2001). "Regionalism in the Nineties: What Effect on Trade?" South-Western College Publishing.

Stevens C. and J. Kennan (2004). "*Comparative study of G8 preferential access schemes for Africa"* Report on a DFID-commissioned study. Institute of Development Studies. April 2004.

Subramanian A., Wei S., (2003). *"The WTO Promotes Trade but Unevenly"*, NBER Working n. 10024, October.

Tangermann S. (2002). *"The Future of Preferential Trade Agreements for Developing Countries and The Current Round of WTO Negotiations on Agriculture"*. FAO Geneva Round, discussion paper no. 3.

Verdaja L., (2005), *"EU Preferential Trade Agreements with Developing Countries Revisited"*. Working Paper.

Viner, J. (1950). *"The Customs Union Issue"*. *NY: Carnegie Endowment for International Peace.*

Voicu A.M., (2006). *"Gravity and Trade Effects of Regional Trading Arrangements: The Central Eastern European Experience"*. Working Paper.

Wainio, J., S. Shapouri, M. Trueblood, and P. Gibson (2005). *"Agricultural Trade Preferences and the Developing Countries*". ERS-USDA Report no. 6.

Westerlund J. and Wilhelmsson F. (2006). "Estimating the gravity model without gravity using panel data". *Unpublished, Departments of Economics, Lund University.*

Wooldridge J. M. (2006). *"Introductory Econometrics: A Modern Approach"*. Thomson

Yu W. (2005). *"Improving Market Access in Agriculture for the African LDCs: Deepening, Broadening and Strengthening Trade Preferences"*. Danish Food and Resources Economics Institute. Working Paper.