



LUND UNIVERSITY

**The Trade Effects of Graduation in the EU's
GSP Scheme**

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Abstract

Graduation has been imposed in unilateral preferential trade agreements when product groups from beneficiaries or beneficiaries themselves are viewed as too competitive and developed. What happens to the product groups of the beneficiaries when the trade preferences are withdrawn?

This paper addresses the potential trade effects of graduation from the European Unions Generalized System of Preferences by using disaggregated data on HS chapter level. A gravity model with specific exporter-product linear time trend is estimated with an Ordinary Least Square estimator using fixed effects. The specific exporter-product linear time trends are included in order to deal with the endogeneity issue that arises and makes it possible to capture the real effect of graduation on imports. The estimated results indicate that the import of the graduated products to the EU12 decreases as a consequence of graduation. This goes in line with the theoretical prediction, which is that removed GSP benefits would have a negative effect on the trade flow due to increased trade costs.

Key words: Graduation, GSP, Developing countries, EU, Gravity Model

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1. Introduction

Industrialized countries have since the 1970's tried to reduce trade barriers for developing countries in order to reduce poverty and generate economic growth. Unilateral trade preferences have been offered to developing countries as a way to reduce the barriers and increase the trade flows. The European Union has offered a set of unilateral trade preferences to developing countries through the Generalized System of Preferences (GSP). However, developing countries and their industries has developed over the time, which has made them more competitive and increased their trade flows. A graduation mechanism has as a consequence been incorporated in the GSP arrangement. Graduation refers to when a country or a product from a country faces withdrawn preferences due to increasing exports. However, graduation of a product group for a country does not imply complete graduation from the scheme (Persson & Wilhelmsson, 2007; European Commission, 2015). The trade effect of graduation is a relatively unexplored subject within the field of international trade. In other words, what happens with the exports of a specific product group when it has been graduated from the European Unions Generalized System of Preferences.

The purpose of this thesis is to address the effect on the EU12 members' import of products that goes from having GSP to be graduated during the covered time period 1993-2015. An endogeneity issue arises when examining the effect of graduation on import since there are other factors that also affects trade during the covered time period. This would make it impossible to distinguish the real effect on imports from graduation since other unobserved factors would affect the results. I include specific exporter-product time trends in order to deal with the endogeneity problem and hence being able to isolate the real effect of graduation on import. This is one of the main contributions to the existing literature in the field of graduation, being able to handle the endogeneity issue in order to capture the real effect of graduation on the import flow.

The theoretical predictions might at a first glance indicate that graduation would have the reversed effect of joining a preferential trade agreement. Meaning that the cost to export would increase as a result of the withdrawn preferences. However, after analyzing the effects of entering a preferential trade agreement some projections can be made. One projection is that initial investments to enter the export market and industrialization tend to occur when a country face preferential treatment. The investments and development during a preferential

agreement might not disappear when a country or a product are being graduated. However, the limited literature on graduation suggests that the possible trade effect is not clear-cut and that graduation do not need to have a negative effect on trade (Hoch & Ow-Taylor, 1993; Persson, 2015).

This study is carried out with a gravity model incorporating a specific time trend for each combination of exporter-product chapters and is estimated with an Ordinary Least Square estimator using fixed exporter-product, importers and time effects. The attained results imply that the import of the graduated products to the EU12 decreases as a consequence of graduation. The general import flow over that time period could have evolved in a positive or negative direction but this is controlled for by the specific time trends.

The disposition of the thesis is as following; the second section outlines the background and gives a brief overview of EU's preferential trade agreements with a focus on EU's GSP arrangement. The third section defines the concept graduation. It also presents which countries and products that have been subject to graduation. The fourth section describes the theoretical framework, which is then followed by a literature review in the fifth section. Section six and seven describes the methodological approach, data and the empirical results. The final section summarizes and discusses the main concepts of the thesis. That section offers proposals on further research and policy implications.

2. Preferential Trade Agreements and GSP

This section will outline the background of EU's Generalized Scheme of Preferences and which countries and what product categories that are included. Furthermore, relevant concepts such as non-reciprocal trade agreements will be discussed and defined.

2.1 Preferential Trade Agreements

The most-favored nation (MFN) principle states that members of the World Trade Organization (WTO) should not discriminate when they trade with different countries. It would be seen as discriminating if a country reduced a tariff for a product when trading with one particular nation but not with other trading partners. This principle is established in the General Agreement on Tariffs and Trade (GATT), however with the exception of preferential

trade agreements (WTO, 2011). Already in 1957 with the Treaty of Rome, the European Economic Community (EEC) imposed preferential treatment when trading with colonies. However, as the time has passed by more preferential trade agreements that are multifaceted have been imposed. The European Union has today at least one, if not several, preferential trade agreements with almost all developing nations (Persson & Wilhelmsson, 2007).

One-sided preferential treatment such as the Generalized System of Preferences (GSP) and non-reciprocal trade agreements are by WTO (2017) defined as a preferential trade agreement. Today, there exists a broad amount of preferential trade agreements¹. The European Union has implemented the GSP directed towards developing states. They have also adopted two other prominent preferential trade agreements directed towards the African, Caribbean and Pacific (ACP) countries and the countries around the Mediterranean Sea. The main goal when implementing a preferential trade agreement is that the developing beneficiary country will be able to increase their exports, gain higher export revenue and be able to differentiate among products that are exported (European Commission, 2017; Persson & Wilhelmsson, 2007).

2.2 The Background of EU's Generalized System of Preferences

The Generalized System of Preferences, GSP, was first established in 1971 with the goal to make it easier for developing nations to export goods to members of the European Union. The establishment of the scheme was a tool for the industrialized nations to reduce poverty through increasing trade and achieve a higher growth, which would lead to further development in the developing nations. The six industrialized EC members implemented the original setting of the GSP in 1971, but other industrialized nations followed and applied it subsequently. The establishment of the GSP scheme would further stimulate economic

¹ Persson and Wilhelmsson (2013) study the European Unions ACP preferences, the preferential towards the countries around the Mediterranean and the GSP program. The authors further point out the similarities and differences across the preferential trade agreements and refer to the "Pyramid of Privilege" where the three agreements are ranked. This pyramid suggest that a beneficiary country would most likely utilize the ACP preferences if it could choose among the three preferential agreements and less likely participate in GSP scheme. The preference margin is greater in both the ACP and the Mediterranean arrangement than the GSP. Another setback with the GSP arrangement compared to the other two arrangements is that it has stricter rules of origin (Persson & Wilhelmsson 2013).

growth and have a positive impact on the developing country's economy, e.g. job creation (Sapir, 1981; European Commission, 2015).

At first, the beneficial treatment within the GSP scheme included duty free quotas and ceilings, but this changed in 1995. The main element in the general GSP arrangement today is reduced tariffs for developing nations when exporting products. This further simplifies the process of entering the European market and trade with the European Union member countries. The degree of which the tariff is reduced for exported goods depends on the *sensitivity* of the products. Furthermore, products are separated into two categories: sensitive goods, which are objective to reduced tariffs whereas duty free access to the market within the European Union applies to the non-sensitive goods. The GSP scheme was reformed in 2014 and as of today approximately 6350 products are included in the scheme (European Commission, 2015; UNCTAD, 2015; Persson & Wilhelmsson, 2007).

The GSP framework is also excluded from the Most-Favoured-Nation (MFN) principle in WTO. The first GSP arrangement in 1971 had a ten-year duration and was repeated in 1981 until 1991. Throughout the duration of the scheme, reviews and evaluations followed every year concerning ceilings, quotas, the coverage of products and GSP recipients. The end of the second term of the arrangement in 1991 was a milestone, where the scheme was up to major evaluation and assessments. The political climate and the Uruguay Round affected the duration of the scheme during the years to come. The European Unions GSP scheme was prolonged in shorter time periods until 1994. However, the scheme got prolonged for a third period during 1995 until 2005 and then for another decade. During that period of time, several modifications of the GSP scheme had been applied, such as changes concerning the rules of origin. Another main change was the introduction of other arrangement such as GSP+ and EBA, which were directed towards LDCs² and developing countries fulfilling humanitarian and international labor laws. The two new arrangements were viewed as more preferential than the general GSP scheme. The current general scheme started to span in 2014 and has a ten-year duration (European Commission, 2015; UNCTAD, 2015).

In sum, there are three types of levels in the preferential treatment depending on the different needs among the participating developing countries (European Commission, 2015). This thesis is mainly directed towards the general arrangement of the generalized system of preferences.

² Least developed countries.

The European Commission (2015) describes the three different programs as following:

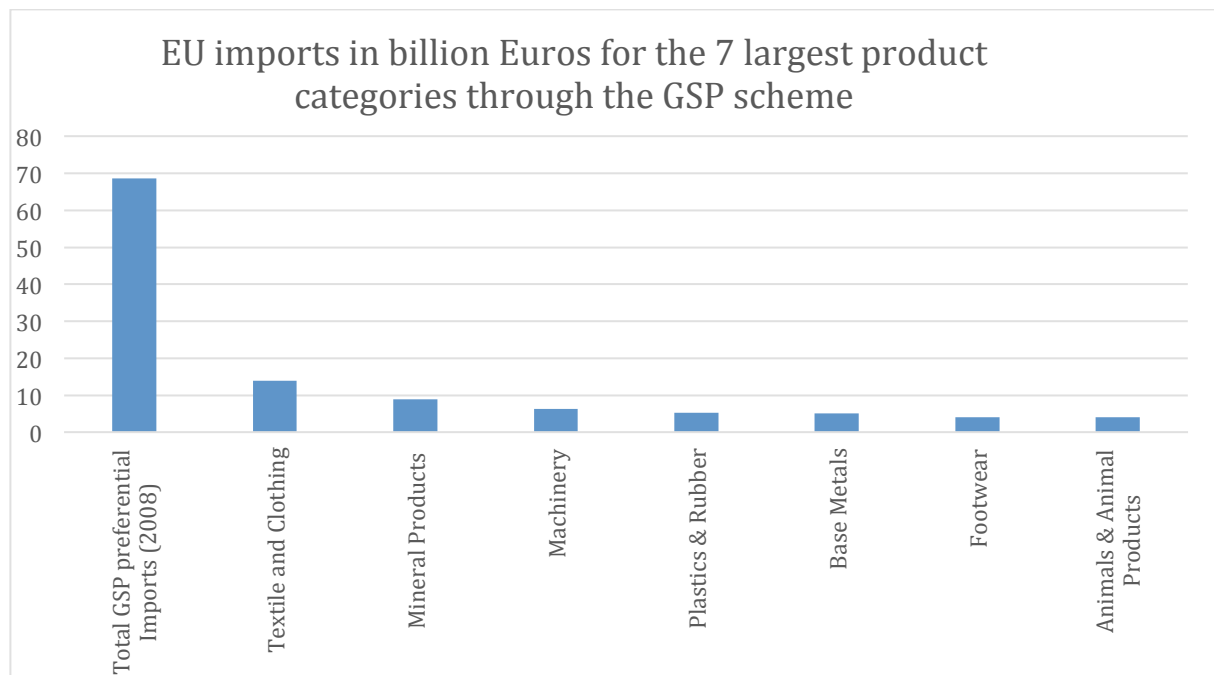
1: GSP – 30 beneficiaries (2015) have duty reductions for approximately 66% of the tariff lines within the European Union.

2: GSP + (*Special Incentive Arrangement for Sustainable Development and Good Governance*) – 13 countries (2015) that have established and follows international labor, human, environment and good governance treaties face zero duties for approximately 66% of the European Unions tariff lines.

3: EBA (*Everything But Arms*) – Directed towards the least developed countries, so-called LDCs, and involves 49 countries (2015) that have free market access with the exclusion of ammunition and arms.

In order to give an appreciation into what extent the GSP scheme is utilized, figure 1 illustrates the total value in billion euros of the European Unions imports through the GSP scheme in 2008. The total import value through the GSP scheme in 2008 was €68.6 billion. Furthermore, the seven product categories displayed in the figure represented the greatest part of the imports. The textile and clothing section dominates the imports and is followed by mineral products and machinery. The utilization of the GSP scheme has increased during the years and the imports from the beneficiaries in 2014 represented approximately €76 billion. Furthermore, the GSP scheme was reformed in 2014 to only include 88 beneficiaries instead of 177 (European Commission, 2010; European Commission, 2015; Gasiorek, 2010).

Figure 1: Imports to the European Union by the GSP beneficiaries in 2008



Source: European Commission (2010)

Cuyvers and Verherstraeten (2005) summarized the different stages for a beneficiary in the so-called “GSP life cycle”. This refers to four stages of development for the beneficiaries in the scheme. The initial stage involves the establishment of the GSP scheme and the beneficiaries make an entrance in European market and increase their performance in the product categories that are subject to preferential treatment. The stage after involves a higher use of the GSP scheme due to better knowledge of the arrangement. In the third stage EU is increasing the imports from the beneficiaries, but at the same time some product categories are graduated. The beneficiary country is then completely graduated from the scheme in the final stage.

To summarize, this section has outlined the framework of the European Unions Generalized System of Preferences and how it has developed over the years. A conclusion is that the GSP arrangement has expanded during the years in order to satisfy the different needs among developing nations and promote good governance. The general program has extended the number of products to include.

3. Graduation

A natural transition after reviewing the GSP scheme is to address the graduation mechanism within the scheme. The main purpose with this thesis is to study how different product categories are affected by being graduated. Thus, there is a need to define the concept graduation and discuss what is entailed in the concept. This section covers a description and discussion of the graduation mechanism within the scope of the European Unions GSP scheme. Furthermore, it does also cover through which basis a product or a country might be graduated from the GSP arrangement.

3.1 Definition and Background

The European Commission defines Graduation as “...imports of particular groups of products originating in a given GSP beneficiary country lose GSP preferences while imports of the other groups of products from that country keep the preferential treatment.” (European Commission, 2015, p.9). Even if a country is considered to be a “developing country”, preferences for different product categories might be withdrawn in order to compete with industrialized nations. This occurs when the beneficiary country performs as well as other industrialized countries when exporting a particular product. However, it is worth noting that even if the preferential treatment is withdrawn for one product category for one developing nation it does not lead to graduation from the whole GSP scheme for that beneficiary, only for that particular product. This further means that it is only a disadvantage to be graduated in comparison to other developing nations who still have products which are not subject to withdrawn preferences. The graduation mechanism can be divided into two groups. The one described above, which is called *Country-Product Section Graduation* i.e. different products are graduated. The second group, *Country Graduation Mechanism*, refers to all trade promoting preferences being withdrawn for a beneficiary country (UNCTAD, 2015; European Commission, 2015).

The application of graduation first occurred in the context of US GSP scheme in 1989 when the trade preferences for Hong-Kong, Singapore, South Korea and Taiwan were withdrawn. One of the main arguments then was that graduation would be applied when the beneficiaries were considered to have reached a successful development in economic terms. This including

both financial and trade advancement. This principle was first incorporated into the enabling clause in GATT during the Tokyo round in 1979. The principle is referring to that countries have, as they develop, more obligations that need to be fulfilled within GATT. This rule was further included into the rules of the GSP schemes, and can be seen as one of the initial rules regarding graduation. The concept of the GSP scheme was to promote and support developing nations trade. When that goal is reached, the need for preferential treatment has diminished (Kirkman, 1989).

3.2 Graduation in the EU's GSP Scheme

The rules of graduation within the European Unions GSP scheme have changed during the years. It was first implemented after the major revision of the GSP scheme in 1995. The decision to graduate a country or a sector was dependent on a development index and a specialization index. These indices will be discussed in detail further down. However, there was another way to graduate products from beneficiary countries as well, which was incorporated in a so-called *Solidarity Mechanism*. This refers to that a certain sector from a beneficiary could be graduated if that exported sector represented 25 percent or more of the total GSP covered imports of that particular product to the European Union. The development and specialization indices for beneficiaries did not matter when adopting the *Solidarity Mechanism*; the beneficiary's exported product would be graduated either way (Cuyvers, 1998).

A development index was introduced in order to track into which degree a country was industrially developed compared to the European Union. The development index (DI) is presented in Equation (1), where Y_i is the GSP beneficiary's national income and Y_{EU} is EU's national income. Furthermore, the variable POP represents the population in the beneficiary country, i , and EU . The value of exports from the manufactured and agricultural sectors from the beneficiary country, i , and EU is denoted as X in the equation. The development in the beneficiary country and EU are equal to each other if the index sum up to zero (Cuyvers, 1998; European Union, 1994).

$$DI_i = \frac{\left\{ \log \left[\frac{Y_i}{POP_i} \right] + \log \left[\frac{X_i}{X_{EU}} \right] \right\}}{2} \quad \text{Equation (1)}$$

Equation (2) represents the specialization index (SI), where $M_{i,k}$ denotes the import of good i from country k to the European Union. The index's ratio show how much the imports of product i from country k constitute of the total GSP covered imports of that particular product to the European Union, but also how much the total imports from country k constitute of the total GSP covered imports to the European Union (Cuyvers, 1998; European Union, 1994).

$$SI_{i,k} = \left(\frac{M_{i,k}}{\sum_k M_{i,k}} \right) / \left(\frac{\sum_i M_{i,k}}{\sum_i \sum_k M_{i,k}} \right) \quad \text{Equation (2)}$$

Graduation is dependent on the combination of these two indices. Table 1 show the different values in which the indices have to range between in order for the European Union to implement graduation. To note is that a beneficiary would not be subject to graduation if their development index is less than -2 (European Union, 1994).

Table 1: Combination of Development index and Specialization Index

Development Index	Specialization Index
≥ -1	≥ 1
$-1 > x > -1.23$	≥ 1.5
$-1.23 > x > -1.7$	≥ 5
$-1.70 > x > -2$	≥ 7

Source: European Union (1994)

The relationship between the development index and the specialization index in table 1 shows that a beneficiary's export of a particular product to the European Union might constitute a large share of the total imports of that particular product, and still not be subject to graduation due to being less developed. This means that a beneficiary would not be graduated if the development index ranged between -1.70 and -2 and the specialization index were less than 7. However, the beneficiary would be subject to graduation if the specialization index were higher than 7. A conclusion reached from the relationship between the development and specialization indices is that a less developed country is allowed to have a higher degree of

specialization without being threatened by graduation. During the implementation of the graduation rule, several countries were removed from the GSP arrangement in two steps due to having a GNP per capita of \$6000 or more in 1991 (Cuyvers, 1998; European Union, 1994).

Both the European Commission (2004) and European Union (2005) states how the graduation mechanism changed during the GSP reform. The changes affected the scheme that started to span in 2006 and ended in 2015. There were several changes made within the graduation rule in order to simplify the graduation process and to make it more transparent. One of the major changes was that the development and specialization index was removed. Instead, a country was subject to withdrawn preferences if the country had been categorized during three years in a row as a high-income country by the World Bank "...and when the value of imports for the five largest sections of its GSP-covered imports to the Community represent less than 75% of the total GSP-covered imports of the beneficiary country to the Community." (European Union, 2005, *Article 3:1*).

Another change during the transition was the categorization and classification of products. During the previous schemes, products had been categorized in different *sectors*. However, as the graduation rule was reformed, the classification system changed and products were now classified into different *sections* in a subdivision of the Harmonized System³ (HS), namely the Combined Nomenclature⁴. The *sectors* and further on *sections* include chapters, 4-digit, 6-digit and 8-digit products from the European Unions Harmonized System. One of the benefits with the new categorization was that recipients of the GSP scheme would only be subject to a graduation of a section if all products in that particular section were performing above average. Furthermore, if the European Unions GSP covered import of a particular section from a beneficiary represented 15 percent^{5,6} or more of total imports from that section during three following years that section would be subject to graduation (European Commission, 2004; European Union, 2005).

³ HS is used for approximately 95 percent of the world trade (European Commission, 2004).

⁴ The Combined Nomenclature will be referred to in the text as the Harmonized System since it is the European Unions Harmonized System.

⁵ Textile as exception, where that section would be graduated if EU's total GSP covered import from a beneficiary represented 12.5 percent (European Union, 2005).

⁶ Note that the initial graduation rule had 25 percent as a threshold (European Union, 1994).

Another extension that was incorporated into the new graduation rule was that countries and sections could be de-graduated if they lost the competitiveness during three consecutive years. To clarify, the preferences would be re-established again (Townsend, 2008).

In sum, the GSP scheme has been subject to several revisions and reforms. The reforms have also affected the graduation rule, which has changed due to modifications and improvements of the scheme.

Table 2 summarizes the main differences among the two graduation regimes. The classification of products differs between the two regimes, whereas the products were categorized in sectors during the initial graduation rule and while during the second rule, products were categorized in sections. Another major change between the first and second graduation rule is how countries and products are subject to graduation. During the first regime the covered GSP import to the European Union of a sector from a beneficiary nation had to represent 25 percent or more of the altogether import from that sector in order to be graduated. However, during the second regime, the share of total imports from a particular section decreased to 15 percent. Furthermore, the development and specialization indices incorporated in the initial graduation rule were removed. The rule that graduated a country with the basis of its GNP per capita was also displaced. The replacing graduation rule stated instead that; *A beneficiary that had been ranked as a high-income nation during three years in row by the World Bank and where the five largest sections import value from the beneficiary to EU through the arrangement is less than 75 percent of the beneficiary's altogether imports through the GSP arrangement would have its preferences removed.* The second graduation regime did also incorporate a rule that allowed for de-graduation (Cuyvers, 1998; European Union, 1994; European Commission, 2004; European Union, 2005).

Overall, the decision to drop the indices increased the transparency in the graduation process. Another aspect, which benefitted countries in where their competitive advantage in one section once had led to graduation but lost it in the competition with industrialized nations, was the de-graduation mechanism. The new categorization of products would gain the small beneficiaries since all products within one section need to be ranked as highly competitive in order for have preferences removed (European Commission, 2004; European Union, 2005; Townsend, 2008). A conclusion drawn is that the second graduation regime was targeted towards the most export driven countries within the scheme and that being highly competitive in some products was not enough to be graduated. This is also a link to the indices from the

prior graduation rule, where least developed countries could have a high specialization index but still not be graduated due to a low development index.

Table 2: Comparison of the two graduation regimes

<i>Differences</i>	Graduation Rule 1995	Graduation Rule 2006
Product Categories	Sectors	Sections
Basis to Graduate	EU's GSP covered import of a sector from a beneficiary equals 25% or more of total imports from that sector	EU's GSP covered import of a section from a beneficiary equals 15% or more of total imports from the section
	Specialization and Development Indices	Country ranked 3 years in a row as a high-income country by the World Bank and when the 5 largest sections import value from the beneficiary to EU through the scheme is less than 75% of the beneficiary's altogether imports through the GSP scheme.
	GNP per capita of \$6000 or more in 1991	
De-graduation Mechanism	No	Yes

Sources: Cuyvers (1998), European Union (1994), European Commission (2004) and European Union (2005).

Finally, table 3 show the chronological order of graduation periods and which rule that has been applied during the different regimes. As shown, there have been in total six different periods, where three periods have been subject to the first graduation regime, whereas the second graduation regime has covered the last three periods. Information about the different graduation periods is collected from the European Union's Council legislative acts⁷. To clarify, the last two GSP schemes has spanned during the time periods 1995 until 2005 and from 2006 until 2015. The schemes have during their duration had several phases, where modifications of the scheme and graduation have occurred (UNCTAD, 2015). The phases are described as graduation periods in table 3 in order to simplify.

⁷ The relevant legislative acts are presented in the footnotes for table 4.

Table 3: The graduation periods and which rule that has been applied

Graduation Periods	Graduation Rule
1995-1998	First
1999-2001	
2002-2005	
2006-2008	Second
2009-2013	
2014-2015	

Source: European Union (1994) (1997) (1998) (2001) (2003) (2005) (2008) (2012:a) (2012:b) (2015).

3.3 Country and Product Graduation

A logical transition after reviewing the graduation concept and the two graduation regimes is to study which countries and products that have been graduated from the European Unions GSP arrangement. The number of beneficiary countries within the GSP scheme has increased since 1995. This section will, however, put attention towards the countries that were recipients of the GSP scheme in 1995⁸ and the products from those beneficiaries that have been graduated.

Table 4 display the beneficiary countries and which chapters⁹ from the Harmonized System that has been graduated during the different periods. Hong-Kong, Singapore and South Korea were among the first countries to be fully graduated within the European Unions GSP scheme, this occurred in 1998. The World Bank ranked Brunei and Saudi Arabia as high-income countries since both countries GNP per capita was more than \$6000 in 1991. That further led to that the countries faced a reduced preferential margin from 1995, which was further abolished in full in 1996. However, Brunei and Saudi Arabia were first removed from the beneficiary list in 2014 together with Argentina, Brazil, Kazakhstan, Malaysia, Russia, South Africa and Uruguay. The reason to remove the countries from the beneficiary list was

⁸ Belarus was suspended from the program due to violation of human rights and labour rights. The country was a beneficiary until 2007, but since it is not included in the sample of countries due to the suspension (European Parliament, 2017). This thesis focus on product graduation and due to that exclude countries that have been fully graduated without having any chapters graduated.

⁹ A list of all chapters in the Harmonized System with product description is available in the appendix table 7.

that they were considered to be either a high-income country or an upper-middle income country. The exports from China and Thailand represented a major portion of all GSP covered imports to the European Union during 2011 to 2014. The countries were due to that fully graduated in 2015 (European Union, 1997; UNCTAD, 1998; European Union, 2015; European Commission, 2015).

An overall conclusion after reviewing table 4 is that the largest number of chapters for a majority of the beneficiary countries were graduated during the first graduation period, which stretches from 1995-1998. Both Argentina and Brazil had products within chapter 41 graduated, which include raw hides, skins and leather. India did also have chapter 41 graduated and in addition chapter 42 and 43 that also originates from the same section and includes articles of leather, harness and furskins. Chapter 42 and 43 were also graduated from China, Hong Kong, South Korea and Thailand. Another set of graduated products in the first period was chapter 95 and 96, which consists of products such as toys, games, sports equipment and miscellaneous manufactured articles. These chapters were graduated for the following beneficiaries: China, Hong Kong, South Korea and Thailand. India had all products within the textile sector graduated during the first graduation period, the same products were graduated for China and Indonesia during the fourth graduation period. A majority of the chapters graduated during the second period were food related. For the South American countries it mainly concerned the chapters *Live Animal and Meat and edible meat offal*. Argentina, Brazil and Thailand did also have all chapters included in the sector *Prepared foodstuffs: Beverages, Spirits and Vinegar; Tobacco and Manufactured Tobacco Products* graduated. Only Russia and Kazakhstan were affected during the third graduation period when chapter 3 was graduated which for example consists of fish and crustaceans. China and Indonesia had a large number of chapters graduated during the fourth period such as textiles. South Africa and Thailand have *vehicles, aircrafts, vessels and associated transport equipment* graduated. Vietnam is the only beneficiary with graduated chapters during the fifth graduation period. The chapters include products such as footwear and umbrellas. China and India had a large number of chapters that graduated during the last period. The graduated chapters for China involve mainly animal and vegetable products. In contrast, the chapters including mineral and chemical products are graduated for India (European Union, 1994; European Union, 1998; European Union, 2001; European Union, 2003; European Union, 2005; European Union, 2008; European Union, 2012).

In sum, a lot of products were graduated during the first graduation period. Furthermore, Argentina and Brazil have had a similar pattern when chapters have been graduated with the exception that Brazil has had more chapters graduated. China has had the largest number of chapters graduated, which might not be surprising due to the development of the country during the recent years. India, who has been a big producer of textile has had withdrawn preferences for textile products since the first graduation period (UNCTAD, 2007; UNDP, 2017).

Table 4: Beneficiaries that have had product graduated during the six different graduation periods

Graduation Periods/GSP Beneficiaries	1995-1998 ^{a)}	1999-2001 ^{b)}	2002-2005 ^{c)}	2006-2008 ^{d)}	2009-2013 ^{e)}	2014-2015 ^{f)}
Argentina	Chapter: 41	Chapter: 1, 2, 4, 16, 17, 18, 19, 20, 21, 22, 23				
Brazil	Chapter: 41, 47, 48, 49, 64, 65, 66, 67, 86, 88, 89	Chapter: 1, 2, 9, 13, 16, 17, 18, 19, 20, 21, 22, 23, 24		Chapter: 44, 45, 46		
Brunei	Chapter: 71					
China	Chapter: 28, 29, 30, 32, 33, 34, 35, 36, 37, 38, 42, 43, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 94, 95, 96	Chapter: 5, 12		Chapter: 31, 39, 40, 41, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 71, 84, 85, 86, 87, 88, 89, 90, 91, 92		Chapter: 1, 2, 3, 6, 7, 8, 9, 10, 11, 12, 13, 15
Hong-Kong	Chapter: 42, 43, 61, 62, 63, 71, 84, 85, 90, 91, 92, 94, 95, 96					
India	Chapter: 41, 42, 43, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60					Chapter: 25, 26, 27, 28, 29, 30, 32, 33, 34, 35, 36, 37, 38, 86, 87, 88, 89
Indonesia	Chapter: 44, 45, 46, 64, 65, 66, 67	Chapter: 15		Chapter: 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 71		Chapter: 1, 2, 4, 30, 32, 33, 34, 35, 36, 37, 38,
Kazakstan	Chapter: 31, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83		Chapter: 3			
Malaysia	Chapter: 39, 40, 44, 45, 46, 61, 62, 63, 85	Chapter: 10, 11, 15				
Russia	Chapter: 25, 26, 27, 31, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83		Chapter: 3	Chapter: 28, 29, 30, 32, 33, 34, 35, 36, 37, 38, 47, 48, 49		
Saudi Arabia	Chapter: 25, 26, 27					
Singapore	Chapter: 84, 85					
South Africa	Chapter: 72			Chapter: 86, 87, 88, 89		
South Korea	Chapter: 39, 40, 42, 43, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 72, 84, 85, 87, 94, 95, 96					
Thailand	Chapter: 39, 40, 42, 43, 61, 62, 63, 64, 65, 66, 67, 71, 94, 95, 96	Chapter: 3, 6, 7, 8, 16, 17, 18, 19, 20, 21, 22, 23		Chapter: 86, 87, 88, 89		Chapter: 15
Uruguay		Chapter: 1, 2				
Vietnam					Chapter: 64, 65, 66, 67	

^{a)} European Union. (1994). "Council Regulation (EC) No 3281/94." Official Journal of the European Union, L 348/1, 30.12.1994

European Union. (1997) "Council Regulation (EC) No 2623/97." Official Journal of the European Union, L 354/1, 30.12.1997

^{b)} European Union. (1998) "Council Regulation (EC) No 2820/98." Official Journal of the European Union, L 357/1, 30.12.1998

^{c)} European Union. (2001). "Council Regulation (EC) No 2501/2001." Official Journal of the European Union, L 346/1, 31.12.2001

^{d)} European Union. (2003). "Council Regulation (EC) No 2211/2003." Official Journal of the European Union, L 332/1, 19.12.2003.

European Union. (2005). "Council Regulation (EC) No 980/2005." Official Journal of the European Union, L 169/1, 30.5.2005

^{e)} European Union. (2008). "Council Regulation (EC) No 732/2008." Official Journal of the European Union, L 211/1, 6.8.2008

^{f)} European Union. (2012:a). "Council Regulation (EU) No 978/2012." Official Journal of the European Union, L 303/1, 25.10.2012

European Union. (2012:b). "Council Regulation (EU) No 1213/2012." Official Journal of the European Union, L 348/11, 18.12.2012

European Union. (2015). "Council Regulation (EU) No 2015/1978." Official Journal of the European Union, L 289/1, 5.11.2015

4. Theory

A passage after reviewing the GSP arrangement and the graduation mechanism is to study the theoretical predictions of graduation. This section puts attention towards the theoretical framework and the expected effects of graduation. However, the theoretical predictions are not clear-cut since the graduation field is relatively unexplored. The theoretical framework regarding trade effects of preferential trade agreements will be described in the first section in order to assess the possible effects of graduation, which will be described in the second section. As a clarification, the last section will present the main theoretical hypotheses.

4.1 The Trade Effects of Preferential Trade Agreements and Graduation

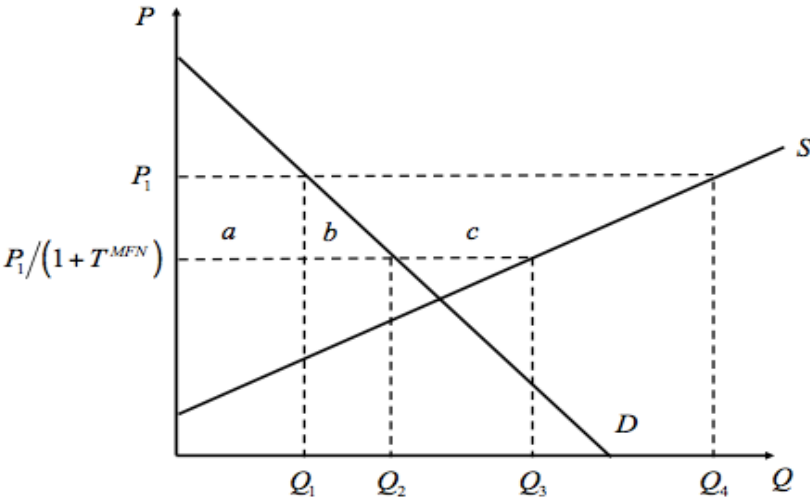
In order to channel the effects of graduation one first has to analyze the effects of entering a preferential agreement. As mentioned in the background section, the aim when implementing the GSP scheme was to increase exports from developing countries to the European Union's Market. In a theoretical sense, this can be studied as the case when a country enters a unilateral preferential agreement. This means that the developing country, i.e. the beneficiary of the preferences, do not have to lower their trade barriers towards the donor countries, in this case the European Union. In a basic partial equilibrium model one can assume three trading partners: EU, the beneficiaries and rest of the world (RoW). At the initial phase, before the establishment of the preferential agreement (GSP in this case), the MFN tariff, T^{MFN} , is applicable for all trading partners exports. The exporting countries then have to face the price of $P_1/(1 + T^{MFN})$ for their exported product, since the price in the importers country is P_1 . The scenario is demonstrated in figure 2, where the exported quantity will be $(Q_3 - Q_2)$ when the exporters have the price $P_1/(1 + T^{MFN})$ (Persson, 2015).

In the second phase, a number of small countries are offered preferential treatment i.e. a preferential trade agreement (in this case the GSP), in order to reduce trade barriers and increase exports. In practical terms, this means that the prices in the domestic market in the donor's country (EU) and exporting country are the same, P_1 , since the MFN tariff is removed. Going back to figure 2, the scenario has changed and the exported quantity is now $(Q_4 - Q_1)$. However, as the increase in export prices will trigger the domestic prices, which

means that the consumer surplus will be reduced with a and b in figure 2. The negative effect will hence be put on the consumers due to facing a higher price, which is a welfare loss. However, the producers in beneficiary countries will both receive a higher price and increase their exports. They will capture the welfare loss from the consumers, namely the area a and b in figure 2 from the consumer surplus. An additional welfare improvement is that the producers will capture area c in figure 2 as well (Persson, 2015).

Another thing to point out is that the country offering preferences lose the tariff revenue from the goods that are imported from the beneficiary. Furthermore, there are several aspects that also need to be brought some attention. An argument behind offering unilateral preferences was industrialization and product diversity. The example presented above show how the intensive margin will be affected when reducing trade barriers i.e. the quantity from the exporting industries increase. However, the removal of trade barriers does also make it easier for other firms to enter the export market. This would then affect the extensive margin of trade i.e. increase the diversification of products exported (Melitz, 2003; Chaney, 2008; Persson, 2015).

Figure 2: The trade effects of being a beneficiary



Sources: Persson (2015)

The theories above have stated the expected effects when granting developing countries unilateral preferences. The contrast is then the expected trade effects when countries or product groups are removed from the preferential scheme.

At first, it might seem obvious that the withdrawal of preferences will make the countries or exported product groups to go back to status quo. To keep in mind is that there is a reason behind graduating a country or a sector/section. That basis of the graduating decision is that a sector/section or country is highly competitive. Persson (2015) present an argument behind granting a developing country preferential access. The argument is that unilateral preferences will lead industrialization and affect both the intensive and the extensive margin to trade. The idea is then that developing countries during the preferential trade agreements are expanding both the range of industries in where products are produced and also the quantity of products exported (Melitz, 2003; Chaney, 2008).

As been pointed out by several researchers such as Melitz (2003), Chaney (2008) and Persson (2015) there is also an investment when an industry enters the export market. Assuming that the investment is made during the time of the preferential agreement, since the industry want to seize the opportunity of the reduced trade barriers. The predicted effect of removing the preferences would then be that the developing countries or sectors/section faces the MFN tariff again. This increases the costs to export the graduated product. Worth to keep in mind then is the development of the industries during the time in the preferential scheme. To point out here is that products are graduated due to performing well and being competitive in the international trade. Following that reasoning would imply an initial decrease in the exports, due to the removal of the trade preferences i.e. the cost to export a good increase. However, it is difficult to estimate the magnitude on the effect removed preferences for countries or product groups have on the trade flow. This is because other factors such as increased competitiveness affects the trade flow as well. The theoretical prediction is that there would be a negative deviation from the trend of exports due to the imposed MFN tariff, which suggest that the trend in export growth continues but on a lower level than before. To clarify, the trend of exports over time would be the same, but on a lower level than before. This further implies that other gains such as industrialization and diversification of exporting products will not be lost due to the removal of preferences. In other words, the competitive product groups where the developing countries had a comparative advantage and other competitive product groups that the country started to export due to the preferential treatment will continue to be exported. However, the cost to export them will increase as a consequence of no longer having a preferential treatment.

4.2 Main Theoretical Hypotheses

The main theoretical hypotheses are as following: the removal of the GSP preferences will affect the exports of the products. However, as described above, graduation implies that the products and countries that face withdrawn preferences are highly performing and competitive. That makes it difficult to appreciate the particular effect of graduation since the effect might not be the reversed to when countries gain preferences. However, graduation leads to an increase in the cost to export for the graduated product, which makes them more expensive. This would further imply that import to the European Union of those products decrease. The expected effect on trade due to graduation would therefore be negative. However, the reason behind graduation provides some arguments suggesting that the effect on trade would not be the opposite of the one entering a preferential trade agreement. The effect would still be negative since the cost to export increases. However, following the theoretical prediction of making investments in the export driven industries during the time in the preferential agreement suggests that the development in the industries will still remain after the withdrawn preferences. That implies that the trend in the export growth continues due to being competitive, but deviate as a result of graduation to a lower level since the unilateral preferences are withdrawn. If the product groups that are graduated was introduced to the export market in the initial stage due to the preferential trade agreement, they will still continue to be exported but as mentioned before at a lower level. Overall, this suggests that the benefits seized due to GSP such as industrialization and product diversification will not be lost because of graduation. The only benefit that will disappear is the reduced tariff. Nevertheless, it can then be seen as the preferential trade agreement fulfilled its purpose since the product groups and countries are graduated due being highly performing and competitive.

5. Previous Research

This section will present previous research about GSP and graduation. The section is divided into two parts, where the first part presents the previous research about entering the GSP while the second part enlightens the previous research about graduation. Several studies have focused on the trade effects of unilateral preferences from the European Union such as Oguledo and MacPhee (1994), Nilsson (2002) and Péridy (2005). See Persson (2012) for a broader review of the research investigating the trade effects of unilateral preferences.

However, previous research covering graduation is quite limited. This section will end with a brief discussion about the literature that have been presented and some concluding remarks.

The research conducted by Sapir (1981) is one of the initial studies within GSP. The purpose with the paper is to study if the EEC's (at that time) GSP arrangement generated any trade benefits for the developing beneficiaries. The study is executed by estimating a gravity model with OLS. The general conclusion is that the implementation of the GSP scheme has brought positive trade effects such as increasing exports from the developing nations. Sapir (1981) shed some light on the concept graduation, when referring to unequal treatment among the heterogeneous beneficiaries in the GSP scheme. To further clarify, the developing countries in the GSP arrangement might be treated differently due to being in different phases of development in industry and production, which might limit the exports from the most advanced developing countries.

A more recent paper that partly covers the GSP scheme is the one conducted by Persson and Wilhelmsson (2007). The authors study the different preferential schemes that the EU has made accessible for developing nations such as the African, Caribbean and Pacific countries (ACP), Mediterranean countries and the developing beneficiaries in the GSP scheme. The authors study if the preferential schemes have affected the exports from developing nations to the European Union in a similar pattern or if the trade effects vary across the agreements. The attained results imply that the preferential schemes leads to trade creation through a rise in exports from the developing nations. However, least developed countries compared to developing countries seem to a larger extent enjoy the positive effect of being a beneficiary in the GSP scheme.

Several economists have studied the efficiency of EU's GSP scheme. For example Zhou and Cuyvers (2012) who limit their study to ten of the ASEAN recipients of the scheme. The authors examine if and how the level of exports has been affected through the GSP scheme. The study adds an additional element to the existing research by using data on various levels such as aggregated, sector and country. The study provides transparency in trade performance when being a beneficiary to the GSP scheme. An overall conclusion is that low developing ASEAN countries enjoyed greater benefits from the scheme when exporting to the European Union members states compared to the more developed ASEAN countries. The findings on a disaggregated level show that the industrial sector seized a lot of benefits from the scheme.

Kirkman (1989) is one of the first to evolve the concept graduation. The study puts attention on the graduation mechanism and what the possible effects that may arise when preferences are withdrawn. Graduation occurred for the first time in 1989 when the United States decided to withdraw the preferences from Hong-Kong, Singapore, South Korea and Taiwan in 1989. The author tries to project the consequences of graduating the newly industrialized economies on recipients of the GSP scheme that remain by using a similarity index. The analysis conducted with the similarity index indicates that the lasting recipients of the GSP scheme had similar characteristics as Singapore concerning economic development and growth. The projected results suggested that graduation of Hong-Kong, Singapore, South Korea and Taiwan in 1989 was beneficial for the other recipients of the scheme, particularly the other ASEAN recipients.

Mendez and Murray (1990) link the possible gains of graduation on the remaining beneficiaries. The study puts attention on the impact in the African low development countries after graduating the four Asian tigers¹⁰ from United States GSP scheme. In order to find out the effects in the African countries, the authors estimate a linear model incorporating the possible welfare gain and welfare loss for the remaining beneficiaries and the former beneficiaries. The authors argue that there is no link between graduating Hong-Kong, Singapore, South Korea and Taiwan and increased trade for the poorest African countries due to differences in product specialization.

Hoch and Ow-Taylor (1993) research can in many ways be seen as a continuation of the research conducted by Kirkman (1989). The authors investigate the effect of the graduation that occurred from US GSP scheme in 1989. The sample consists of the previous beneficiaries Hong-Kong, South Korea and Taiwan. The reason behind graduating these newly industrialized economies was due to their surplus in trade with the United States kept increasing. In order to estimate how the withdrawn trade benefits affect Hong-Kong, South Korea and Taiwan the authors use a model constructed by Baldwin and Murray. Opposed to the prediction, the results attained imply that the former beneficiary countries were not particularly affected by the withdrawn trade benefit. However, United States imports from the countries slightly dropped, but on the contrary the trade surplus marginally increased for Taiwan whereas it heavily decreased for the other newly industrialized economies.

¹⁰ Hong-Kong, Singapore, South Korea and Taiwan.

Cuyvers and Soeng (2013) study covers the time period 1994-2007 and the authors explore how changes in EU's GSP arrangement have affected the imports in EU from the beneficiary in Latin America, ASEAN and China. The attained results suggest that changes in the GSP scheme has had a positive impact on the imports of industrial products but have affected the agricultural products in the opposite direction. Cuyvers and Soeng (2013) further enlighten the concept of graduation, which were actualized when the GSP system was reformed in 1995. The reform did also involve a new set of graduation rules such as the development and specialization indices. The preference margins for different product groups were also dependent on the volatility of the products. The margin decreased for less volatile categories of commodities. The conclusion is that the efficiency of graduation in the scheme varies dependent on which sector that is involved. The graduation element seems to be more efficient for commodities in the industrial sector than for textile products.

Overall, there exist a very limited amount of research on how trade is affected by graduation. EU's GSP scheme has been analyzed from a series of vantage points. Sapir (1981) concludes that the establishment of the GSP scheme has had positive trade effects while Cuyvers and Soeng (2013) argue that the GSP scheme indeed had a positive impact for some sectors. This section has also presented the most relevant literature that has touched upon the topic of graduation. Furthermore, some academics such as Kirkman (1989), Hoch and Ow-Taylor (1993) have reviewed the effect of graduation from US GSP scheme. The general impression is that the exports from the former beneficiaries have not been particularly affected. In sum, the previous research suggests that graduation is not necessarily equivalent to decreased exports. It should be noted that this applies solely to the US GSP scheme, and can thus be considered a guideline for the graduation effect in EU's GSP scheme. However, the setting of US GSP scheme and EU's GSP scheme is not the same, which could further imply that the graduation effect will not be the same either.

6. Methodology

This section outline the methodological approach executed in this thesis. Furthermore, the model and estimation issues are explained. This is followed by a detailed description of the data and sample.

6.1 Empirical Model

The empirical model used in this thesis is the gravity model, which is based on the gravity equation. The idea behind the gravity equation is derived from Newton's gravity theory and states that bilateral trade flows depends on the economy of the trading countries. This refers to that countries with a high GDP generate greater trade volumes. Furthermore, the gravity equation does also capture another important element within international trade, namely that the distance between countries affect the size of the bilateral trade flow. The relationship between trade and the gravity equation was first presented by Tinbergen (1962). The gravity model is nowadays considered to be a fundamental work-horse when analyzing the global trade patterns (WTO & UNCTAD, 2012).

Equation (3) displays the gravity equation in the simplest multiplicative form. T represents the trade flow between the two countries, i and j . The two countries GDP is denoted by Y and the geographical distance between country i and j is denoted by D . a_0 , a_1 , a_2 and a_3 represent the unknown parameters in the gravity equation. Equation (3) states that the trade between the two countries is relative to the GDP and inversely relative to their distance (Santos Silva & Tenreyro, 2006).

$$T_{ij} = a_0 Y_i^{a_1} Y_j^{a_2} D_{ij}^{a_3} \quad \text{Equation (3)}$$

The specification used in this thesis is presented in Equation (4). The baseline specification is estimated with Ordinary Least Square with fixed effects.

$$\begin{aligned} \ln Import_{ijtc} = & \beta_1 + \beta_2 \ln POP_{it} + \beta_3 \ln POP_{jt} + \beta_4 \ln GDP_{it} + \beta_5 \ln GDP_{jt} + \beta_6 \ln Distance_{ij} \\ & + \beta_7 ComLang_{ij} + \beta_8 ColHist_{ij} + \beta_9 Grad_{jtc} + \tau_t + \gamma_{jc} + \lambda_i + \mu_{jc} * t \\ & + \varepsilon_{ijtc} \end{aligned} \quad \text{Equation (4)}$$

As shown in the specification in Equation (4) $Import_{ijtc}$ is the dependent variable and represents the yearly import where t denotes year and i denotes EU12 states and c denotes imports in the 2-digit HS¹¹ chapters and j beneficiary states from the GSP. The interpretation of the coefficients for the variables is as following: the coefficients for non-dummy variables

¹¹ A further description of the Harmonized System (HS) is presented in section 6.3.

are analyzed as elasticities. However, the coefficients for the dummy variables “...need to be transformed as follows in order to be interpreted as elasticities: $\text{elasticity} = \exp(a)-1$ where a is the estimated coefficient of the dummy variable.” (WTO & UNCTAD, 2012, p.127).

Population and GDP are included as controls since those two variables help explaining the trade pattern. The explanatory variable GDP is assumed to have a positive impact on trade flows, since wealthy countries tend to in a higher degree import and export more. Intuitively, GDP is a measure of the economic possibilities to create a trade flow between country i and country j . GDP is expressed in nominal euros. The size of the population of a country might act as a proxy for that country’s openness against other trading countries and the economic capacity of that country (WTO & UNCTAD, 2012).

Other explanatory variables that are commonly used when applying the gravity model are distance, common language and colonial history. The bilateral variable distance is measured as the distance between country i and country j ’s capitals. The bilateral variable distance is assumed to have a negative coefficient. The reason is that trading countries that have a far distance between each other experience higher trade costs which reduce trade incentives. Common language and colonial history are bilateral dummy variables. The previous mentioned gravity variables assume the value 1 if a bilateral pair share a common language or have a colonial history. In the opposite case, they assume the value 0. The coefficient for a bilateral trade pair that shares a common language is expected to show a positive sign. The same prediction is applied to the variable colonial history i.e. that the coefficient for that variable show a positive sign when trading country pairs have certain colonial ties to each other (WTO & UNCTAD, 2012)

The main independent variable of interest is $Grad_{jtc}$, which is the graduation dummy. The dummy assumes the value 1 if a product chapter¹² in a certain year from a certain exporter has been graduated and otherwise it assumes the value 0. The Graduation Dummy can be seen as a kind of “within” effect due to estimating the model with fixed exporter-product effects and

¹² The graduation dummy is constructed in the manner that it assumes the value 1 from that year a chapter has been graduated. Some products are originally graduated on a 4-digit, 6-digit or 8-digit level. A majority of products are graduated in chapter level and I have chosen to use data on chapter level due to being able to include more countries in the sample over the number of products. I have calculated how many percent of a chapter a product have been when products on a 4-digit, 6-digit or 8-digit level has been graduated and if a product consisted of more than 85 percent of the chapter then I have graduated the chapter. I have otherwise left the product non-graduated.

controlling for the specific time trends. This means that the Graduation Dummy show the effect of when a product from an exporter goes from having GSP to not having the preferences during the investigated time period. The goal of this is to capture the time series effect for the separate trade flows. This technically means that the Graduation Dummy captures an average of the deviation from the individual time trends for all specific combinations of exporters and products due to graduation. A positive coefficient would then imply that the average import to the EU12 members has increased during the investigated time period due to graduation. By this follows that a negative coefficient then would indicate that the average import during the investigated time period to the EU12 members has decreased as a consequence of graduation. To summarize, the total import flow could have been increasing or decreasing over the time period but the dummy coefficient manages to capture only the effect of graduation on the import flow.

The time fixed effects are represented by τ_t and controls for variation over time such as economic shocks. γ_{jc} is the specific effect for all combinations of exporters and products which “...captures all time-invariant heterogeneity based on observed and unobserved differences in product or exporter characteristics.” (Bourdet & Persson, 2012, p.305). An importer fixed effect is included, denoted as λ_i , in order to control for unobserved heterogeneity among the importing countries i.e. the EU12 member states. $\mu_{jc} * t$ is the exporter-product specific time trends which are linear time trends that are specific for every exporter-product chapter. This is included in order to control for the growth in imports of the product chapters from the beneficiary countries to the EU12 members over the covered time period. The inclusion of time trends makes it possible to isolate the real effect of graduation on imports generally and the potential differential effects among the combinations of exporter-products. Additionally, it allows controlling for other factors such as supply capacity, which may have an effect in imports, thus biasing the results¹³. Lastly, the disturbance term is denoted by ε_{ijtc} (Persson & Wilhelmsson, 2007).

¹³ A more detailed discussion about the inclusion of exporter-product specific time trends is presented in section 6.2.

6.2 Estimation and Estimation Issues

An Ordinary Least Square (OLS) estimator with fixed effects is the main method of estimation in this thesis. The baseline specification is estimated with time, importer and exporter-product fixed effects and robust standard errors. To check the robustness of the results several specifications are estimated with different variations of fixed effects such as separate exporter, separate product and importer fixed effects and pair fixed effects with separate product fixed effects.

There are four major estimation issues to keep in mind when estimating a gravity model. The four issues will be described and discussed in this section as well as possible solutions to control for them. One of the most debated issues when using trade data is zero trade values. The problem with zero trade could either be that there actually does not exist any bilateral trade within a product group, missing observations could be reported as zeros or that it is rounding errors due to very little bilateral trade in one specific product group. This issue might lead to inconsistent results when estimating a log linearized gravity model. The zero value observations will then be dropped since log of zero is undefined. As mentioned, it is almost unmanageable to distinguish between missing observations and zero trade (WTO & UNCTAD, 2012; Santos Silva & Tenreyro, 2006).

Another estimation issue that also is present when estimating gravity models is unobserved heterogeneity. Not controlling for it might influence the results to be inconsistent and biased. Unobserved heterogeneity arises as a result of an incorrect specification of the estimated model due to unobserved characteristics between country pairs, exporters or product groups. A way to handle the issue with unobserved heterogeneity when using panel data is to include fixed effects when estimating the specification. However, a pitfall when incorporating a lot of fixed effects is that degrees of freedom are lost (Egger, 2002; Gómez-Herrera & Milgram Baleix, 2012; Gómez-Herrera, 2013).

A third estimation issue worth to emphasize and that usually arises when estimating gravity models is heteroskedasticity. The main problem is that log linearizing the estimated model affects the disturbance term and further makes the variance inconstant for the observations used in the estimation (Gómez-Herrera, 2013). To stress the importance of this issue "...the pattern of heteroskedasticity and, indeed, the form of all higher-order moments of the conditional distribution of the error term can affect the consistency of an estimator, rather

than just its efficiency.” (Santos Silva & Tenreyro, 2006, p. 644). This is usually the case when executing an OLS regression and might as mentioned previously lead to inconsistent results (Gómez-Herrera, 2013; Santos Silva & Tenreyro, 2006).

The major estimation issue, which is essential in this thesis, is the endogeneity problem in the context of graduation. The endogeneity problem basically boils down to that some unobserved variable, not included in the model, are affecting the dependent variable, imports, and the independent variable, graduation. In other words, the estimated effect on the import value due to graduation would be a source of bias since the estimated effect on imports would be explained by something that is not included in the model. As mentioned previously, product groups from beneficiaries are graduated due to growth in imports to the European Union. Technically, this means that the graduation dummy switches from the value 0 to the value 1 when a product from a beneficiary is graduated. However, there might also be other factors that are not included in the model that affects the import during the covered time period. The endogeneity problem arises since regressions, which does not control for time trends would capture both the general time trend to the EU12 member states as well as the effect of graduation. It would be impossible to distinguish the actual effect of graduation from the general effect of growth imports to the EU12 countries during the covered time period. To deal with this issue I include specific exporter-product time trends that are linear and that are allowed to have any direction. This specific exporter-product time trend would help estimate the real graduation effect and hence capture any deviations from the time trend, since the general growth in imports to the EU12 members over time is controlled for. To clarify, adding the detailed time trends makes it easier for the model to isolate the effect of graduation (WTO & UNCTAD, 2012).

As mentioned in the beginning of this section, the main estimation method applied will be OLS with time, exporter-product and importer fixed effects and robust standard errors. The baseline specification is presented in Equation (4). As previously discussed, there are some setbacks when using OLS as an estimator and a natural choice when estimating the gravity model would be to use the Poisson pseudo-maximum-likelihood estimator (PPML), which is commonly used in the academics of international trade. However, the PPML estimator has a lot of benefits such as being able to estimate the gravity equation in its original form, which solves the problem with zero trade values. One major drawback with the PPML estimator, which is essential in this thesis, is that it is not possible to estimate the gravity model with exporter-product time trends due to there being too many dimensions. As discussed earlier,

including exporter-product time trends are of great importance when examining the effect of graduation on imports in order to be able to isolate the effects of graduation and controlling for the possible endogeneity problem. A way to investigate the zero trade values impact on the estimated results is to compare the baseline estimation when the zero trade values are dropped due to the log of zero being undefined with the baseline estimation replacing all zero trade values with a small value such as one which would define the log as zero. A solution to reduce the issue of unobserved heterogeneity is to include importer and exporter-product fixed effects in the estimation. Adopting robust standard errors when estimating the gravity model by using OLS decreases the problem with heteroskedasticity. The solutions discussed might in many ways handle the major estimation issues. However, it is not a perfectly solid method due that the gravity model needs to be log linearized in order to be estimated with OLS (Gómez-Herrera, 2013; Persson and Wilhelmsson, 2013; Santos Silva & Tenreyro, 2006; Shepherd, 2012; WTO & UNCTAD, 2012).

The baseline specification will be estimated with different sets of fixed effects in order to test the strength of the results. This will be pair fixed effects with separate product fixed effects, but also separate exporter, separate product and importer fixed effects. Furthermore, a robustness check will also be made to separate the graduation effect of the two different regimes. This is done by generating two new graduation variables in which the first graduation variable assumes the value 1 if a chapter from a certain exporter has been graduated during 1995-2005 and otherwise it assumes the value 0. The second graduation variable will assume the value 1 if a chapter from a certain exporter has been graduated during 2006-2015 and otherwise it assumes the value 0. However, the main setback when using OLS is that the gravity equation is log linearized which further means that observations from the sample will be dropped due to zero trade values. A way to control for the zero trade values and make sure that they do not drive the estimates in a certain direction is to compare the estimates of the baseline specification when the zero trade values are dropped and when the zero trade values are included. The latter is done by replacing the zero trade values with a small value such as one in order to have the log defined as zero. If the estimates go in the same direction one can draw the conclusion that the results are not mainly driven by the zero trade values (Santos Silva & Tenreyro, 2006; Shepherd, 2012; WTO & UNCTAD, 2012).

6.3 Data and Sample

A panel data set is used in this thesis. The sample consists of 17 exporting countries and 12 importing countries during the time period 1993-2015. The exporting countries were or are classified as developing countries when they gained preferential treatment through the GSP arrangement. EU's GSP scheme is the best preferential trade benefits when trading with the EU12 members for the exporting countries that are included in the sample. Developing countries that are eligible for other preferential trade preferences such as those described in the second section are not included in the sample. Furthermore, the exporting countries included in the sample are only those that were eligible to benefit from EU's GSP scheme in 1994. In other words, there is no inclusion of countries that has been eligible for EU's GSP scheme during the following years. The importing countries are the EU12¹⁴ nations. The argument behind limiting the sample to EU12 countries is that those were the only European countries that imported under the GSP scheme in the beginning of the time period i.e. 1993 and 1994 (Eurostat, 2014). All countries included in the sample are presented in table 5.

The Harmonized System (HS) is an international categorization system for approximately 5300 products. It groups products down to an 8-digit level. It consists of 21 sections, which are then broken down to a 2-digit level consisting of 99 chapters. An example is chapter 09 which include coffee, tea, maté and spices. This chapter might then be broken down to a 4-digit heading, which is even more detailed than chapters. Headings might then be broken down to subheadings, which is on a 6-digit level. The European Unions Harmonized System¹⁵ has detailed product data down to an 8-digit level (UN TRADE STATISTICS, 2017).

The trade data used in this thesis is in a disaggregated level of 2-digit HS chapters¹⁶ and the data set includes all 99 chapters¹⁷. An argument behind using trade data on detailed level is the inclusion of product and product groups in the GSP arrangement. It would be impossible

¹⁴ The trade data for Belgium and Luxembourg is merged until 1999. I have formed a synthetic country 'Bellux' for the period 1993-1998 in order to account for this. Belgium's gravity variables represent the gravity variables for 'Bellux'. Belgium and Luxembourg's GDP are added together and represents total GDP for 'Bellux' during the period 1993-1998. The same procedure is executed when accounting for total population in 'Bellux'. The synthetic country is dissolved in 1999 since trade data for Belgium and Luxembourg is reported separately from 1999 until 2015.

¹⁵ The Combined Nomenclature is the European Union's Harmonized System.

¹⁶ A full list of all 99 chapters in the Harmonized System is presented in the appendix in table 7.

¹⁷ Chapter 77 and 98 does not exist and 99 include temporary legislations and is not included either.

to investigate the impact of graduation on products if the data were on an aggregate level. However, a main difference between using data on aggregated versus disaggregated level is that there almost always exists bilateral trade on an aggregated level while all bilateral country pairs might not trade in every product group. This means that there exists some zero trade flows in the panel data set. The trade data is represented by the import values from the EU12 nations expressed in euros and collected from Eurostat. An argument behind collecting import data instead of export data is that it is often reported more correctly and in detail due to customs and taxes (WTO, 2012).

Table 5: The exporting and importing countries included in the sample

GSP Beneficiaries			EU12	
Argentina	Indonesia	South Africa	Belgium	Italy
Brazil	Kazakstan	South Korea	Denmark	Luxembourg
Brunei	Malaysia	Thailand	France	Netherlands
China	Russia	Uruguay	Germany	Portugal
Hong-Kong	Saudi Arabia	Vietnam	Greece	Spain
India	Singapore		Ireland	United Kingdom

Data on GDP and population is collected from the World Bank Indicators. The bilateral gravity variables: Distance, Common language, Colonial history are gathered from CEPII database.

7. Empirical Results

7.1 Baseline Estimation

The baseline results are presented in table 6, column (a), where the gravity model with exporter-product specific linear time trends is estimated with OLS using exporter-product fixed effects, importer fixed effects and year fixed effects. The main independent variable, the Graduation Dummy, is significant at a ten percent level. The estimated coefficient has a negative sign, which suggest that graduation of product groups from beneficiaries during the covered time period has a negative effect on the imports of the graduated products to the EU12 member states. In other words, the import of the graduated products to the EU12 members decreases on average with 9.5 percent as a consequence of graduation. The

estimated effect on imports due to graduation goes in line with the theoretical predictions. Namely that graduation will have a negative effect on the imports due the removal of trade preferences. However, to point out once more, the total import flow could have been increasing or decreasing over the time period which induces the endogeneity issue. Nevertheless, by including the specific exporter-product time trends the dummy coefficient achieves to isolate the effect of graduation on the import flow.

The other gravity variables in the baseline estimation that are significant show the expected sign. For example the variable Distance is significant at a one percent level and show that two countries trade less on average with each other if they have a large geographical distance. The variable Colonial History has a positive coefficient and is also significant at a one percent level. This can be interpreted as countries with a colonial history trade more with each other, which goes in line with the theoretical predictions. The bilateral variable Common Language is also significant at a one percent level and the coefficient has a positive sign, which implies that sharing a Common Language has a positive effect on trade. GDP Importer is highly significant at a one percent level and has a positive coefficient. This is expected and goes in line with economic theory since a country with a high GDP tends trade more. The variable Population Importer is significant at a one percent level and the coefficient has a positive sign, which implies that a growing population increases imports. Neither the variables GDP Exporter nor Population Exporter are significant.

Table 6: Estimation Results

Dependent Variable: Import Value	(a)	(b)	(c)	(d)	(e)
Distance	-2.840*** (0.208)	-2.844*** (0.208)	-	-2.844*** (0.208)	-2.840*** (0.213)
Common Language	1.146*** (0.108)	1.133*** (0.108)	-	1.133*** (0.108)	1.146*** (0.0979)
Colonial History	0.859*** (0.0968)	0.864*** (0.0966)	-	0.863*** (0.0966)	0.859*** (0.0930)
GDP Importer	0.293*** (0.0303)	0.301*** (0.0300)	0.299*** (0.0532)	0.301*** (0.0300)	0.293*** (0.0359)
GDP Exporter	0.0400 (0.185)	0.0182 (0.182)	0.0825 (0.193)	0.0184 (0.182)	0.0436 (0.188)
Population Importer	2.572*** (0.258)	2.632*** (0.257)	2.551*** (0.615)	2.632*** (0.257)	2.572*** (0.335)
Population Exporter	0.435 (1.297)	0.111 (1.236)	0.586 (1.175)	0.113 (1.236)	0.329 (1.152)
Graduation Dummy	-0.0999* (0.0521)	-0.130*** (0.0471)	-0.149*** (0.0562)		-0.125* (0.0662)
Graduation Regime 1				-0.131*** (0.0468)	
Graduation Regime 2				-0.191*** (0.0561)	
Observations	437,472	440,640	437,472	440,640	437,472
R-squared	0.386	0.385	0.567	0.385	0.676
Exporter-Product Fixed Effects	Yes	Yes	No	Yes	No
Importer Fixed Effects	Yes	Yes	No	Yes	Yes
Separate Exporter Fixed Effects	No	No	No	No	Yes
Separate Product Fixed Effects	No	No	Yes	No	Yes
Pair Fixed Effects	No	No	Yes	No	No
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes
Exporter-Product Specific Time Trends	Yes	Yes	Yes	Yes	Yes

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Notes: Column (a) presents the results of the baseline specification estimated by using OLS with exporter-product fixed effects, importer fixed effects and year fixed effects. Column (b) presents the results of the baseline specification when the zero trade values are not dropped in the OLS estimation with exporter-product fixed effects, importer fixed effects and year fixed effects. Column (c) presents the results of the baseline specification estimated by using OLS with pair fixed effects, separate product fixed effects and year fixed effects. Column (d) presents the results of the specification when the graduation regimes are separated, the specification are estimated by using OLS with exporter-product fixed effects, importer fixed effects and year fixed effects. Column (e) presents the results of the baseline specification estimated by using OLS with separate exporter fixed effects, separate product fixed effects, importer fixed effects and year fixed effects. Note that the gravity model including exporter-product specific time trends is estimated in all regressions.

7.2 Robustness Checks

Table 6, column (b), presents the estimates of the baseline specification with the modification that the zero trade values are included in the estimation since they are replaced with a small number in order to have the log defined and to check that the results are not driven by the zero

trade values. There is no major difference between the results attained in column (a) and column (b) with the exception of the Graduation Dummy being significant at a one percent level in the estimated specification presented in column (b). The coefficient for the Graduation Dummy has a negative sign just as it has in the baseline estimation. This gives further strength to the baseline result and implies that the zero trade values do not have a major impact on the estimates. The obtained result indicates that graduation of products decreases the import of those products to the EU12 members. Aside from that, there are no real differences in the results presented in column (a) and column (b) in table 6. The variables GDP Exporter and Population Exporter are insignificant. The coefficients for the variables Common Language, Colonial History, GDP Importer and Population Importer still show a positive sign and the coefficient for Distance show a negative sign.

Column (c) in table 6 presents the estimates where the gravity model with exporter-product specific linear time trends is estimated with OLS using pair fixed effects, separate product fixed effects and year fixed effects. The bilateral variables Distance, Common Language and Colonial History are all dropped because of collinearity. The coefficients for the variables GDP Importer and Population Importer still show a positive sign and are significant at a one percent level. The main independent variable of interest, the Graduation Dummy, is significant at a one percent level and the coefficient show a negative sign just as it does in the estimations presented in column (a) and column (b) in table 6. This further strengthens the previously obtained results about graduation having a negative effect on the import of the graduated products due to the removal of the preferential treatment.

Column (d) in table 6 show the attained estimates when the effect of the two graduation regimes are separated. However, the gravity model with exporter-product specific linear time trends is still estimated with OLS using exporter-product fixed effects, importer fixed effects and year fixed effects. The bilateral gravity variables are all significant at a one percent level presenting the predicted sign on the coefficients. The coefficients for the variables GDP Importer and Population Importer show a positive sign. The two main variables of interest in this estimation, Graduation Regime 1 and Graduation Regime 2, have a negative sign and are significant at a one percent level. The import of graduated products to the EU12 member states during the first regime decreases on average with approximately 12 percent as a result of graduation. The impact of the second regime is slightly larger in where the import of the graduated products decreases on average with around 17 percent as a consequence of removing the GSP.

The last robustness test is presented in column (e) in table 6. The gravity model with exporter-product specific linear time trends is estimated with OLS using separate exporter, separate product, importer and year fixed effects. The coefficient for the bilateral variable distance is negative which is predicted by economic theory. Furthermore, there is a positive sign on the coefficients for the other variables, which goes in line with trade theory. For example, speaking the same language is assumed to have a positive effect on trade. The coefficient for the Graduation Dummy shows a negative sign and the dummy variable is significant at ten percent level. The estimated coefficient for the Graduation Dummy goes in same direction as the results obtained in the baseline estimation and the other robustness checks.

In sum, the overall result from the baseline estimation and the different robustness tests is that the Graduation Dummy's coefficient exhibits a negative sign. The implication of the results is that the import of the graduated products to the EU12 countries decreases as a consequence of graduation during the covered time span. The attained results can be linked to the theory, where one would expect that the removal of trade preferences would generate a negative effect on the trade flow. To emphasize here is the endogeneity issue, which means that the total import flow to EU12 members could have been increasing or decreasing during the investigated time period due to other factors that are not included in the model. A way to control for this is to include the specific exporter-product time trends in where the Graduation Dummy's estimated coefficient achieves to capture only the effect of graduation on the import flow. The results, however, contradicts the conclusion made by Hoch and Ow-Taylor (1993). The authors argue that graduation did not have a negative effect on the former beneficiaries. An explanation for this could be that Hoch and Ow-Taylor (1993) studies the US GSP arrangement in where graduation effect could differ across the GSP schemes. However, another explanation could be that the authors do not succeed to fully control for the endogeneity issue that arises which would then bias the results. This would further put some weight behind the argument of including the specific exporter-product time trends in order to isolate the effect of graduation. However, including specific time trends is a rather new methodological feature when studying trade preferences.

8. Summary and Further Research

This study investigates the impact of the graduation mechanism in the European Unions GSP Scheme by estimating a gravity model with specific exporter-product time trends by using an OLS estimator with fixed effects. Products are graduated as a result of being successful in imports and this induces an endogeneity problem when estimating the effect of graduation on trade. The reason is that there are also other factors, which might not be included in the model that has an effect on trade. It would be unmanageable to separate the actual effect of graduation from the general effect of growth in the imports to EU12 countries during the covered time period if the endogeneity issue is not controlled for. I include specific exporter-product time trends that are linear and that are allowed to have any direction in order to isolate the effect of graduation. The inclusion of specific time trend is a rather new methodological approach when dealing with trade preferences. The way to handle the endogeneity issue in order to capture the real effect of graduation on trade flows is the main contribution of this paper to the existing literature.

The attained results goes in line with the theoretical predictions, which suggest that removal of trade preferences would increase the cost to export the graduated product. The estimates show that graduation of a specific product from a specific exporter has a negative effect on the import of that product to the EU12 member states. The estimated coefficient in the baseline results implies that the import of the graduated products to the EU12 decreases on average with 9.5 percent as a consequence of graduation. The total import flow over that time period could have been increasing or decreasing but is controlled for by the specific time trends. The results from the baseline estimation are robust through different specifications. The conclusion when examining the separate effects of the two graduation regimes is that the second has on average had slightly more negative effect on the imports of the graduated products than the first regime. However, the main conclusion of the results is that graduation of products has a negative effect on the import of those products.

Further research should address the graduation mechanism on a disaggregated level within other GSP schemes such as the US GSP arrangement. This would open up to compare the graduation effect over the different schemes. The main focus should then be to control for the endogeneity issue in order to capture the real effect of graduation. This would be interesting since the graduation rules differ among the GSP arrangements and would be a contribution to the limited research of graduation. Another extension to this study would be to include more

members of the European Union in order to have a larger sample and study if that has any impact on the estimates.

References

- Bourdet, Y. & Persson, M. (2012). “Completing the European Union Customs Union: The Effects of Trade Procedure Harmonization.” *Journal of Common Market Studies*, vol. 50(2). pp. 300–314.
- Chaney, T. (2008). “Distorted Gravity: The Intensive and Extensive Margins of International Trade.” *American Economic Review*, vol. 98(4). pp. 1707–21.
- CEPII. (2017). GeoDist. Retrieved 2 May, 2017 from:
http://www.cepii.fr/CEPII/en/bdd_modele/presentation.asp?id=6
- Cuyvers, L. (1998). “The generalised system of preferences of the European Union, with special reference to ASEAN and Thailand.” *CAS Discussion paper No 18*
- Cuyvers, L. & Verherstraeten, S. (2005). “The EU’s Generalized System of Preferences and its ASEAN beneficiaries: a success story?” *CAS Discussion Paper No. 47, Centre for ASEAN Studies, Antwerp, December*.
- Cuyvers, L. & Soeng, R. (2013). “The impact of the EU Generalized System of Preferences on exports and GSP utilization by Asian and Latin American countries.” *Journal of International Trade Law and Policy*, vol. 12 Iss 1. pp. 80 – 97.
- Egger, P. (2002). “An Econometric View on the Estimation of Gravity Models and the Calculation of Trade Potentials.” *World Economy*, vol. 25(2). pp. 297-312.
- European Commission. (2004). “Developing countries, international trade and sustainable development: the function of the Community’s generalised system of preferences (GSP) for the ten-year period from 2006 to 2015.” *Brussels, 7.7.2004 COM(2004) 461 final*
- European Commission. (2010). “Public Consultation Exercise on the EU’s GSP, March-May 2010.” *External trade, PP, EC, 2010*. Retrieved 12 April, 2017 from:
http://trade.ec.europa.eu/doclib/docs/2010/june/tradoc_146223.pdf
- European Commission. (2015). “The EU’s Generalized Scheme of Preferences (GSP).” Retrieved 8 April, 2017 from:
http://trade.ec.europa.eu/doclib/docs/2015/august/tradoc_153732.pdf

European Commission. (2017). “Economic Partnerships” Retrieved 15 June, 2017 from:
<http://ec.europa.eu/trade/policy/countries-and-regions/development/economic-partnerships/>

European Parliament. (2017). “Human rights in EU trade policy: Unilateral measures.”
Retrieved 12 June, 2017 from:
[http://www.europarl.europa.eu/RegData/etudes/BRIE/2017/595878/EPRS_BRI\(2017\)595878_EN.pdf](http://www.europarl.europa.eu/RegData/etudes/BRIE/2017/595878/EPRS_BRI(2017)595878_EN.pdf)

European Union. (1994). ”Council Regulation (EC) No 3281/94.” *Official Journal of the European Union, L 348/1*, 30.12.1994

European Union. (1997) ”Council Regulation (EC) No 2623/97.” *Official Journal of the European Union, L 354/1*, 30.12.1997

European Union. (1998) ”Council Regulation (EC) No 2820/98.” *Official Journal of the European Union, L 357/1*, 30.12.1998

European Union. (2001). ”Council Regulation (EC) No 2501/2001.” *Official Journal of the European Union, L 346/1*, 31.12.2001

European Union. (2003). ”Council Regulation (EC) No 2211/2003.” *Official Journal of the European Union, L 332/1*, 19.12.2003

European Union. (2005). ”Council Regulation (EC) No 980/2005.” *Official Journal of the European Union, L 169/1*, 30.5.2005

European Union. (2008). ”Council Regulation (EC) No 732/2008.” *Official Journal of the European Union, L 211/1*, 6.8.2008

European Union. (2012:a). ”Council Regulation (EU) No 978/2012.” *Official Journal of the European Union, L 303/1*, 25.10.2012

European Union. (2012:b). ”Council Regulation (EU) No 1213/2012.” *Official Journal of the European Union, L 348/11*, 18.12.2012

European Union. (2012). ”Council Regulation (EU) No 1213/2012.” *Official Journal of the European Union, L 348/11*, 18.12.2012

European Union. (2015). ”Council Regulation (EU) No 2015/1978.” *Official Journal of the*

European Union, L 289/1, 5.11.2015

Eurostat. (2017). "International Trade Database" Retrieved 10 May, 2017 from:

<http://ec.europa.eu/eurostat/web/international-trade-in-goods/data/database>

Eurostat. (2014). "Glossary: EU Enlargements" Retrieved 29 June, 2017 from:

http://ec.europa.eu/eurostat/statistics-explained/index.php/Glossary:EU_enlargements

Gasiorek, M. (2010). "Mid-term Evaluation of the EU's Generalised System of Preferences." *Center for the Analysis of Regional Integration at Sussex*

Gómez-Herrera, E., & Milgram Baleix, J. (2012). "EMU impact of on third countries' exports. A gravity approach". *The Papers 10/26, Department of Economic Theory and Economic History of the University of Granada*

Gómez-Herrera, E. (2013). "Comparing alternative methods to estimate gravity models of bilateral trade". *Empirical Economics, vol. 44(3). pp. 1087-1111.*

Hoch, O. C. & Ow-Taylor C. H. (1993). "Graduation from the U.S. GSP-A Comparative Study of the East Asian Newly Industrializing Economies." *Journal of Asian Economics, vol. 4(1). pp. 89-98.*

Kirkman, K. E. (1989). "Graduation in the generalized system of preferences: The projected impact on remaining beneficiaries in the United States scheme." *World Development, ISSN 0305-750X, 1989, Vol 17, Iss 10. pp. 1597 – 1600.*

Melitz, M.J. (2003). "The Impact of Trade on Intra-Industry Reallocations and Aggregate Industry Productivity." *Econometrica, vol. 71(6). pp. 1695–725.*

Mendez, J. A. & Murray, T. (1990). "A note on the effects of graduation under the US GSP scheme on Africa." *Journal of Development Studies, vol.26 Iss 2. pp. 313–323.*

Nilsson, L. (2002). "Trading Relations: Is the Roadmap from Lomé to Cotonou Correct?" *Applied Economics, vol. 34(4). pp. 439–452.*

Oguledo, V.I. & MacPhee, C.R. (1994). "Gravity Models: A Reformulation and an Application to Discriminatory Trade Arrangements." *Applied Economics, vol. 26(2). pp. 107–120.*

Persson, M. & Wilhelmsson, F. (2007). "Assessing the Effects of EU Trade Preferences for Developing Countries." in Y. Bourdet, J. Gullstrand and K. Olofsdotter (eds.), *The European 31 Union and Developing Countries: Trade, aid and Growth in an Integrating World* (Cheltenham: Edward Elgar Publishing) pp. 29–48.

Persson, M. (2012). "From Trade Preferences to Trade Facilitation: Taking Stock of the Issues." *Economics: The Open-Access, Open-Assessment E-journal*, vol. 6 (17). pp. 1-33.

Persson, M. & Wilhelmsson, F. (2013). "EU Trade Preferences and Export Diversification." *Working Paper 2013:32, Lund University, Department of Economics at School of Economics and Management*, pp. 1-30. Retrieved 10 April, 2017 from:
http://project.nek.lu.se/publications/workpap/papers/WP13_32.pdf

Persson, M. (2015). "Trade Preferences from a Policy Perspective." in Morrissey, O. R. Lopez and K. Sharma (eds.), *Handbook on Trade and Development*, Cheltenham, United Kingdom: Edward Elgar, pp. 111-128.

Péridy, N. (2005). "The Trade Effects of the Euro-Mediterranean Partnership: What Are the Lessons for ASEAN Countries?" *Journal of Asian Economics*, vol. 16(1). pp. 125–139.

Sapir, A. (1981). "Trade Benefits Under the EEC Generalized System of Preferences." *European Economic Review*, vol. 15(3). pp. 339–55.

Santos Silva, J.M.C., & Tenreyro, S. (2006). "The Log of Gravity". *Review of Economics and Statistics*, vol. 88(4). pp. 641–58.

Shepherd, B. (2012). "The Gravity Model of International Trade: A User Guide". *ARTNeT Gravity Modeling Initiative and UN publications*

Townsend, I. (2008). "EU trade preferences for developing countries: the GSP & 'Everything But Arms'." *SN/EP/3369, December 2008*. Retrieved 20 April, 2017 from:
<http://researchbriefings.files.parliament.uk/documents/SN03369/SN03369.pdf>.

UNCTAD. (1998). "Generalized System of Preferences: Handbook on the Scheme of the European Community." Retrieved 9 April, 2017 from:
<http://unctad.org/en/Docs/poitcdtsbm25.pdf>

UNCTAD. (2007). “Trade in Textiles and Clothing: Assuring Development Gains in a Rapidly Changing Environment ” Retrieved 18 April, 2017 from:

http://unctad.org/en/docs/ditctnkd20069_en.pdf

UNCTAD. (2015). “Generalized System of Preferences: Handbook on the Scheme of the European Union.” Retrieved 12 April, 2017 from:

http://unctad.org/en/PublicationsLibrary/itcdtsbmisc25rev4_en.pdf

UNDP. (2017). ”About China” Retrieved 25 June, 2017 from:

<http://www.cn.undp.org/content/china/en/home/countryinfo.html>

UN TRADE STATISTICS. (2017). “Harmonized Commodity Description and Coding Systems HS.” Retrieved 17 June, 2017 from:

<https://unstats.un.org/unsd/tradekb/Knowledgebase/50018/Harmonized-Commodity-Description-and-Coding-Systems-HS>

World Bank. (2017).”World Development Indicators” Retrieved 25 April, 2017 from:

<http://data.worldbank.org/indicator>

WTO. (2011). “II. The WTO and preferential trade agreements: From co-existence to coherence.” Retrieved 10 April, 2017 from:

https://www.wto.org/english/res_e/booksp_e/anrep_e/wtr11-2a_e.pdf

WTO. (2012). ”International Trade Statistics 2012.” Retrieved 29 June, 2017 from:

https://www.wto.org/english/res_e/statis_e/its2012_e/its2012_e.pdf

WTO. (2017). “Regional trade agreements and preferential trade agreements” Retrieved 25 June, 2017 from: https://www.wto.org/english/tratop_e/region_e/rta_pta_e.htm

WTO & UNCTAD. (2012). *A Practical Guide to Trade Policy Analysis*.

Zhou, W. & Cuyvers, L. (2012). “The effectiveness of EU's Generalised System of Preferences: Evidence from ASEAN countries.” *Journal of International Trade Law and Policy*, vol.11 Iss 1. pp. 65 – 81.

Appendix

Table 7: The Harmonized System categorized in sections and chapters

Section I	Live Animals; Animal Products
Chapter 1	Live Animals
Chapter 2	Meat and edible meat offal
Chapter 3	Fish and crustaceans, molluscs and other aquatic invertebrates
Chapter 4	Dairy produce; birds' agges; natural honey; edible products of animal origin, not elsewhere specified or included
Chapter 5	Products of animal origin, not elsewhere specified or included
Section II	Vegetable Products
Chapter 6	Live trees and other plants; bulbs, roots and the like; cut flowers and ornamental foliage
Chapter 7	Edible vegetables and certain roots and tubers
Chapter 8	Edible fruit and nuts; peel of citrus fruit or melons
Chapter 9	Coffee, tea, maté and spices
Chapter 10	Cereals
Chapter 11	Products of the milling industry; malt; starches; inulin; wheat gluten
Chapter 12	Oil seeds and oleaginous fruits; miscellaneous grains, seeds and fruit; industrial or medicinal plants; straw and fodder
Chapter 13	Lac; gums; resins and other vegetable saps and extracts
Chapter 14	Vegetable plaiting materials; vegetable products not elsewhere specified or included
Section III	Animal or Vegetable Fats and Oils and their Cleavage Products; Prepared Edible Fats; Animal or Vegetable Waxes
Chapter 15	Animal or vegetable fats and oils and their cleavage products; prepared edible fats; animal or vegetable waxes
Section IV	Prepared Foodstuffs; Beverages, Spirits, and Vinegar; Tobacco and Manufactured Tobacco Substitutes
Chapter 16	Preparations of meat, of fish or of crustaceans, molluscs or other aquatic invertebrates
Chapter 17	Sugars and sugar confectionery
Chapter 18	Cocoa and cocoa preparations
Chapter 19	Preparations of cereals, flour, starch or milk; bakers' wares
Chapter 20	Preparations of vegetables, fruit, nuts or other parts of plants
Chapter 21	Miscellaneous edible preparations
Chapter 22	Beverages, spirits and vinegar
Chapter 23	Residues and waste from the food industries; prepared animal feed
Chapter 24	Tobacco and manufactured tobacco substitutes
Section V	Mineral Products
Chapter 25	Salt; sulfur; earths and stone; plastering materials, lime and cement
Chapter 26	Ores, slag and ash
Chapter 27	Mineral fuels, mineral oils and products of their distillation; bituminous substances; mineral waxes
Section VI	Products of the Chemical or Allied Industries
Chapter 28	Inorganic chemicals; organic or inorganic compounds of precious metals, of rare-earth metals, of radioactive elements or of isotopes
Chapter 29	Organic chemicals
Chapter 30	Pharmaceutical products
Chapter 31	Fertilizers
Chapter 32	Tanning or dyeing extracts; tannins and their derivatives; dyes, pigments and other coloring matter; paints, varnishes; putty and other mastics; inks
Chapter 33	Essential oils and resinoids: perfumery, cosmetic or toilet preparations
Chapter 34	Soap, organic surface-active agents, washing preparations, lubricating preparations, artificial waxes, prepared waxes, polishing or scouring preparations, candles and similar articles, modeling pastes, "dental waxes" and dental preparations with a basis of plaster
Chapter 35	Albuminoidal substances; modified starches; glues; enzymes
Chapter 36	Explosives; pyrotechnic products; matches; pyrophoric alloys; certain combustible preparations
Chapter 37	Photographic or cinematographic goods
Chapter 38	Miscellaneous chemical products
Section VII	Plastics and Articles thereof; Rubber and Articles thereof
Chapter 39	Plastics and articles thereof
Chapter 40	Rubber and articles thereof

Section VIII	Raw Hides and Skins, Leather, Furskins and Articles thereof; Saddlery and Harness; Travel Goods, Handbags and Similar Containers; Articles of Animal Gut (Other than Silkworm Gut)
Chapter 41	Raw hides and skins (other than furskins) and leather
Chapter 42	Articles of leather; saddlery and harness; travel goods, handbags and similar containers; articles of animal gut (other than silkworm gut)
Chapter 43	Furskins and artificial fur; manufactures thereof
Section IX	Wood and Articles of Wood; Wood Charcoal; Cork and Articles of Cork; Manufactures of Straw, of Esparto or of Other Plaiting Materials; Basketware and Wickerwork
Chapter 44	Wood and articles of wood; wood charcoal
Chapter 45	Cork and articles of cork
Chapter 46	Manufactures of straw, of esparto or of other plaiting materials; basketware and wickerwork
Section X	Pulp of Wood or of Other Fibrous Cellulosic Material; Recovered (Waste and Scrap) Paper or Paperboard; Paper and Paperboard and Articles thereof
Chapter 47	Pulp of wood or of other fibrous cellulosic material; recovered (waster and scrap) paper or paperboard
Chapter 48	Paper and paperboard; articles of paper pulp, of paper or of paperboard
Chapter 49	Printed books, newspapers, pictures and other products of the printing industry; manuscripts, typescripts and plans
Section XI	Textiles and Textiles Articles
Chapter 50	Silk
Chapter 51	Wool, fine or coarse animal hair; horsehair yarn and woven fabric
Chapter 52	Cotton
Chapter 53	Other vegetable textile fibres; paper yarn and woven fabrics of paper yarn
Chapter 54	Man-made filaments; strip and the like of man-made textile materials
Chapter 55	Man-made staple fibers
Chapter 56	Wadding, felt and nonwovens; special yarns; twine, cordage, ropes and cables and articles thereof
Chapter 57	Carpets and other textile floor coverings
Chapter 58	Special woven fabrics; tufted textile fabrics; lace; tapestries; trimmings; embroidery
Chapter 59	Impregnated, coated, covered or laminated textile fabrics; textile articles of a kind suitable for industrial use
Chapter 60	Knitted or crocheted fabrics
Chapter 61	Articles of apparel and clothing accessories, knitted or crocheted
Chapter 62	Articles of apparel and clothing accessories, not knitted or crocheted
Chapter 63	Other made up textile articles; needlecraft sets; worn clothing and worn textile articles; rags
Section XII	Footwear, Headgear, Umbrellas, Sun Umbrellas, Walking-sticks, Seat-sticks, Whips, Riding-crops and Parts thereof; Prepared Feathers and Articles made thereiwith; Artificial Flowers; Articles of Human Hair
Chapter 64	Footwear; gaiters and the like; parts of such articles
Chapter 65	Headgear and parts thereof
Chapter 66	Umbrellas, sun umbrellas, walking-sticks, seat-sticks, whips, riding-crops and parts thereof
Chapter 67	Prepared feathers and down and articles made of feathers or of down; artificial flowers; articles of human hair
Section XIII	Articles of Stone, Plaster, Cement, Asbestos, Mica or Similar Materials; Ceramic Products; Glass and Glassware
Chapter 68	Articles of stone, plaster, cement, asbestos, mica or similar materials
Chapter 69	Ceramic products
Chapter 70	Glass and glassware
Section XIV	Natural or Cultured Pearls, Precious or Semiprecious Stones, Precious Metals, Metals Clad with Precious Metal, and Articles thereof; Imitation Jewelry; Coin
Chapter 71	Natural or cultured pearls, precious or semiprecious stones, precious metals, metals clad with precious metal, and articles thereof; imitation jewelry; coin
Section XV	Base Metals and Articles of Base Metal
Chapter 72	Iron and steel
Chapter 73	Articles of iron or steel
Chapter 74	Copper and articles thereof
Chapter 75	Nickel and articles thereof
Chapter 76	Aluminum and articles thereof
Chapter 77	(Reserved for possible future use)
Chapter 78	Lead and articles thereof
Chapter 79	Zinc and articles thereof
Chapter 80	Tin and articles thereof

Chapter 81	Other base metals; cermets; articles thereof
Chapter 82	Tools, implements, cutlery, spoons, and forks, of base metal; parts thereof of base metal
Chapter 83	Miscellaneous articles of base metals
Section XVI	Machinery and Mechanical Appliances; Electrical Equipment, Parts thereof; Sound Recorders and Reproducers, Television Image and Sound Recorders and Reproducers, and Parts and Accessories of such Articles
Chapter 84	Nuclear reactors, boilers, machinery and mechanical appliances; parts thereof
Chapter 85	Electrical machinery and equipment and parts thereof; sound recorders and reproducers, television image and sound recorders and reproducers, and parts and accessories of such articles
Section XVII	Vehicles, Aircraft, Vessels and Associated Transport Equipment
Chapter 86	Railway or tramway locomotives, rolling stock and parts thereof; railway or tramway track fixtures and fittings and parts thereof; mechanical (including electro-mechanical) traffic signaling equipment of all kinds
Chapter 87	Vehicles other than railway or tramway rolling stock, and parts and accessories thereof
Chapter 88	Aircraft, spacecraft, and parts thereof
Chapter 89	Ships, boats and floating structures
Section XVIII	Optical, Photographic, Cinematographic, Measuring, Checking, Precision, Medical or Surgical Instruments and Apparatus; Clocks and Watches; Musical Instruments; Parts and Accessories thereof
Chapter 90	Optical, photographic, cinematographic, measuring, checking, precision, medical or surgical instruments and apparatus; parts and accessories thereof
Chapter 91	Clocks and watches
Chapter 92	Musical instruments; parts and accessories of such articles
Section XIX	Arms and Ammunition; Parts and Accessories thereof
Chapter 93	Arms and ammunition; parts and accessories thereof
Section XX	Miscellaneous Manufactured Articles
Chapter 94	Furniture; bedding, mattresses, mattress supports, cushions and similar stuffed furnishings; lamps and lighting fittings, not elsewhere specified of included; illuminated signs, illuminated nameplates and the like: prefabricated buildings
Chapter 95	Toys, games and sports equipment; parts and accessories thereof
Chapter 96	Miscellaneous manufactured articles
Section XXI	Works of Art, Collectors' Pieces and Antiques
Chapter 97	Works of art, collectors' pieces and antiques
Section XXII	Special Classification Provisions; Temporary Legislation; Temporary Modifications Established Pursuant to Trade Legislation; Additional Import Restrictions Established Pursuant to Section 22 of the Agricultural Adjustment Act, As Amended
Chapter 98	Special classification provisions
Chapter 99	Temporary legislation; temporary modifications established pursuant to trade legislation; additional import restrictions established pursuant to section 22 of the agricultural adjustment act, as amended

Source: Eurostat (2017)

Table 8: Variables and Definitions

Variable	Definition and Data Source
Import Value	Imports in nominal Euro. Data source: Eurostat Trade Database (2017)
GDP	GDP in nominal USD converted by the author to Euro. Data source: World Bank (2017)
Population	Population . Data source: World Bank (2017)
Distance	Distance in km between the two largest cities in two countries. Data source: CEPII (2017)
Colonial History	Dummy variable that is defined as 1 if two countries have a colonial history. Data source: CEPII (2017)
Common official language	Dummy variable that is defined as 1 if two countries share a common official or primary language. Data source: CEPII (2017)
Graduation Dummy	Dummy variable that is defined as 1 if a product from a beneficiary is graduated. Computed by the author using information from the legislative acts from the European Council (1994;1997;1998;2001;2003;2005; 2008;2012:a;2012:b;2015).