



# LUND UNIVERSITY

## School of Economics and Management

### Graduation From the EU GSP Scheme: The Effects of China

#### **Abstract**

The European Union has a number of policies intended to stimulate growth and development of the less developed countries. This paper investigates EUs largest of this kind, the Generalized System of Preferences, and the effects of graduating from the scheme. When the development of a beneficiary country's product sector is considered being competitive enough, the EU will no longer include the sector in the scheme, that sector is then being graduated. The biggest beneficiary of the scheme during the last decades has been China, which is also the EUs biggest trading partner. In 2015, China had all of its then still included products sectors graduated from the scheme. This paper empirically investigates the effects graduation has on China's exports to the EU. The estimations are performed with a gravity model specified with the level of China's exports as the dependent variable and the graduation of sectors from the GSP as the main explanatory variable. The study is not able to find any negative effect from graduation.

## **Preface**

This thesis will conclude my one-year Master of Science education in Economics at Lund University. All research and work has been conducted during the spring semester of 2016.

I would like to express my gratitude toward my advisor Maria Persson at the Department of Economics at Lund University. Her assistance and guidance have been undisputable in the progress of writing the thesis, where I always felt welcome when in doubt or needed advice. Also, Maria Persson's experience and expertise in the subject along with her openness for discussion has inspired me throughout the progress.

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## **1. Introduction**

The Generalized System of Preferences (GSP) scheme is one of EUs key policies for development in the less developed countries today, the scheme is facilitating for growth in these countries by reducing trade barriers to the EU (European Commission, 2016). Development in the poorer countries is one of the most topical issues for both economists and politicians today and there is a consensus that the developed world must assist to stimulate growth and development in these countries. This paper will focus on the effects of graduation from the GSP scheme. The attention will be directed at China, a country that has made a journey from one end of the spectre to the other and is therefor a role model in the topic.

During the post World War II era, several policies and measures have been implemented to help less developed countries to catch up, but despite this, the inequalities between countries have continued to increase (Credit Suisse Research Institute, 2015). One of the major policies regarding the development of the least developed countries was proposed in the United Nations Conference on Trade and Development (UNCTAD) in 1968. UNCTAD recommended the developed nations of the world to implement the GSP scheme, which aimed to speed up the industrialisation in less developed nations by preferential treatment of their exports to the developed nations (Cuyvers and Soeng, 2013). The GSP scheme was implemented by EU in 1971 and the scheme has since then been both extended and expanded. As of today it consists of three different branches with different levels of reduced trade barriers for the beneficiary countries. About the same time as the GSP scheme was implemented, China was the sixth poorest country in the world (Deininger, Jin, Xia & Huang, 2014) and the comprehensive reform carried out in the late 1970's was essential. The reform was also the beginning of a complete transformation of a country that is now the world's second biggest economy as well as the biggest exporter (Zhang & He, 2016). Coming from a socialist model with complete state-ownership this journey was made possible through a number of different political and economical measures, ranging from the banking sector to the agricultural reforms. At the core of the reform lies the massive restructuring of resources that enabled private ownership and made it possible for private firms and entrepreneurs in China to make profit and also, decide how to reinvest and use their profits. Giving the entrepreneurs and managers of private firms incentives to innovate, reduce costs, increase the productivity and ultimately, making the firm as competitive as possible, are all crucial factors

distinguishing private firms from state-owned firms (Shleifer, 1998) and hence, played a large part in the economic development since the Chinese reforms. As this was the catalyst of the Chinese economic growth, exports were one of the main drivers of it. Export-oriented growth has been an objective for the Chinese government during the last decades, with China's comparative advantage in low labour costs and economies of scale as important factors for such policies (Caporale, Sova, A. & Sova, R., 2015). As mentioned above, the export-promoting policies did not solely come from within China, but also from the outside through preferential trade agreements from the rest of the world, like the GSP.

The EU GSP scheme is set up to reduce trade barriers for the beneficiary countries with the aim to increase their exports. The scheme is divided into product categories under which the GSP is either applied or not depending on how well developed that sector is. As a beneficiary country develops and hopefully generates growth in this sector, it will finally *graduate* as the sector is then considered as being competitive with the rest of the developed world. China has, since the mid-1990's, had sectors graduated on a more or less regular basis and at January 1<sup>st</sup> 2015, China lost all of their GSP preferences as a result of their economic status (European Council, 2014). This would, according to traditional trade theory, cause a reduction of the exports due to the higher tariffs faced by importers of China's exports. Still, as the objective with the GSP scheme is to make the developing countries competitive with the developed, this paper will investigate this theory-contradicting objective by analysing how well China's graduated sectors perform when they are no longer a part of the GSP scheme. With the EU being China's largest trading partner (Caporale *et al.*, 2015) this paper will focus on the exports to the EU countries. Considering the objective of the GSP and the fact that concerned sectors have been graduated, the question of research is stated as:

*Are China's exports to the EU affected negatively by the graduation policy?*

The rest of the paper is structured as follows. Section 2 contains background information on the GSP scheme and China's reform and economic development. Section 3 will provide the theoretical framework needed to carry out the estimations. Section 4 reviews previous research on the subject. Section 5 will go over the method for the estimation and the data used while Section 6 consists of the empirical results. Section 7 will then summarize and conclude the paper.

## **2. Background**

This section will provide information and background on important topics that will act as a foundation for understanding the remainder of the paper. In addition to clarifying certain policies and terms, the section will also give a detailed outline of which sectors that are included in the GSP scheme. First, Section 2.1 will handle the Chinese post-reform development and important implied policies that has led China to where it is today. Section 2.2 provides an introduction to the GSP as well as a overview of which sectors have enjoyed the trade preferences through the scheme. At last, Section 2.3 will give describe the process of graduation, including an overview of when included sectors were graduated.

### **2.1 China's economic development**

The period since China's reforms in the late 1970's has, as mentioned above, been characterised by previously unforeseen economic growth. Relying on the foundation of its comparative advantage in low labour costs, the manufacturing sector were in the front line of the development with the new conditions, favouring the township and village enterprises (TVEs). TVEs were rural industry firms that benefited from the huge numbers of surplus labour as a reaction to the reforms and the dismantling of state-owned enterprises (SOEs) and the previous household responsibility system. In the period 1981-91, the output value for TVEs grew at 29.6 % annually (Lin, Cai and Li, 1996) proving that the new path might be beneficial. Though this was just the first step in a process of relaxing property rights, it revealed the benefits of leaving a system of complete government ownership for a more competitive environment allowing for private ownership.

The 1990's was characterised by several new growth encouraging legal policies, where the privatisation of the state-owned sector were one of the biggest measures taken in the post-reform era. The Company Law, implemented in late 1993, structured this privatisation and enabled for two new types of firms called Joint-Stock Corporation (JSC) and Limited Liability Company (LLT). The effects of the policies were immediate and effective; industrial output value produced by the state-owned sector decreased from 54.6 % in 1990 to 28.64 % in 1998 (Chen, 2002). For a perspective of the differences in productivity between the traditional SOEs and the JSCs/LLTs, in 2003 there were 23.000 SOEs accounting for one third of total output while 11.000 JSCs/LLTs accounted for two thirds of the output (Naughton, 2007). In the mid-90's, several other measures were implemented; including generally liberalising

policies (reducing tariffs and trade restrictions), export encouraging policies as well as policies encouraging both inward and outward FDI. Even though the GSP schemes implemented by some of the world's developed countries were not directly aimed at them, China was a beneficiary in the majority of the schemes (UNCTAD, 2015), enjoying trade preferences from the developed countries in certain sectors. Hence, not only the self-imposed policies affected China in their development throughout the post-reform era.

As the foundations for the economic growth were settled in the 1980's and 90's, the 2000's were the period when the economy truly accelerated. An important step was taken early in the 2000's, when China's entry in the World Trade Organisation (WTO) in 2001 increased its participation in the multilateral trading system, leading to further multilateral reductions in its tariff barriers. In addition to this, China reduced the invisible barriers to trade, the so called non-tariff trade barriers, by measures such as removal of licenses, import quotas and trading practices during the first decade of the 2000's (Caporale *et al.*, 2015). To put this in a perspective, as mentioned in the introduction; China has gone from being the world's sixth poorest country to become the world's second biggest economy and the largest exporter (Zhang & He, 2016), which has also led to it being graduated from the EU GSP scheme as of 2015. A more technical approach on this procedure, the structure of GSP and the graduation mechanism follows in the two forthcoming sections.

## **2.2 Generalized System of Preferences**

The GSP scheme that EU applied in 1971 aimed to industrialise the less developed countries through preferential treatment for their exports. Originally, the EU that implemented the GSP consisted of six countries, but the number of included countries has increased along with the expansion of EU and today the GSP scheme applies to imports for 28 countries (European Commission, 2016). The GSP scheme is supposed to always be relevant and up to date with the prevalent climate, and therefore the scheme is under constant revision with 10-year cycles for which guidelines are drawn. These revisions have often been substantial and the alterations keep the scheme up to date with the prevailing economic environment.

In the early stages the GSP scheme was very complex, with various tariff rate reductions on different products depending on their level origin and product group, the scheme also included quotas and other restrictions. Since one of the 10-year revisions in 1995 the scheme has been altered to make it more easily applicable and straightforward, starting to form into

the shape the scheme has today (Cuyvers and Soueng, 2013). The current scheme has no quotas or quantitative restrictions and also, the former way of establishing the sensitivity of a product in four categories was reduced to two, sensitive and non-sensitive products. Dating from the Council Regulation no. 980/2005, custom tariff ad valorem duties on non-sensitive products are completely removed, with an exception for agricultural products. For sensitive products, tariff rates were reduced by 3.5 % compared to the Most Favoured Nation (MFN) rate<sup>1</sup>, with an exception for clothing, where tariff rates are reduced by 20 %. In the same regulation, the European Council introduces two new categories of the GSP scheme intended for the very least developed nations called GSP+ and Everything But Arms (EBA). These two new schemes were implied to give the least developed countries even greater trade preferences, but as this paper will only investigate the effects of the main GSP scheme, the details of the two new schemes will not be assessed here.<sup>2</sup>

Moreover, the GSP includes a rule of origin criterion that ensures that exported products actually are produced in the beneficiary country. The rules, which determine *when* a product is considered as originating from a beneficiary country, are very detailed and vary depending on what type of product is being exported. Even though comprehensive, the rules of origin are boiled down to two main criterias (European Council, 2010) that state that a product should be considered as originating in a beneficiary country when:

1. Wholly obtained in that country *or*
2. Products obtained in that country, incorporating materials that have not been wholly obtained there, provided that such materials have undergone sufficient working or processing.

The regulation (No. 1063/2014) defining these rules consists of several annexes and clauses that specify under which premises the second article shall consider a product as originating from the beneficiary country or not.

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<sup>1</sup> MFN is the most important principle of the WTO agreement, stating that a country can not treat another member of the WTO no less than its most favoured nation, meaning that it is not allowed to discriminate between member countries when it comes to for example tariff rates. The exceptions to this principle include Free Trade Agreements (FTAs) approved by the WTO and schemes intended for developing countries, such as the GSP (World Trade Organisation, 2016).

<sup>2</sup> For details on GSP+ and EBA, see Council Regulation no. 980/2005 from the European Commission.

To determine which product categories to be included in the GSP scheme for each country, products are classified by the combined nomenclature (CN) codes and then divided into subcategories, the CN codes consist of 97 chapters. Originally the CN chapters were divided into 33 *sectors* under which countries could apply to benefit from (European Council, 2001), this was later changed and the CN chapters are today instead divided into 20 subcategories called *sections*. If a country is enjoying trade preferences under the GSP in a certain section, it does so until that section is considered competitive enough on the EU market. This is then a sign that the products in that section no longer needs preferential treatment, and is therefore being graduated from the scheme. This is the main objective with the scheme and as a country graduates, EU argues that the negative impacts on exports are expected to be, with a less than 1 % fall in total exports (EU, 2015). This is also in line with the hypothesis of this paper. More on the graduation process and the requirements for graduation will follow in Section 2.3.

### **2.2.1 Descriptive Statistics on the EU GSP Scheme**

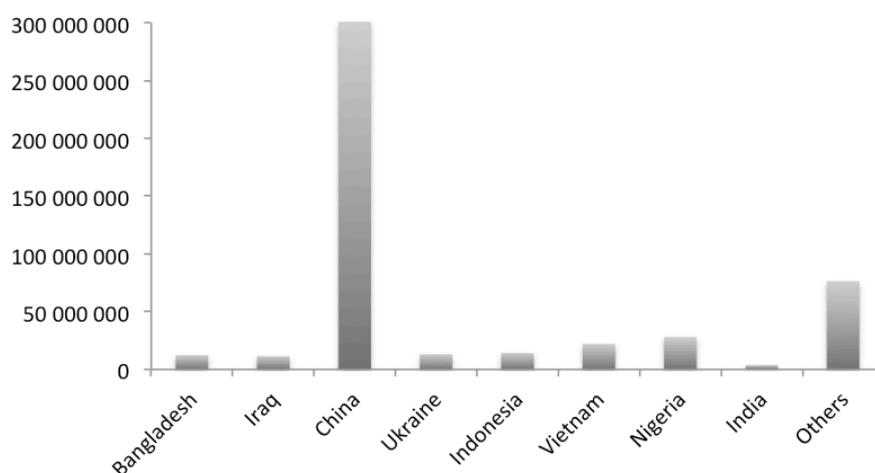
With China coming from a status as one of the poorest countries in the world, it has been one of the largest GSP beneficiaries, having enjoyed trade preferences in 16 of the 20 possible sections covered by the GSP.<sup>3</sup> It is worth keeping in mind that even though China did start out being a beneficiary in a total of 16 sections, they have been continuously graduated from sections since 1995.<sup>4</sup> In the 2000's, China had by far become the largest of all GSP beneficiaries. Figure 1 provides a clear picture of the size of China's development and growth compared to the rest of the countries included in the GSP scheme; in its last year as a GSP beneficiary China accounted for 58.3 % of total imports (European Commission, 2016), a substantial fraction which indeed adds reason to investigate the case of China more thoroughly. To clarify, this fraction considers the total imports to EU countries and not only the sections included in the GSP, but it nevertheless indicates the level of development that China have reached.

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<sup>3</sup> For the complete list of all sections that China have had included in the scheme, see Table 3 in the appendix.

<sup>4</sup> A full overview over graduated sections will be provided in Section 2.3.

**Figure 1. Total imports (including non-GSP imports) to the EU from all GSP beneficiaries, 2014 (thousand EUR)**



*Source: European Commission (2016)*

The utilisation rate for the GSP scheme (which states the part of GSP eligible imports that is actually used for GSP preferential imports) was 70.3 % in 2014, implying that the beneficiary countries are utilising the scheme to a high degree. In a global, non-GSP trade perspective, China still stands strong when it comes to trade with the EU. In 2012, two years before the European Council suspended China from the scheme, EU was China's biggest trading partner, accounting for 14.1 % of its total trade that year (Caporale *et al.*, 2015). Hence, the EU-China trading relationship is very important. The effects of China's graduation are of great matter for both the EU and China since a change in trade pattern potentially forced by the graduation would come costly for both parts.

### **2.3 Graduation from GSP**

A graduation mechanism was first implemented in the GSP scheme in 1995. The graduation mechanism has also, like the GSP scheme itself, been through changes since it was first implemented. When introduced, the requirements for graduation were rather complex, relying on criteria based on share of GSP imports, development index and an export-specialisation index (WTO, 2006). This was revised in Council Regulation No. 980/2005, creating a simplified graduation criterion that states as follows:

*Tariff preferences will be removed when the average value of Community imports from that country of products included in the section concerned and covered by the arrangement*

*enjoyed by that country exceeds 15 % of the value of Community imports of the same products from all countries (...) for three consecutive years.*

This criterion is still effective, but has been revised to increase the threshold level at 17.5 % instead of 15 %. Note also that this holds for all included sections with an exception for textile and clothing, where the threshold is 14.5 %. In addition to this country-section specific graduation mechanism, GSP also contains a general country specific graduation criterion, stating that a country will be graduated when the World Bank has classified it as a high or middle-upper income country for three consecutive years. Since this ignores the export specific conditions for graduated countries, they are still considered eligible for the scheme, meaning that if they would lose their status as a high or middle-upper income country they would become beneficiaries again (EU, 2016).

China has had sections being graduated continuously since the implementation of the graduation mechanism. They officially lost all rights for preferential treatment through the GSP scheme as of January 1<sup>st</sup> 2015 when China in 2013 had been classified as a middle-upper income country for three consecutive years. Even though this was the final suspension, China had practically been graduated from all sectors as of January 1<sup>st</sup> 2014. Table 1 provides an overview of China's graduated sections in the EU GSP scheme. Since the categorising of the CN codes have changed during this period, the years 1995-2005 represent the old system with 33 sectors denoted in Roman numerals while 2006-2015 consists of the new system with 20 sections denoted by Arabic numerals.

**Table 1. Graduated Sections - China**

<b>1995</b>	<b>1999</b>	<b>2004</b>	<b>2006</b>	<b>2014</b>	<b>2015</b>
XII,	XIII, IV,	XXVII,	III, XVI, XX,	7a, 8a, 9a,	1a, 2a, 2b, 2c,
XIV,	XVIII, XXXIII	XXVIII,	9b, 11a, 14,	4b	Lost all
XIV,	XXII,	XXIX, XXXII	15a, 17a, 17b		GSP
XXIII					preferences

*Source: European Commission (1994, 1998, 2003, 2005, 2012, 2014)*

Footwear and clothing are among the earliest graduated sectors as they were excluded from the scheme in 1995. In 1999 base metals are one of the sectors graduated that year. In 2004, a

lot of manufacturing products are graduated, where consumer electronics, paper and plastics are among the graduated sectors. The excluded sectors in 2006 were of the same character, and in 2014, the graduated products were in the agricultural and food sector.

It would be naive to draw the conclusion that the GSP itself is the sole cause to this development and the fact that the Chinese sectors are experiencing enough growth to be graduated. And even though recent studies show that the GSP do have a positive effect on countries' exports (for example Cuyvers and Soeng, 2013), the purpose of this paper is not to investigate the effect of GSP, but to assess the effects of graduation from GSP. However, Table 1 still provides an interesting alternative picture of China's graduation frequency, which is very much in line with the overall economic growth in China during this period where the growth in several sectors are mirrored in the graduation frequency.

### **3. Theoretical Framework**

In the most elemental point of view, the foundations of the GSP scheme rely on the Heckscher-Ohlin theory and the fact that countries benefit from trade. They do so by, in a  $2 \cdot 2 \cdot 2^5$  setting, exporting the good of which they have a comparative advantage in and importing the one they do not. If the GSP scheme would not be applied, the concerned countries would trade less and hence be in a more autarky like state where they need to produce more different kind of goods instead of specialising on the ones they have comparative advantage in. In addition to the fundamental trade theories, models and theories handling trade diversion and the effects of tariff reductions, preferential trade agreements and short and long run effects of general economic integration can be applied to the impacts of the GSP scheme. This section will enlighten and discuss some of the underlying theories that acts as incentives for the implementation of the GSP scheme.

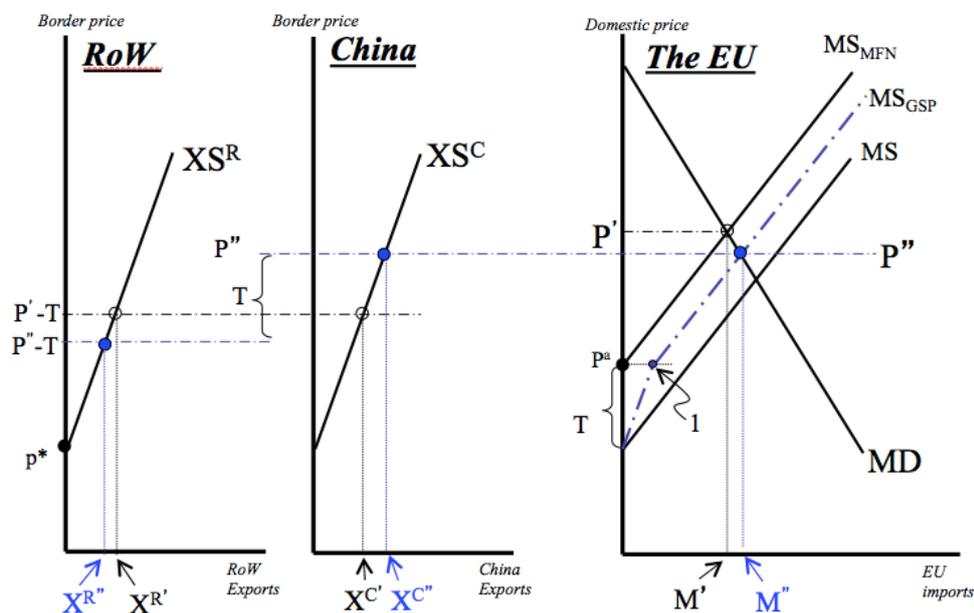
The implementation of the GSP scheme does, as mentioned earlier, equal a removal or reduction of a tariff, which affects a country's trade. To visualise this, the trade-creating effects of a tariff reduction from a PTA is found in Figure 1. In this figure, the rest of the world (RoW) are not experiencing trade preferences and is hence faced with a MFN tariff for exports to the EU. The EUs import supply for RoW is the  $MS_{MFN}$  curve and the  $MS_{GSP}$  curve

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<sup>5</sup> A setting where there are 2 countries, 2 goods and 2 factors of production.

represents import supply for China. Before the GSP scheme, China would face the same border price as RoW ( $P^R - T$ ), which would imply that their exports sector would compete on the same terms as the developed countries. This diagram, however, does not consider differences in development of efficient in export sectors, which is why the export supply curves of both China and RoW. With the implementation of the GSP scheme, China will instead face the border price  $P^C$ , which is higher than the one RoW face. The quantity exported increase to  $X^C$  for China and decrease to  $X^R$  for RoW. (Baldwin and Wyplosz, 2012). Hence, the GSP scheme will both increase China's quantity of exports compared to RoW as well as increase the price received for the exports.

Figur 1. Price and quantity effects of GSP scheme



Source: Baldwin, R. and Wyplosz (2012)

Previously discussed theories consider the positive effects of the implementation of the GSP scheme. It is easy to just invert these theories and draw the opposite conclusion when it comes to the graduation of a country-sector. This would imply that the suspension from the GSP scheme will put China in the same situation as the RoW in Figure 1, where the faced border price is  $P^R - T$  and the level of exports would theoretically decrease from  $X^C$  to  $X^R$ . However, there is support for theories implying that this is not necessary the only effect when the GSP scheme has developed the graduated sector enough. There are two arguments for how this discrepancy with traditional economic trade theory could appear; first, the theories above are applied with the assumption that the GSP beneficiary does not have a developed, competitive industry and hence would simply leave the export market when graduated. But as

the sector is now developed and competing at the same level as the rest of the world or even at a higher level, it will still export according to their competitiveness instead of leaving the market. Hence, when a country-sector graduate, the industry is considered being competitive and will of course be affected but it will not completely revert to the levels of exports from before the GSP.

Second and more applicable to the specific China-EU trade, the export pattern and export decision does not completely follow the static models of trade theory, as there are sunk costs included in the export decision (Persson and Gullstrand, 2014). Once a firm enters an export market and has paid the sunk costs, relatively small changes in tariffs (such as from graduation) does not have to imply major reductions on the exports. This pattern is also within the conception of what is called social embeddedness, something that originates from Granovetter's (1985) theories in economic behaviour and social relations. His theories are as much an addition to traditional trade theory as they are controversial, relying on the ideas that business relations spill over into social relations, not only among managers and directors of firms, but at all places where transactions are taking place. So, instead of a market place completely based on traditional trade theory, Granovetter states that "...firms in a market setting may persist instead because a dense network of social relations is overlaid on the business relations connecting such firms". His theories ultimately say that business relations and transaction patterns depends more on social structures than traditional economic theory accounts for. Applying these theories in a perspective of this paper might indicate that a small increase in the import price does not necessarily imply that the business relation between the trading firms is terminated.

There are also effects from the GSP scheme that not only concerns the quantity of exports and prices. GSP acts as an integrating tool since the prior trade barriers limited exports in the concerned, less developed countries. Applying the GSP scheme on these countries will thus be equal to opening up new potential export markets that was not available before. Baldwin and Venables (1995) describe the positive long run growth effects that come from this kind of preferential trade agreement. First of all, they argue that technological spillover effects will arise as a consequence of the increased trade volumes between the beneficiary countries and the developed countries. Second, the efficiency will increase as a consequence of the pro-competitive effect if a sector is characterised by imperfect competition. This efficiency increasing effect is hence arising in line with the theories of economies of scale for the

manufacturing industries, where a diminishing marginal cost of production will reduce the average cost per output as new markets emerge and increased exports will benefit the sectors concerned by the GSP scheme. Building on the same foundation as these theories, Panagariya (2000) also discuss the effects of PTAs. Coming to a somewhat similar conclusion, the author also stresses that there are welfare gains coming from a PTA, as long as the PTA is trade creating and not trade diverting.

Although not entirely objective, the EU states that the immediate negative effects of graduation from the GSP are expected to be very small (EU, 2015), something that contradicts the traditional trade theories, but could be plausible considering the theories from Granovetter and Persson & Gullstrand. Hence, EUs fundamental ideology behind the GSP and graduation mechanism, that each graduated sector has become competitive enough and established on the EU market are somewhat contradicting traditional trade theory, but could still suggest that the effect does not have to be negative. However, the short run effect from graduation that might occur as the industry graduates is not supposed to be disregarded as the sector is indeed experiencing higher tariffs on its exports.

#### **4. Previous Research**

The effects of the EU GSP scheme have gained some attention throughout the years, however the effect of graduating from it is not nearly as comprehensively covered. One reason for this is obviously that the graduation mechanism was not implemented until 1995 and the country-sectors graduated since then has been scarce. This is visualised by The European Council (2011), who argues that by the time of the report, less than 1% of all country-sectors group combinations had actually been graduated, where a majority of these involved China. Moreover, it is not until the very recent years that countries have actually been completely graduated from the scheme, possibly an eye-opener that will generate more ex-post analyses in the following years.

One the earliest studies on the (then called EEC) EU GSP scheme is done by Sapir (1981). The author uses the gravity model to estimate the performance of the PTA and finds a significant trade preference effect. Sapir (1981) does also point out that there might occur some inequalities between beneficiary countries, as there are big differences in the level of development. This characteristic is then mentioned as an argument for the, then not yet

implemented, graduation mechanism that would not be realised until more than a decade later. Persson and Wilhelmsson (2007) provides a more recent view of how some of EUs key PTAs perform. The authors use data on trade on EU imports for the years 1960-2002. Like Sapir (1981), they use the gravity model to carry out the estimations. The authors do not find that the GSP scheme overall increase exports for the beneficiary country, though they suggest that there are significant positive effects for the least developed countries.

Cuyvers and Soeng (2013) investigate how the utilisation of the GSP scheme is affected for different sectors. Their results are interesting, as agricultural products are negatively affected, industrial products positively affected and no significant effect is found for textile products.

The authors also draw conclusions in a context of the graduation mechanism. They argue that the graduation mechanism seems to be effective, since the fact that the level of development in the beneficiary countries has a negative effect of utilisation on agricultural products. Despite the relatively wide range of literature on the effects of the prevailing GSP scheme, and except from the previous mentioned study from Cuyvers and Soeng (2013), very few have comprehensively covered the effects of the actual graduation from the scheme. H

Hock and Ow-Taylor (1991) estimates the potential losses Singapore would suffer from graduating from the US GSP scheme. However, contrary to their expectations the authors find that Singapore's trade was not hurt. Instead, they conclude that Singapore's export industries had matured to a level that proved to be able to withstand the loss of the GSP benefits. As this is one of the few ex post studies on the subject of graduation, this paper will contribute to the literature on the subject by providing a rare analysis of the effects of graduation from the GSP scheme in a Chinese perspective.

## **5. Method**

This study aims to empirically estimate the effect that the graduation from the EU GSP scheme has on Chinese exports to the EU15 countries. The covered time period starts from the year after the graduation mechanism was implemented in 1996 until 2014. The data used in the paper is collected from three different sources; bilateral trade data from the UN Comtrade database, country specific data from the CEPII institute and the GDP data from the World Development Index (World Bank, 2016). The most commonly used method when

analysing trade flows in an ex post estimation is the gravity model, which is also the model of choice in this study.

### 5.1. Empirical model

Even if estimation of trade flows with the gravity model is the benchmark alternative in modern economic research, various ways of modifying the application of it has changed throughout. Still building on the early contributions from Aitken (1973), Sapir (1981) and other more recent (Anderson and Wincoop, 2003), the gravity model rests on the intuitive idea that bilateral trade flows are larger the bigger the mass of the countries also considering the distance between the trading countries. Along with these two fundamental elements, a number of control variables are included to assess an as clean effect as possible from the variable of interest to the empirical results. Also, the model contains time-, importer- and sector specific fixed effect, which will be further explained and interpreted below. For this study, the model is specified in Eq. (1). To clarify the preconditions of the model; the sample from which the model is estimated contains only observations from sectors that at some point has been included in the GSP scheme with China as the exporting country, the EU15 countries as importing countries during the time period 1996-2014.

$$X_{cijt} = \alpha_i + \beta_1 Grad + \beta_2 \ln(GDP_{it}) + \beta_3 \ln(GDP_{jt}) + \beta_5 Population_{jt} + \beta_5 wto + \beta_6 st + \delta_c + \lambda_i + \gamma_t + \varepsilon_{cijt} \quad (1)$$

The dependent variable,  $X_{cijt}$ , is the exports from country  $i$ , to country  $j$  for the year  $t$  in the CN-classification  $c$ .  $\delta_c$  is CN-class-,  $\gamma_t$  time- and  $\lambda_j$  represents importer fixed effects, while  $st$  captures sector-time specific trend characteristics from the sample. Since China is the only exporter,  $i$  is always represented by China and  $j$  consist of the EU15 countries<sup>6</sup>. *Graduation* is the main explanatory variable; it is a dummy variable that is equal to 1 if a product is graduated from the GSP scheme and 0 if it is still enjoying trade preferences. Since the model only contains products that at some point have been included in the scheme, the reference group is products enjoying trade preferences. This will imply that, if the EU objective is proved to stand, the coefficient  $\beta_1$  will not be negative since the exports would then not be negatively affected by graduation.

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<sup>6</sup> For a full list of the EU15 countries, see the appendix.

To identify the cleanest possible effect of graduation, a number of control variables are included in the model. These are intended to be other factors that in addition to *Graduation* too affect the level of trade between countries and there are a number of different ways to control for these factors. The inclusion of the sector-time trend variable  $ct$ , has the intention to assess both the effects from growth over time in Chinese exports generally, as well as differences in growth between sectors specifically. The reason for including the detailed, 4-digit, CN-code system as a fixed effect rather than the sector classification is to avoid capturing effects from product categories with large differences that are included in the same sector but not sharing the same CN-code. Further more, three fixed effects are included to control for time, importer and CN-class specific effects. Combined with the sector-time trend variable, this is intended to clear as much of the general Chinese export growth as possible to avoid an endogeneity problem, where the investigated graduation effect is instead captured by an unobserved factor from outside the model. More about this possible issue will be discussed in the following section.

In line with the fundamentals of the gravity equation, the size of a country and the distance between to countries will affect how much they import and export, therefor control variables are included to control for that. For this purpose, the two GDP variables will act as proxies for economic size, where  $\ln(GDP)$  represents the natural logarithm of the GDP for the importing countries.  $Population_{jt}$  is also included in the model to account for the size of the importer at the year  $t$ . China's economic size captured by the variable  $Exporter \ln(GDP)$ . These variables are expected to have a positive effect on China's exports. Even though China is the only exporting country in the dataset, its economic growth has been substantial, with a large spread in their magnitude between 1996 and 2014 and therefor China's GDP is also included in the model.

The variable  $WTO$  captures the effect of China's exports after its membership in the WTO. The expected effect on the exports to the EU15 countries is somewhat ambiguous. On one hand, trade barriers to the rest of the world would be reduced with the membership of WTO which would have a negative effect on China's exports to the EU, but there is a also a high probability that, since the membership of WTO does not only imply that China exports more to the rest of the world, it is also correlated to the strong Chinese growth experienced in the years following their entrance in the WTO, which motivates its inclusion in the model.

The fixed effects in the model captures the constant distance between countries, and is therefore already included in the regression. Other usual variables, such as sharing of a colonial history, sharing of border and sharing of language are for natural reasons excluded since China is the only exporting country and none of the variables above would have any variation (all observations would have a zero-value).

## **5.2. Estimation Issues**

Despite the fact that the gravity model has commonly been estimated by OLS, this strategy has its disadvantages. When estimating models with potential trade flows (implying that trade does not necessarily need to occur) and there a lot of observations with zero trade, the model lose large parts of the data. However, Westerlund and Wilhelmsson (2011) found that estimations using a fixed effects Poisson Pseudo Maximum Likelihood estimation is of advantage, and this is also the estimation used for this paper. This estimation works very well with samples containing zero trade values, neither does it suffer from the heteroskedasticity weaknesses that is often the case when estimating this type of sample with a least square estimation. What distinguish this estimation of the gravity model from general gravity models is that instead of several exporting and importing countries, there is only one exporter and a relatively small and homogenous group of importers. That is something that can have the effect of the control variables not acting as what is common, since the trade flows might not depend on the complete same factors within the specific China to EU15 trade as multilateral trade.

Another very important aspect is the previously mentioned endogeneity issue related to the substantial growth China has shown during the last twenty years, and this comes with some implications that need to be discussed. Fundamentally, the problem stems from a simultaneity issue, since the graduation of a sector is a consequence of China's economic growth as the growth in exports increases the *Graduation* variable from 0 to 1 at the same time as the model tries to estimate the effect of China's export after graduation. Also, considering that China's exports is increasing through out the investigated time period (which will be displayed in the following section), this trend need to be controlled for so that the effects from graduation can be assessed without capturing anything from the growth in exports from year to year. This endogeneity problem is discussed in the previous section, with the different measures of handling the problem; there is reason to believe that all of this is not captured in the model. If that is the case, the result would probably show that graduation has a positive impact on the

export, when what it really means is that all growth is not really controlled for. This issue could also be interpreted, if looking at it from another perspective, as that the graduation itself does not affect the growth in Chinese exports enough to generate a negative growth in that sector.

### **5.3. Data**

The sample from which the model is estimated comes from three different types of data. The main part includes exports from China to the EU15 countries in the time period 1996-2014, divided into the CN code product classification on a 4-digit level. This is supplemented by country specific data for each year in the same period as well as by bilateral country pair data. Thus, the sample contains export flows to 15 countries over 19 years at a 4-digit CN code product classification, providing an unbalanced panel, yielding 239,154 observations. The time period for the sample reaches from one year after the enlargement of the EU from 12 to 15 countries, which were implemented at January 1<sup>st</sup> 1995, in that way all 15 countries in the sample have had reasonable time to adapt to the EU and in this case, the trade agreements that it includes. The most recent data available at the time of this paper is the 2014 data, which will add to this paper's contribution to the literature by being as up-to-date as is possible. Note also that, as mentioned above, the model is estimated using only the sectors that at some point have experienced trade preferences through the GSP scheme. This will reduce the number of observations used in the regression, which will be displayed in the Empirical Results section.

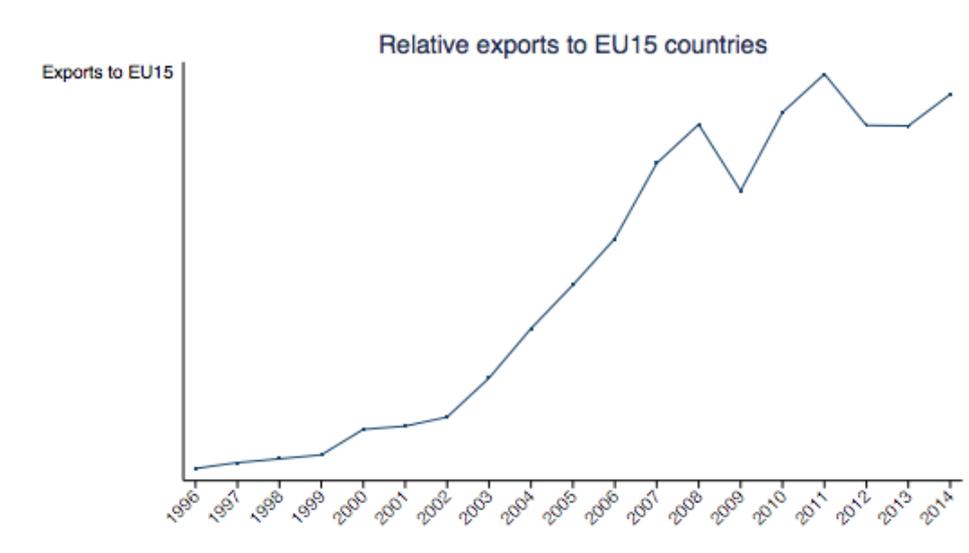
The trade data is collected from the UN Comtrade database (UN Comtrade, 2016) on a 4-digit product classification level. The graduation variable is created by the information from the legal documents on the GSP called Council Regulations, provided by the European Council, dating back until 1995 when the graduation mechanism was first implemented. Country specific data such as GDP and GDP per capita is extracted from the World Development Indicators (The World Bank, 2016) for respective year. Country pair data such as the distance between countries is collected from the CEPII Institute (CEPII, 2016).

#### **5.4.1. Descriptive Statistics**

To offer an overview of the dataset this section will provide some key figures on important variables and statistics of the sample. As also mentioned above, the dataset consists of 239,154 observations of Chinese export to 15 countries. First, as a picture of China's growth during the researched time period, Figure 2 shows the development of the exports to (or

imports from) the EU15 countries since the first year included in the dataset. The development during the beginning of the 2000's is clearly mirrored in the dataset, where the effects from the financial crisis is also seen as the imports to the EU15 dropped in 2009, much like the overall imports to the developed world in that year (Milesi-Feretti and Tille, 2011).

Figure 2. China's relative exports to EU15 countries.



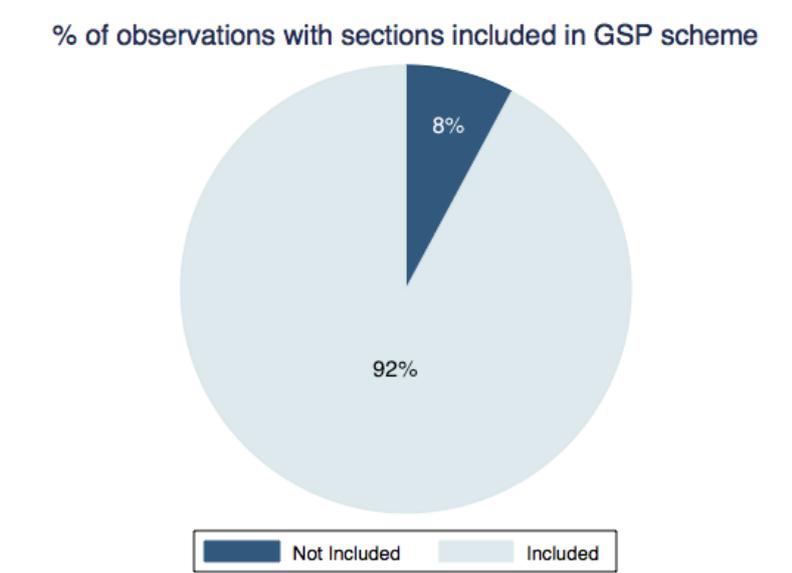
The general trend of high growth in exports seen in Figure 2 motivates the use of the  $ct$  variable in the model. In that way, the estimation results from the other variables will ideally not pick up any effect from the displayed export growth. Given the pace of the development, China's record of sections graduating from the GSP scheme since the mid-1990's does not appear unmotivated. For a picture of how many of the included sectors that were graduated, Figure 3 displays the total number of observations graduated from the GSP scheme as a fraction of all observations in the dataset.

Figure 3. Fraction of observations for China's graduated from the GSP scheme



At last, as not all observations in the dataset represents exports in product categories that have at sometime been included in the GSP scheme, Figure 4 shows the spread of the GSP scheme. 92 % of the observations in the dataset fall under product categories that have at some point been included in the GSP scheme and hence, only 8 % has not. Since the main empirical results in this paper is estimated from the sample with the 92 % included in the GSP scheme, this will be useful when analysing some of the robustness tests where the full database will be used in order to modify the reference group of the regression.

Figure 4. Observations with a section at some time included in GSP scheme



## **6. Empirical Results**

This section will provide the estimation results from the main regression as well as several robustness tests to investigate the validity of the main results. The estimation results will show how China's graduated sectors from the GSP scheme have affected its exports in these sectors. As previously argued, the expectation of the results are ambiguous, on one hand traditional trade theory clearly states that an increased tariff will lead to less exports. But the theories on social embeddedness and the impact of sunk costs in firms' export decisions could contend the traditional theories.

### **6.1. Estimation Results**

The fixed effect Poisson Pseudo Maximum Likelihood estimation results are provided in Table 2. The dependent variable, *trade*, is nominal while the variables on GDP are all in logarithmic form. The main explanatory variable is a dummy variable and in this context, the interpretation of it lies in whether or not an effect on export is found after graduation. To generate an as clear effect from graduation as possible, a number of variables and fixed effects have been included in the model. The result of the main estimation, Eq. (1), is provided in Column I. Column II-IV consists of various robustness tests.

**Table 2. Estimation Results**

<i>Variable</i>	<i>Baseline</i>			<i>Robustness</i>	
	<i>I</i>	<i>II</i>	<i>III</i>	<i>IV</i>	<i>V</i>
<i>Graduation</i>	0.19***	0.19***	0.14***		
<i>Graduation*</i>				1.14***	
<i>Clothing</i>					
<i>Graduation*</i>				-0.42***	
<i>Agriculture</i>					
<i>Graduation*</i>				1.16***	
<i>Manufacturing</i>					
<i>Graduation</i>					0.19**
<i>1995-2004</i>					
<i>Graduation</i>					0.19***
<i>2005-2014</i>					
<i>ln(GDP)</i>	0.95***	0.95***	0.95***	0.76***	0.95***
<i>Exporter ln(GDP)</i>	0.78***	1.16***	1.86***	1.39***	0.78***
<i>Population</i>	-0.00*	-0.00*	-0.00*	-0.00*	-0.00*
<i>WTO</i>	0.58***		0.28	0.71***	0.59**
<i>Time effects</i>	YES	YES	YES	YES	YES
<i>Importer effects</i>	YES	YES	YES	YES	YES
<i>Sector effects</i>	YES	YES	YES	NO	YES
<i>Sector specific time trend</i>	YES	YES	YES	YES	YES
<i>N</i>	220521	220521	239152	220522	220521

*Note: Significant levels: \*  $p < 0.10$ ; \*\*  $p < 0.05$ ; \*\*\*  $p < 0.01$ .*

*All regressions are estimated with robust standard errors.*

The results from Eq (1) is found in column I, the dependent variable *Graduation* is a dummy variable and therefor interpreted as the effect on exports, dependent on if a sector is graduated or not. The benchmark sample in the regression is exports from China to EU15 for products at some point included in the GSP scheme. All explanatory variables are thus the effect of each variable on that baseline sample. The variable of focus for this paper, *Graduation*, is positive and significant. This result is somewhat interesting since it, as argued earlier, contradicts the very basis of economic trade theory that states that an increased tariff leads to reduced exports and a positive coefficient for *Graduation* should therefor not be possible. The result can therefor consist of two explanations. First, as previously mentioned, there are theories stating

that trade does not necessarily have to be negatively affected by the increased tariffs that stems from graduation. However, these theories can only provide an explanation to why the coefficient is not negative and has no explanation to why it is positive. This can instead be explained by the high rate of growth China's exports have had during the last decades that have caused endogeneity problems in the model. This is the case when the dependent variable *Trade* appears to be positively affected by *Graduation* but that effect is instead stems from outside the model. The possible endogeneity issue was identified when setting up the model, and several measures were taken to deal with the problem, however, the only reasonable explanation to the positive nature of the coefficient must be that it is affected by the growth in exports during the period of the sample. Another way of interpreting this result is that the possible negative export effect of graduation is not itself large enough to affect China's export growth. Since the exports are still higher in the years following the graduation of a sector, it is fair to argue for that conclusion, but since the model in this paper is not built with that intention, that kind of analysis is left for future research.

Regarding the control variables in the model, they are pretty much in line with most gravity models. The size of the importer, measured in  $\ln(GDP)$  has a coefficient that is positive and significant. The same goes for the economic size of China, where coefficient is also positive and significant. This is interpreted as that the economic size of the importer as well as the size of China affects the export levels between the countries. This is very much expected, as the larger a country is, the more it produces and hence also has the possibility to export. As an example, consider Figure 2, which displayed how China's exports have increased from 1996 to 2014, this result states that the increasing economic size of China was a factor in the increasing exports pictured. Also, by including this variable in the model, it contributes to excluding the growth effects from the main explanatory variable *Graduation* to pick up any effects of China's increasing economic size during the period of the sample. The variable *WTO* captures the effect of China's exports in the period after its membership in the WTO, the coefficient is positive and significant. With the probable correlation of the membership and China's growth, the positive effect on the exports further clean the impact of the *Graduation* variable in the regression, though as discussed above, there are probably more

unobserved effects that need to be considered. To display how this growth effect is handled and gradually decreasing, see Table 4 in Appendix.<sup>7</sup>

## 6.2. Robustness Tests and Discussion

Several robustness tests are computed to assert the validity or identify possible shortcomings of the baseline model, column *II-V* displays the results of these tests. All robustness tests are, like the baseline model, estimated with the fixed effects Poisson Pseudo Maximum Likelihood estimator with robust standard errors. In the first estimation, found in column *II*, a test is conducted on the possibly uncertain effect of China's WTO membership, and the *wto* variable is therefore removed from that model. The membership was argued to imply two effects in opposite directions; China's increased potential to growth which would increase its exports and China's lowered trade barriers with the rest of the world, which would decrease its exports to the EU15 countries. However, the results show no major difference in the Graduation variable, it is still significant and positive. The coefficient for *Exporter ln(GDP)* is positive and significant but has a lower value, which implies that the *WTO* variable does pick up some of the growth effect from the *Exporter ln(GDP)* variable.

As the benchmark sample in *Column I* considered the exports from all products some time included in the GSP scheme, the second robustness test will evaluate how the graduated sectors perform compared to all products exported by China, and therefore an estimation on the whole dataset is also carried out. Note that, as mentioned in the Data section, the main sample consists of 92 % of the full dataset, this estimation will thus only be close to a tenth larger, the estimation is found in *Column III*. Not surprisingly, the results look very much alike the ones in *Column I*. *Column IV* contains estimations on how certain sectors are performing after graduation by investigating certain graduated sectors from three categories. The results show that both the manufacturing and the clothing sectors, like the original estimation, have a positive and significant coefficient. However, it is interesting to note that the agricultural sector perform worse after graduation than the average GSP-included product. This is something that could be worth investigated further, not only to study what is behind the effect, but also for future implementations and improvements of preferential trade agreements. At last, *Column V* provides a test on the effects from graduating at different

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<sup>7</sup> This table shows how the coefficient is affected when including sector-time trends, sector specific-, time specific and importer specific effects to the model respectively.

times. The graduation variable is here split in two, where sectors graduated from 1995-2004 are divided from the sectors graduating in the years 2005-2014. The chosen time periods are motivated by the expansion of the EU that was made effective in 2005, where the inclusion of 10 new member countries could possibly affect the imports to the original 15. The results however does not indicate that there are any changes in the graduation variable over time, as all coefficients show practically identical results as in *Column I*.

Despite that these robustness tests indicate that the model used in this paper prove to be of some strength, it would be naïve not to consider the points of discussion with these results. First, the estimations are based on a sample consisting of only one exporting country, which removes the possibilities of making statements about PTAs generally and how the GSP and its graduation mechanism performs for the whole scheme. Since this paper only focus on the exports of China, who are fully graduated from the scheme, these results can only offer a picture specifically of how China was affected and attempts to apply it on other GSP beneficiaries should be done with care. A second point of discussion regards the other part of the sample, the importing EU15 countries. It can be argued that the EU15 countries are a relatively homogenous group of countries with similar demographic and economic characteristics. One way of choosing the included countries could have been to include today's 28 EU member countries and create a dummy for when each country joined the EU. The problem with this would have been the difficulties in assessing a clean graduation effect, since there would have been a lot of countries being a member of the EU for just one or two years before a product might have graduated, it could then have been hard to argument for any GSP-related trade effects at all during these one or two years, and even harder to find a graduation effect. On the same topic, it could be argued that this paper is evaluating the effects of graduation too early on, since China's last sectors were graduated as late as in 2014. However, the sectors that were graduated in 2014 were just a small fraction of their graduation process, having sectors graduated since 1995. Still, it would probably be very valuable to make a similar study in five years time and investigate the long run effects. The largest point of discussion with these results does however lie in the endogeneity problem that probably has been of such magnitude that the pure effect from graduation has not emerged. Despite several measures to deal with this problem, the model still appears to suffer from unobserved effects, which makes it difficult to interpret the results from the estimation.

## 7. Summary and Conclusion

With the increasing inequalities between developed and less developed countries in the world, a lot of focus is being aimed at reducing these gaps by various policies to promote growth. One such policy is the EU Generalised System of Preferences scheme, which reduces trade barriers for the less developed countries to generate growth in their export sectors and ultimately become competitive on the world market. When a sector becomes competitive enough, EU graduates it and the sector does no longer enjoy the preferences of the scheme. China is a country that has been a beneficiary of the scheme and simultaneously experienced strong economic growth, having sectors graduated on a more or less regular basis since the mid-1990s until it was completely graduated in 2015. This paper has investigated the effects of China's exports on the final graduation. The study uses (product category) disaggregated trade data from the UN Comtrade database along with country specific data from the CEPII institute as well as from the World Bank covering the years 1996-2014. The data is estimated in a gravity model with the intention of analysing how China's exports are affected by their product sectors being graduated from the GSP scheme. Motivated by the somewhat theory-contradicting objective with the scheme, the researched question concerns whether it is possible that China's exports to EU are at least not worse off after graduation from GSP than when included in the scheme.

The conclusions from the findings of this paper somewhat ambiguous. The question of concern is being answered, as it is found that China's graduated sectors have not been performing worse after graduation, but that is not all. Instead, the results show a positive and significant effect of graduation, which would imply that the graduated sectors have performed better after being faced to higher tariffs. This is concerning as it is directly contradicting traditional trade theory and therefor two possible conclusions should be drawn from the result. First, the result that the effect is not negative can be explained by the facts that the graduated sectors are being competitive, combined with the theories of social embeddedness and the fact that the sunk costs associated with exporting is already accounted for (which would imply that the exporters is still present on the export market with its business relations also after graduation). However, this does not explain why the graduation effect is positive, which is why the results are probably skewed due to endogeneity issues where the found positive effect stems from factors outside the model. The most likely source for the positive results are the generally high growth rate in China's exports, and despite the several measures intended to

deal with this problem, the endogeneity issue still seems present. Considering that, an alternative conclusion would be to suggest that the result can at least indicate that the graduation of sectors does not affect the general growth in China's exports, which leads to a discussion on the graduation policy itself and whether or not it is an effective tool for the GSP scheme. The absence of negative effect on the scheme's largest and most frequently graduated country could suggest that the European Commission should evaluate the requirements and mechanics of the graduation mechanism. China might still be a very special case, but it has nevertheless developed throughout its time as a GSP beneficiary and the graduation from the scheme has at least not substantially harmed the growth of China and its exports.

As final comment, some robustness tests suggests that certain sectors are affected by graduation in different ways, with for example the agricultural sector not performing as well after graduation as the manufacturing or the clothing sector. Future research could make use of this and analyse this pattern more thoroughly with the intension to find the possible reasons for the differences and ultimately making the GSP scheme more efficient.

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## Appendix

Table 3. List of sections included in China's GSP.

<b>GSP Section</b>	<b>Description</b>
S-1a	Live animals and animal products excluded fish
S-1b	Fish, crustaceans, molluscs and aquatic invertebrates
S-2b	Vegetables and fruit
S-2c	Coffee, tea, maté and spices
S-2d	Cereals, flour, nuts, resins and vegetable plaiting
S-4b	Prepared foodstuffs (excl. meat and fish), beverages, spirits and vinegar
S-6a	Inorganic and organic chemicals
S-6b	Chemicals, other than organic and inorganic chemicals
S-7a	Plastics
S-7b	Rubber
S-8a	Raw hides and skins and leather
S-8b	Articles of leather and fur skins
S-9a	Wood and wood charcoal
S-9b	Cork, straw and plaiting
S-11a	Textiles
S-11b	Apparels and clothing
S-12a	Footwear
S-12b	Headgear, umbrellas, sun umbrellas, sticks, whips, feathers and down
S-13	Articles of stone, ceramic products and glass
S-14	Pearls and precious metals
S-15a	Iron, steel and articles of iron and steel
S-15b	Base metals (excl. iron and steel), articles of base metals (excl. articles of iron and steel)
S-16	Machinery and equipment
S-17a	Railway and tramway vehicles and products
S-17b	Road vehicles, bicycles, aviation and space, boats and parts thereof
S-18	Optical, clocks and watches, musical equipment
S-20	Miscellaneous

**Table 4. Controlling measures effect on *Graduation***

<i>Variable</i>	<i>poisson</i>	<i>two</i>	<i>three</i>	<i>four</i>
<i>Graduation</i>	0.19***	0.25***	0.25***	0.47***
<i>lngdp</i>	0.95***	0.95***	0.18***	0.19***
<i>lngdp_exp</i>	0.78***	1.05***	1.01***	0.91***
<i>pop</i>	-0.00*	-0.00*	0.00***	0.00***
<i>wto</i>	0.58**	0.42**	0.58***	0.54***
<i>N</i>	220521	220521	220521	220521

*Note: Significant levels: \*  $p < 0.10$ ; \*\*  $p < 0.05$ ; \*\*\*  $p < 0.01$ .*

*All regressions are estimated with robust standard errors.*

### The EU15 countries

Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, Netherlands, Portugal, Spain, Sweden, United Kingdom.