Distributional effects of graduation from the EU's GSP scheme:
Can the GSP trade preference scheme have gender-specific effects?

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Abstract

The objective of the EU's trade preference scheme GSP is to alleviate poverty, create jobs and promote international principles and values. Graduation is when a certain product group or beneficiary country loses its EU GSP trade preferences, after having reached a predefined level of development or having become too competitive. This thesis analyses the graduation mechanism in the EU GSP in terms of distributional effects. The ambition is to assess if certain industries have been impacted differently by the graduation policy, notably the industries in which the data suggests that women tend to work.

In order to examine such potential distributional effects, manufacturing industry data on employment levels is incorporated in a fixed effects model in which the episodes of product graduation from the EU's GSP function as a dummy variable. The baseline specification regressions cannot establish any relationship between graduation and manufacturing employment. The result of a subsample analysis shows weak evidence of a negative link between graduation and manufacturing employment in female-dominated industries, but the link is not robust.

Key words: EU GSP, graduation, manufacturing employment, fixed effects

List of abbreviations

2SLS	Two Stage Least Squares
ACP	African, Caribbean and Pacific States
ATC	Agreement on Textiles and Clothing
CAP	Common Agriculture Policy
CEDAW	Convention on the Elimination of all forms of Discrimination Against Women
CES	Constant Elasticity of Substitution
CGE	Computable General Equilibrium
CN	Combined Nomenclature
CPE	Computable Partial Equilibrium
EBA	Everything But Arms
EC	European Communities
ECSC	European Coal and Steel Community
EPZ	Export Processing Zones
EU	European Union
EU GSP	The EU's Generalised Scheme of Preferences
FDI	Foreign Direct Investment
FTA	Free Trade Agreement
GATT	General Agreement on Trade and Tariffs
GSP	Generalized System of Preferences
HS	Harmonised System
ILO	International Labour Organisation
ISIC	International Standard Industrial Classification of All Economic Activities
LDC	Least Developed Countries
MFN	Most Favoured Nation
NAFTA	North American Free Trade Agreement
OECD	Organisation for Economic Cooperation and Development
OLS	Ordinary Least Squares
SDG	Sustainable Development Goal
UN	United Nations
UNCTAD	United Nations Conference on Trade and Development
UNIDO	United Nations Industrial Development Organization
WCO	World Customs Organisation
WITS	World Integrated Trade Solution
WTO	World Trade Organisation

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1. Introduction

It has now been almost 50 years since the initial launch of the European Union (EU)[1] trade preference scheme named the Generalised Scheme of Preferences (EU's GSP).[2] The objective of the EU's GSP scheme is to alleviate poverty in developing countries and to create jobs, while at the same time promoting international values and principles for labour rights, human rights and the environment (European Commission, 2019). Alongside development policy and aid, the EU GSP is one of the important instruments in the EU's toolbox used to support low and lower-middle income countries all over the world.

The launch of the EU's GSP scheme came shortly after the United Nations Conference on Trade and Development (UNCTAD) had called for establishing a Generalized System of Preferences (GSP) with the purpose of facilitating the integration of developing countries into the world economy. The EU's GSP scheme has since its launch been revised and amended several times, but its main function is that it unilaterally removes customs duties on a given set of tariff lines in order to facilitate exports from developing countries into the EU. Put simply, it liberalises parts of the EU market for developing countries, without them having to liberalise anything in return.

The EU's unilateral liberalisation has however always been relatively controlled. Since 1995, the EU has included a policy for graduation of its GSP beneficiaries, which means that the beneficiary countries that have become too competitive or deemed to not need special preferences no longer benefit from the trade preferences under the EU GSP. The graduation can occur both for particular groups of products or for whole countries.

Starting from the EU's objective of GSP being an instrument to alleviate poverty, create jobs, and promote international principles, this thesis will analyse the graduation mechanism in the EU GSP in terms of distributional effects. More specifically, it will assess if the EU GSP graduation scheme could have specific effects on certain industries within the manufacturing sector in which women are more likely to work.

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[1] To simplify, this thesis will refer to the European Communities as the EU.
[2] To avoid confusion, this thesis refers to the *EU GSP* or the EU's *GSP scheme* when it refers to the EU's specific Generalized *Scheme* of Preferences rather than the broader Generalized *System* of Preferences.

Therefore, the research question of the thesis is:

Could the EU GSP graduation scheme have gender-specific effects on employment?

This question builds on a theoretical framework of economic theory explaining the export decisions of firms and the reallocation processes that can occur when countries trade. The thesis tests the hypothesis that graduation from the EU GSP could affect trade flows and/or costs of producers in the beneficiary countries, which in turn could affect employment levels and employment composition in different sectors in the GSP beneficiary countries. The research question thus leads the topic of GSP graduation into the research areas of potential links between international trade and employment, and the relationship between trade and gender equality.

The effects of trade policy on employment have for a long time been a relevant question for policymakers. The literature about international trade and labour market effects is vast and substantial. Still, the conclusions from the empirical literature differ, and it is difficult to establish clear links between trade and employment (Jansen, Peters & Salazar-Xirinachs, 2011).

When the Organisation for Economic Cooperation and Development (OECD), International Labour Organisation (ILO), World Bank and World Trade Organisation (WTO) were tasked by the leaders of the world's largest economies (G-20) to report on benefits of trade liberalisation for employment and growth, their report referred to the complex links between trade and employment. They concluded however that the available evidence suggests that trade openness can contribute to growth and employment, but that the trade openness should be complemented by other appropriate policies (ILO, OECD, World Bank & WTO, 2010). In general, many researchers that analyse the empirical evidence on trade and employment underline the importance of complementing policies and a more deep understanding of countries' particular contexts (Jansen & Lee, 2007; Jansen, Peters & Salazar-Xirinachs, 2011; Rama, 2003; Winters, McCulloch & McKay, 2002).

Nevertheless, the debate about the effects of trade on employment remains lively, not the least in the United States where the research on the 'China trade shock' recently gained attention. This refers to the work of Autor, Dorn and Hanson (2013) who suggested that the increasing exposure to Chinese import competition has had a negative effect on employment and wages. In fact, they argue that it explains as much as one quarter of the decline in manufacturing employment in the United States.

The effects of trade policy for different groups in society, including specifically for women, have also started to be increasingly discussed by policymakers and researchers. To begin with defining the concept of gender equality in this thesis, it will refer to equal rights, responsibilities and opportunities of women and men and girls and boys (UN Women, 2019). Gender equality has historically been a relatively absent aspect in trade policy, which has been perceived as a fairly 'gender neutral' policy area. This has however begun to change.

There are a number of reasons to the growing interest in a gender perspective on trade policy. First, achieving gender equality is established as an important global objective. It is a fundamental human right embodied in the United Nations' (UN) Charter and an obligation of the Convention on the Elimination of all forms of Discrimination Against Women (CEDAW). Gender equality and empowerment of all women and girls also makes out Sustainable Development Goal (SDG) number 5 in the UN's 2030 Agenda. Moreover, gender equality has been perceived as a channel for enhanced economic growth (Korinek, 2005; Tran-Nguyen & Zampetti, 2004), although some have pointed out that gender *inequality* through women's lower wages may have been supporting some export-oriented countries' economic growth (Seguino, 2000).

One general conclusion that has evolved over the years is that trade policies can have different impacts on different groups in societies, including on women and men, and this due to a mix of socio-cultural, political and economic factors and structures (IANWGE, 2011, p.3). Women can be affected by trade as workers, producers, traders and consumers of goods and services. In order to define the impacts of trade in terms of levels, IANWGE (2011, p. 3) suggests that there is (1) the sector level, where trade may increase or reduce employment and income for women, depending on the sector of employment and on production structures; (2) the governmental level, where public expenditures are determined and can have impacts on public investments in social infrastructure and services that may affect women to a greater

extent than men; and (3) the household level where expenditures may vary depending on changes in consumer goods prices. This thesis will mainly look at the first level and if graduation may increase or reduce employment for women, depending on the sector and on production structures.

The increased interest in the relationship between trade and gender equality has been seen in the EU's trade policy and in the WTO. In the case of the EU, it has during the recent years started to explore the gender perspective in its trade policy and trade agreements (Viilup, 2015). In the case of WTO, the last Ministerial Conference in Buenos Aires ended with 118 of the organisation's members and observers agreeing on a declaration that acknowledges the importance of incorporating a gender perspective into the promotion of inclusive economic growth, and they also agreed upon measures to make trade and development policies more gender-responsive (WTO, 2017).

Although a growing amount of literature studies trade and gender equality, gender-specific effects are notoriously difficult to research due to a lack of detailed data and challenges with disentangling specific trade policy effects.

In order to examine if the EU's graduation schedule has had specific effects on certain groups, and more specifically on women, manufacturing data with the dimensions of industry, country and year will be incorporated in a fixed effects model where the state of graduation from the EU's GSP for a given industry, country and year features as a dummy variable together with a range of control variables. The model includes industry*country fixed effects, time fixed effects and industry*country-specific time trends, both linear and nonlinear. The data spans from 1990-2013 and covers two of the substantial reviews of the EU's GSP regulation. The analysis required the construction of a database in which the tariff lines of all the products that graduated from the EU's GSP, classified in terms of Harmonised System (HS) codes, were translated into the codes of industries in the manufacturing sector as they are classified by the International Standard Industrial Classification of All Economic Activities (ISIC). This database needed to take into account that the HS for classifying goods has been revised several times over these years as well as any changes in product coverage in the EU's GSP.

The baseline specification cannot establish any links between graduation and employment levels in the industries in the manufacturing sector of the EU GSP beneficiary countries in the

sample. When running the model for a subsample of industries in which the share of female employees is on average relatively higher, and when excluding China from the sample, there is weak evidence of graduation having a negative connection to employment. However, this finding is not robust.

Although the results indicate no relationship between graduation and employment or are not very robust, this thesis will hopefully contribute to the existing literature in three ways. First, it contributes to the literature by analysing distributional effects from *increased* trade barriers, rather than analysing effects from liberalisation of trade. The increase in trade barriers occurs when beneficiary countries are partly or fully graduated from the EU GSP and hence experience re-established customs duties. The approach to examine the impact on employment from increased trade barriers is rather unusual and is therefore an interesting approach, compared to most empirical works that study what happens when trade is liberalised. Second, although the literature on the EU's GSP has explored several of the GSP's dimensions, the literature on the EU's GSP graduation mechanism is narrower and it mostly focuses on trade flows. This thesis therefore contributes to the literature on GSP graduation, particularly by seeking to analyse potential distributional effects in manufacturing. Third, this thesis is relevant in light of the increasing interest by policymakers and researchers in distributional effects from trade, not the least making sure that women have equal opportunities to benefit of trade.

The thesis starts by in Chapter 2 describing the EU's GSP and its mechanism for graduation. After this, Chapter 3 and Chapter 4 lay out the relevant theory and previous research. This will cover the theory on how trade can affect production costs and thereby exporting decisions, and present some of the literature on trade and employment, trade and gender equality and on the GSP. Chapter 5 presents the data, the model and its limitations, and Chapter 6 describes the obtained results. Finally, Chapter 7 summarises and concludes the analysis of the thesis.

2. Background

2.1. The Generalized System of Preferences (GSP)

The Generalized System of Preferences (GSP) became the international community's answer to a call by the United Nations Conference on Trade and Development (UNCTAD) in 1968 for a generalised, non-reciprocal, non-discriminatory system of preferences that would benefit developing countries. This required a waiver from the General Agreement on Trade and Tariffs (GATT) principle of Most Favoured Nation (MFN), which states that WTO members should not discriminate between countries. The temporary waiver for the GSP subsequently acquired a more permanent basis in the Enabling Clause in the GATT/WTO framework (van Biesebroeck, Hvidt Thelle, Jeppesen & Gjødesen-Lund, 2015).

After UNCTAD established the GSP system in 1971, the EU and several other countries introduced GSP schemes specific to their own trade policies. In addition to the EU, there are currently twelve countries, including the United States, Japan and Canada, that have set up national GSP schemes and thereby offer GSP preferences to developing countries (UNCTAD, 2019).

The EU's GSP scheme was introduced already in 1971 by six of the current EU Member States, but then as the European Communities (EC). The EU's GSP scheme has since then been regularly revised, including with a more comprehensive change every ten years and including the adjustment needed when the EU's Lisbon Treaty entered into force. The latest comprehensive reviews of the EU GSP entered into force in 1995, 2006 and 2014.

In the end of the 90s, the EU GSP scheme added to its standard GSP arrangement with special incentive arrangements for promoting labour rights, for protecting the environment, for combatting drug production and trafficking, and for least developed countries (LDCs). A specific arrangement called Everything But Arms (EBA) was introduced in 2001, and that gave trade preferences to LDCs for basically all products except weapons and ammunition. The number of special incentive arrangements was reduced to three, and this due to a WTO dispute brought by India concerning the special arrangement to combat drug production and trafficking (UNCTAD, 2015, p.14). Consequently, the EU GSP now contains three

arrangements: the standard GSP, the GSP+ and the EBA (European Council, 2005), as seen in Table 1 below.

In January 2019, the number of beneficiary countries was 71, with 15 in the standard EU GSP arrangement, 8 in the GSP+ arrangement and 48 in the EBA arrangement. This is quite a change from in the 90s and the beginning of the 2000s when the number of EU GSP beneficiary countries was exceeding 170 (European Council, 1994; European Council, 2005). The drop mainly consists of the beneficiaries in the standard EU GSP arrangement and GSP+ rather than EBA.

Table 1. Structure of the current EU GSP scheme

Structure of the current EU GSP scheme	
Standard GSP	The standard EU GSP arrangement is given to low or lower-middle income countries. It currently grants a partial or a full removal of customs duties for ca. 66% of the EU's tariff lines.
GSP+	The GSP+ special arrangement is given to vulnerable low and lower-middle income countries that agree to implement 27 international conventions related to human rights, labour rights, protection of the environment and good governance. It grants a full removal of the customs duties in the standard EU GSP arrangement.
EBA	The EBA special arrangement is given to LDCs. It grants duty-free access for all products except for arms and ammunition.

Source: European Commission (2019)

The trade preferences given under the EU GSP scheme are classified in terms of tariff codes from the EU's Combined Nomenclature (CN), which adds EU-specific subdivisions to the Harmonised System (HS) run by the World Customs Organisation (WCO). The HS arranges ca. 5 000 commodity groups in a legal and logical structure by a six digit code, and is used all over the world for a uniform classification of goods (WCO, 2019).

As stated in Table 1, the EU GSP currently covers about 66% of tariff lines. This concerns mainly industrial products, as agricultural products covered by the EU's Common Agriculture Policy (CAP) have been problematic for the EU to include. In some cases, the covered product categories include whole HS chapters, but in many cases, the coverage refers to very specific codes at 8-digit level. Although there have been some changes in the products included in the EU GSP scheme over the years, the changes have not been very drastic. The EU has however made other changes that affect the product coverage.

Before 1995, the EU GSP scheme imposed limitations in the covered GSP preferences by the use of quotas, ceilings and fixed zero-duty amounts. Such limitations were removed in 1995, but there were other new tools to restrict the preferences.

From 1995, the included products started to be classified according to level of sensitivity, where sensitive products only got a more limited custom duty reduction. Expressed in terms of preferential margin[3], the very sensitive products got a 15% preferential margin; sensitive products got a 30% preferential margin; semi-sensitive products got a 65% preferential margin and non-sensitive products could enter duty-free, i.e. got a 100% preferential margin. The sensitivity categories were later simplified, to only consist of non-sensitive and sensitive products (van Biesebroeck et al, 2015; European Council, 1994; European Council, 2005). In 2011, around 61% of the tariff lines for the standard EU GSP were sensitive (European Commission, 2011, p.17). Examples of sensitive products are labour intensive manufactured products such as textiles, clothing and footwear, and agricultural products covered by the CAP. The EU has also ensured that it can use a safeguard in case of serious difficulties for EU producers, which secures the opportunity to reintroduce the normal Common Customs Tariff.

In addition, the 1995 revision introduced a graduation mechanism in order to withdraw preferences from product categories in which GSP beneficiary countries were deemed to be too competitive in (see full description of the graduation mechanism in Section 2.2. below).

The beneficiary countries' utilisation rates of the EU GSP preferences have been slightly uneven over the years. For example, it was reported in 2010 that China, India, Thailand, Brazil, and Russia accounted for more than 67% of all GSP covered EU imports (European Commission, 2011, p.11). The European Commission has previously also flagged up that some countries indeed have had low utilisation rates of preferences. Potential reasons for this were believed to be the difficulty of choosing between other tracks of preferential trade arrangements and a pressure by standard GSP beneficiary countries on those with GSP+ and on LDCs (European Commission, 2011, p.18). It has however been more clearly stipulated from 2006 and forward that countries with other preferential agreements, such as Free Trade Agreements (FTAs) with the EU should not have GSP preferences at the same time

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[3] The preferential margin is defined as the difference between the MFN rate of duty and the preferential rate of duty

(European Council, 2005; EU, 2012), and the utilisation has been slightly increasing (van Biesebroeck et al, 2015).

2.2. Graduation from EU GSP

As mentioned in Section 2.1., the EU GSP has been revised several times. An important change in the 1995 revision was the introduction of a graduation mechanism.

Graduation can be defined as when certain groups of products, defined in HS tariff codes, from a given EU GSP beneficiary country lose the GSP preferences, while imports of the remaining groups of products from that country keep the preferences (European Commission, 2015). The graduation could be rather rapid or more stepwise depending on what type of graduation.

The objective of introducing a graduation mechanism was to limit the EU's GSP trade preferences to the countries and sectors most in need. In essence, the EU wanted to ensure the EU GSP as a development focused policy (van Biesebroeck et al, 2015, p.27; European Council, 1994). In line with this reasoning, product groups that had reached a relatively high level of exports to the EU market started to become classified as sufficiently competitive at the world market, and thus in no need of GSP trade preferences (European Council, 1994). Whole countries could also be graduated if deemed to no longer be in need of GSP. Hong Kong, South Korea and Singapore were the first to be excluded in this way in 1998 (European Council, 1997).

The graduation mechanism has been adjusted and fine-tuned over the years, as summarised below in Table 2. This table presents the main rules, although there have been some exceptions. In order to see which product groups that could be graduated, see Table A.1., A.2. and A.3. in Appendix A.

Table 2. Structure and changes of the EU GSP graduation mechanism

Structure and changes of the EU GSP graduation mechanism, from year 1995		
Graduation period	Categorisation of the product groups for graduation	Rules determining if a product group or a country should be graduated:
1995-1998 1999-2001 2002-2005	Product groups divided into 33 sectors	*Main rules for <u>product</u> graduation:* - through a combination of a development index and specialisation index. - if the beneficiary country's exports to the EU in a given sector made out more than 25% of the total EU imports of that sector from all beneficiary countries.
		Main rule for <u>country</u> graduation: - if the beneficiary country reached threshold level of per capita GNP.
2006-2008 2009-2013	Product groups divided into 22 sections	*Main rules for <u>product</u> graduation:* - if the beneficiary country's exports to the EU in a given section made out more than 15 % of EU imports in that given section from all beneficiary countries.
		Main rule for <u>country</u> graduation - if the beneficiary country was classified by the World Bank as a high-income country during three consecutive years, and when the value of imports to the EU for the five largest sections make out more than 75 % of the total GSP imports of the beneficiary country to the EU.
2014-2016 2017-	Product groups divided into 32 sections	*Main rules for <u>product</u> graduation:* - if the beneficiary country's exports to the EU in a given section make out more than 17.5 % of EU imports in that given section from all beneficiary countries. *Main rule for <u>country</u> graduation* - if the beneficiary country is classified by the World Bank as a high-income or an upper-middle income country during three consecutive years.

Source: EU (2012), European Commission (2015), European Council (1994), European Council (2005)

As stated in Table 2, the product graduation mechanism in 1995 was triggered in accordance with a development and a specialisation index, and if a product group from a beneficiary country made out more than 25% of the total GSP imports to the EU (European Council, 1994). Country graduation happened when a country's income per capita exceeded a given threshold level. This threshold was set to US$ 6 000 in the 1995 EU GSP regulation (European Council, 1994).

The development index is defined by the European Council (1994) as:

$$DI_i = \frac{\left\{ log\left[\frac{\left[\frac{Y_i}{POP_i} \right]}{\left[\frac{Y_{ue}}{POP_{ue}} \right]} \right] + log\left[\frac{X_i}{X_{ue}} \right] \right\}}{2}$$

where Y_i is a given beneficiary country's income, Y_{ue} is the EU's income, POP_i is a given beneficiary country's population, POP_{ue} is the EU's population, X_i is the value of a given beneficiary country's manufactured exports, and X_{ue} the value of the corresponding EU exports.

The specialisation index was calculated by using the relationship between the proportion of imports in a given group of products from a beneficiary country within the total amount of the EU, with the given beneficiary country's share proportion of the total EU imports (European Council, 1994). Cuyvers (1998) has defined the specialisation index as:

$$SI_{i,k} = \frac{\frac{M_{i,k}}{\sum_k M_{i,k}}}{\frac{\sum_i M_{i,k}}{\sum_i \sum_k M_{i,k}}}$$

where $M_{i,k}$ is the EU imports of imports of product i from country k.

The development index and the specialisation index were combined in order to see if the product graduation mechanism should be triggered, and this happened according to a special scale. For example, beneficiary countries with a development index greater than -1 would graduate when the specialisation index was equal to or greater than 1, and beneficiary

countries with a development index between -1,70 and -2, would graduate when the specialisation index was equal to or greater than 7 (European Council, 1994).

In this period, the product groups that were subject to potential graduation consisted of 33 sectors with product groups, see Table A.1. in Appendix A for the structure of these sectors. If a given beneficiary country according to the graduation rules of this period became too competitive in a given type of product, the whole sector was graduated. In the latter half of this period, in 2002, the EU started to allow for *degraduation* of sectors that had not met the graduation criteria for three consecutive years.

The 2006 revision of the EU GSP simplified the initial graduation mechanism. From 2006, the two indexes were dropped and the product graduation mechanism was instead triggered if a beneficiary country's exports to the EU in a given section made out more than 15 % of EU imports in that given section from all beneficiary countries. There was an exception given if the section exceeded 50 % of the value of GSP covered imports from beneficiary country.

The country graduation started to depend on the country having been categorised by the World Bank as a high or upper-middle income country during three consecutive years, and on when the value of GSP imports of the five largest sections made out 75% of the total GSP-covered imports to the EU (European Council, 2005). The product groups that were subject to potential graduation now consisted of 22 sections (incl. subsections), as depicted in Table A.2. in Appendix A. This did not mean that less product groups had the potential to graduate, just that the EU's categorisation of these product groups had become less specified.

As of the 2014 revision of the EU GSP, the product graduation mechanism is triggered if the beneficiary country's exports to the EU in a given section make out more than 17.5 % of EU imports in that given section from all beneficiary countries. The product groups that are subject to potential graduation now increased again to 32 sections (incl. subsections), thus becoming a bit more fine-tuned as depicted in Table A.3. in Appendix A. The country graduation is triggered when the beneficiary country is classified by the World Bank as a high-income or an upper-middle income country during three consecutive years.

The actual product group graduations of the beneficiary countries in the data sample used in this thesis are depicted in Table 3 below. Note that the data sample does not include all GSP beneficiaries.

Table 3. Data sample occurrences of product graduation in terms of HS chapter

Periods of graduation in terms of HS chapters for the GSP beneficiary countries in data sample					
	Year 1995-1998[4]	Year 1999-2001[5]	Year 2002-2005[6]	Year 2006-2008[7]	Year 2009-2013[8]
Argentina	HS chapter 04, 41	HS chapter 01, 02, 16, 17, 18, 19, 20, 21, 22, 23			
Brazil	HS chapter 13, 41, 47, 48, 49, 64, 65, 66, 67, 72, 73, 86, 88, 89	HS chapter 01, 02, 09, 16, 17, 18, 19, 20, 21, 22, 23, 24	HS chapter 44, 45, 46		
Chile	HS chapter 13, 31	HS chapter 06, 07, 08		-	-
China	HS chapter 12, 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	HS chapter 05	HS chapter 04, 39, 40, 47, 48, 49, 84, 85, 90, 91, 92	HS chapter 31, 41, 44, 45, 46, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 71, 86, 87, 88, 89	
Colombia			HS chapter 06, 07, 08		
Costa Rica			HS chapter 06, 07, 08		
Hong Kong	HS chapter 42, 43, 61, 62, 63, 71, 84, 85, 90, 91, 92, 94, 95, 96	-	-	-	-
India	HS chapter 41, 42, 43, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59,			HS chapter 71	

[4] European Council (1994); European Council (1996); European Council (1997)
[5] European Council (1998)
[6] European Council (2001); European Council (2003)
[7] European Council (2005)
[8] European Council (2008)

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Indonesia	HS chapter 44, 45, 46, 64, 65, 66, 67	HS chapter 15			
Kazakhstan	HS chapter 31, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83				
Kuwait			HS chapter 25, 26, 27		
Macao	HS chapter 61, 62, 63				
Mauritius			HS chapter 61, 62, 63		
Mexico	HS chapter 72, 73	HS chapter 04, 06, 07, 08	HS chapter 16, 17, 18, 19, 20, 21, 22, 23, 28, 29, 30, 32, 33, 34, 35, 36, 37, 38, 68, 69, 70		
Morocco			HS chapter 31		
Pakistan	HS chapter 41, 42, 43, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60				
Philippines		HS chapter 15			
Russia	HS chapter 25, 26, 27, 31, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83			HS chapter 28, 29, 30, 32, 33, 34, 35, 36, 37, 38, 47, 48, 49,	
Saudi Arabia	HS chapter 25, 26, 27				
Singapore	HS chapter 84, 85	-	-	-	-
South Africa				HS chapter 86, 87, 88, 89	
South Korea	HS chapter 39, 40, 42, 43, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 72, 73, 84, 85, 87, 94, 95, 96	-	-	-	-
Thailand	HS chapter 39, 40, 42, 43, 61, 62, 63, 64, 65, 66, 67, 71, 94,	HS chapter 03, 06, 07, 08, 16, 17, 18, 19, 20, 21, 22, 23	HS chapter 68, 69, 70, 84, 85	HS chapter 86, 87, 88, 89	

	95, 96			
Ukraine	HS chapter 31	HS chapter 12		
Uruguay		HS chapter 01, 02		
Vietnam				HS chapter 64, 65, 66, 67

As mentioned above, Table 3 is built upon the data sample included in the empirical analysis of Chapter 5 and 6, and it is limited to a number of standard GSP beneficiaries. As we see, episodes of product graduations have occurred continuously over the years, although some countries are more frequently graduated and in a larger number of product categories. One notable example is China. From year 2003, some of the graduations were reversed, degraduated, and a number of product groups could again enjoy GSP preferences. In the years of 2003, 2005, 2006 and 2009, most beneficiary countries in this sample had a number of product groups degraduated, thus again receiving trade preferences. However, Brazil, China, India, Indonesia, Thailand and Vietnam still had one or many product groups graduated in the last period displayed in Table 3. For the subsequent analysis of this thesis, it can be noticed that the latter period in Table 3 is dominated by graduation that concerns product groups from China and from Russia.

In addition to the product graduations, several of the countries graduated on country level. For example, Hong Kong, Singapore, and South Korea graduated fully in 1998, and Chile left the scheme in 2007 due to being part of an Association Agreement with the EU. In the two following periods of 2014-2016 and 2017-2019, most countries in the sample had ceased to receive GSP preferences as a result of becoming classified as high-income or upper-middle income countries, or since they had other trade arrangements with the EU (European Commission, 2015; European Commission, 2016).

As mentioned already in Section 2.1, the number of GSP beneficiaries dropped drastically when the 2014 revision of the EU GSP regulation came into force. In total, for all three arrangements in EU GSP, the number of beneficiaries was planned to drop from 178 to 92 (European Commission, 2015). The drop included many of the countries in the sample displayed in Table 3. The only countries from the sample displayed in Table 3 that remain as of January 2019 are India, Indonesia and Vietnam (European Commission, 2019).

3. Theory

As this thesis seeks to examine employment effects for particular groups of increased trade barriers, it is relevant to bring up economic theory on how international trade can affect production and profits, which in turn can affect employment. A Heckscher-Ohlin model can give us insight of trade patterns and reallocations, by explaining how countries tend to export products that make use of the abundant factors of production, in which they have a comparative advantage. Something more might however be needed in the case of this thesis that seeks to search even further into distributional effects. As pointed out by Redding (2011, p.86), the earlier works in trade theory mainly emphasised comparative advantages and increased product variety as potential welfare gains from trade, whereas the theories of heterogeneous firms and trade shed light on the potential for trade to impact welfare through within-industry restructuring of resources.

This chapter will therefore concentrate on the new new trade theory starting with the Melitz (2003) model, which is a dynamic industry model with heterogeneous firms that offers an explanation of how international trade can lead to intra-industry reallocation across firms. In the subsequent analysis of this thesis, the international trade parameter in focus will be graduation from EU GSP, and the question sought to answer is whether graduation could affect employment reallocation through increased production and export costs.

The Melitz 2003 model built further on the work of Krugman (1980) whose model seeks to explain trade, scale economics and product differentiation under imperfect competition, and on the work of Hopenhayn (1992) whose model seeks to explain entry, exit, and firm heterogeneity in terms of size and growth rate. By doing so, the Melitz (2003) model can take account of heterogeneity in firm productivity and monopolistic competition with increasing returns to scale.

In order to explain some relevant elements of the Melitz (2003) model, this thesis presents the structure of Redding (2011, pp.80-83).

In the Melitz (2003) model, labour is the only factor of production and its supply is inelastic at the aggregate level L. The representative consumer's preferences over a continuum of varieties of goods are represented by Constant Elasticity of Substitution (CES) or the Dixit-Stiglitz type (Dixit & Stiglitz, 1977). The assumptions imply that the consumer has a love for variety:

$$U = \left[\int_{\omega \in \Omega} q(\omega)^\rho d\omega\right]^{\frac{1}{\rho}}, \quad 0 < \rho < 1 \tag{1}$$

where ω represents a variety of a good and Ω is a set of available varieties of good. The price index dual to the consumer's preferences is:

$$P = \left[\int_{\omega \in \Omega} p(\omega)^{1-\sigma} d\omega\right]^{\frac{1}{1-\sigma}}, \quad \sigma = \frac{1}{1-\rho} > 1 \tag{2}$$

where σ is the elasticity of substitution between different varieties of goods.

From this, one can derive the revenue for a variety of a good to be:

$$r_d(\omega) = R \left(\frac{p_d(\omega)}{P}\right)^{1-\sigma} \tag{3}$$

where $p_d(\omega)$ is the price in the domestic market for the variety ω and R is the aggregate revenue of the domestic producers.

In the Melitz (2003) model, there is a continuum of firms that produce a variety of a good ω. The firms operate in a market with monopolistic competition and they all have a fixed production cost f, but the labour productivity of these firms differs. Basically, they need different amounts of labour in order to produce a variety of a good ω. This labour productivity is indexed by φ. The costs to produce the quantity $q(\varphi)$ of a variety of a good are measured in terms of labour l:

$$l(\varphi) = f_d + \frac{q(\varphi)}{\varphi}, \; f > 0, \; \varphi > 0 \qquad\qquad (4)$$

where f_d is a fixed cost of the production, φ is the productivity of the firm's labour drawn from a fixed distribution of productivities g_φ after the firm has payed the sunk costs for market entry.

By the first-order condition from the firm profit-maximisation problem, it can be shown that the equilibrium price rule for the domestic market is the mark-up over the marginal cost, which depends on the elasticity of demand. A firm will enter and serve the domestic market if the domestic price p_d gives it a non-negative profit:

$$p_d(\varphi) = \left(\frac{\sigma}{\sigma-1}\right)\frac{w_d}{\varphi} = \frac{1}{\rho\varphi} \qquad\qquad (5)$$

where p_d is the domestic price and the wage is normalised to $w_d = 1$.

Moving onto discussing the exporting decisions of firms, the firms have to take into account the costs of trade. As there is the same constant elasticity of demand in domestic and export markets, the equilibrium price of export p_x is a constant multiple of the domestic price p_d (5) by the extra marginal trade cost τ so that:

$$p_x(\varphi) = \tau p_d(\varphi) = \frac{\tau}{\rho\varphi} \qquad\qquad (6)$$

where p_x is the export price and p_d the domestic price, and τ is the extra marginal cost for exporting firms that serve other markets than the domestic one. The extra marginal cost τ is an iceberg cost, implying that $\tau > 1$ units of the good must be exported in order for 1 unit to successfully reach the final export destination.

By substituting the equilibrium price of export in (6) into firm revenue (3), the equilibrium revenue of sales both domestically and of export sales are:

$$r_x(\varphi) = \tau^{1-\sigma}r_d(\varphi) = r^{1-\sigma}(\rho\varphi)^{\sigma-1}RP^{\sigma-1} \qquad\qquad (7)$$

Using the equilibrium revenue in (7), it can be shown that the relative revenue of firms that operate in the same market only depends on how their productivities compare to one another:

$$\frac{r_d(\varphi'')}{r_d(\varphi')} = \frac{r_x(\varphi'')}{r_x(\varphi')} = \left(\frac{\varphi''}{\varphi'}\right)^{\sigma-1} \tag{8}$$

As of the of CES utility and because all firms (regardless of whether they export or not) has to pay the fixed cost f_d , the model assumes that all firms will serve the domestic market. This even if they are exporters. For a firm that both exports and serves the local market, the profit can be divided into two parts, so that the costs in respective market are separated:

$$\pi_d(\varphi) = \frac{r_d(\varphi)}{\sigma} - f_d; \quad \pi_x(\varphi) = \frac{r_x(\varphi)}{\sigma} - f_x \tag{9}$$

where f_d is the domestic fixed costs of production, and f_x is the fixed investment cost needed to export to each one of the potential export markets.

The fixed production cost f_d points to a zero-profit cut-off in productivity φ_d^*, and that any firm below this cut-off would exit the domestic market due to negative profits:

$$r_d(\varphi_d^*) = (\rho\varphi_d^*)^{\sigma-1}RP^{\sigma-1} = \sigma f_d \tag{10}$$

The fixed importing cost f_x points to an exporting cut-off in productivity φ_x^*, and that firms that are below this cut-off will not export, but only serve the domestic market:

$$r_x(\varphi_x^*) = \tau^{1-\sigma}(\rho\varphi_x^*)^{\sigma-1}RP^{\sigma-1} = \sigma f_x \tag{11}$$

When combining the zero-profit cut-off productivity condition (10) with the export cut-off productivity condition (11) and the relative revenue of firms in the same market (8), Redding (2011, p.83) determines that it can be shown that the two productivity cut-offs relate to each other in the following way:

$$\varphi_x^* = \Lambda \, \varphi_x^*, \quad \Lambda \equiv \tau \left(\frac{f_x}{f_d}\right)^{\frac{1}{\sigma-1}} \tag{12}$$

Basically, the Melitz model can explain that:

(1) $\varphi < \varphi_d^*$ means that the least productive firms that are below the domestic productivity cut-off level will leave the market due to negative profits

(2) $\varphi_d^* \leq \varphi < \varphi_x^*$ means that the intermediate productivity firms that are on or above the domestic productivity cut-off level will serve the domestic market, but that they will not export

(3) $\varphi \geq \varphi_x^*$ means that the most productive firms that are on or above the export productivity cut-off level will serve both the domestic market and export

Melitz (2003) subsequently suggests that trade liberalisation leads to an increased zero-profit cut-off in productivity and higher average revenue and profit for firms. These forces lead to reallocation in the industries within a country that can increase aggregate productivity, which in turn should lead to increasing welfare. The model became the beginning of what is referred to as new new trade theory, which provides insights on the link between trade, firms and reallocation, and on how firms may react to trade costs in their production and export decisions.

The Melitz model is however highly stylised, as it assumes a frictionless labour market where all workers obtain a common wage w. If one would take labour market frictions into consideration, trade could potentially affect the distribution of income and lead to differences in sectoral unemployment rates (Redding, 2011, pp.95-96).

There are interesting examples of theoretical work that extend the Melitz model in order to consider wages and frictions in the labour market.

As for wages, Davis and Harrigan (2011) complement the restructuring mechanisms in the product market with corresponding labour market churning. In their framework, there is an

equilibrium unemployment and workers distinguish between good and bad jobs. This categorisation in good and bad depends on whether the wage is above or under the average wage. Hence, workers select jobs both because of firm productivities and firm wages. Davis and Harrigan argue that trade can imply a distributional conflict and also that trade liberalisation may diminish the good type of job compared to bad jobs. Also focusing on wages, Egger and Kreickemeier (2009) add workers' fair wage preferences. In their framework, a wage is considered to be fair as a function of the productivity level of the employer, implying that workers earn different wages in equilibrium. The rent-sharing motives of workers will affect the equilibrium levels of productivity distribution of firms, aggregate output, and average profits. In addition, there are corresponding effects on the labour market. This as the workers' fair wage-effort mechanism implies both wage inequality among workers employed in different firms and allows for involuntary unemployment. All of these mechanisms affect the aggregated factors, such as L. In their framework, trade liberalisation will in line with the Melitz selection process of firms lead to raised average profits of the firms that remain on the market. However, distributional conflicts should rise as both wage inequality and the unemployment rate increase.

As for labour market frictions, Helpman and Itskhoki (2010) take the Melitz model into a two-country two-sector model in which one sector produces homogeneous products while the other one produces differentiated products. The latter industry is categorised by firm heterogeneity and monopolistic competition, but also by labour search and matching and wage bargaining. They argue that both countries gain from trade, but that the country with the flexible labour market gains more, has a higher total factor productivity and a lower price level. However, the unemployment rates in the two countries do not mirror the labour market rigidity, as the rate of unemployment in the flexible country could be higher or lower.

Helpman, Itskhoki and Redding (2010) allow for an equilibrium in which equal workers get different wages, in which trade will change the industry composition by reallocating resources from low- to high-productivity firms, where the latter pay higher wages and are more selective in their recruitment. In their framework, aggregate unemployment and inequality come to depend on the allocation of resources across sectors as well as on unemployment and inequality within sectors. They suggest that openness to trade can improve welfare but that the distribution of wages in a sector can be more unequal in a trade equilibrium.

Felbermayr, Prat and Schmerer (2010) build on the Melitz model by introducing search frictions in the long term. They conclude that the impact of trade liberalisation on the labour market is shaped by its impact on average productivity, which in turn depend on a range of parameters including wage bargaining. They discuss alterations in the iceberg trade cost τ and the fixed foreign market cost f_x, in which changes can reflect both technological and political changes (i.e. tariffs, technical barriers to trade, rules).

Figure 1 displays the simulation results from the framework by Felbermayr, Prat and Schmerer (2010) of unemployment and real wages. The first diagram illustrates variable trade costs, τ, the second diagram displays changes in the number of countries a given country exports to, n, and the third diagram illustrates the effects of a change in trade fixed costs, f_x. Most relevant for this thesis is that they associate higher variable trade costs with higher unemployment whereas higher fixed trade costs would not, as this means that only very efficient firms could enter such foreign markets. The conclusion of Felbermayr, Prat and Schmerer (2010) is that the impact of trade openness on the rate of unemployment is negative in the long-term.

Figure 1. Simulation results on trade costs, unemployment and wages (Felbermayr, Prat and Schmerer, 2010)
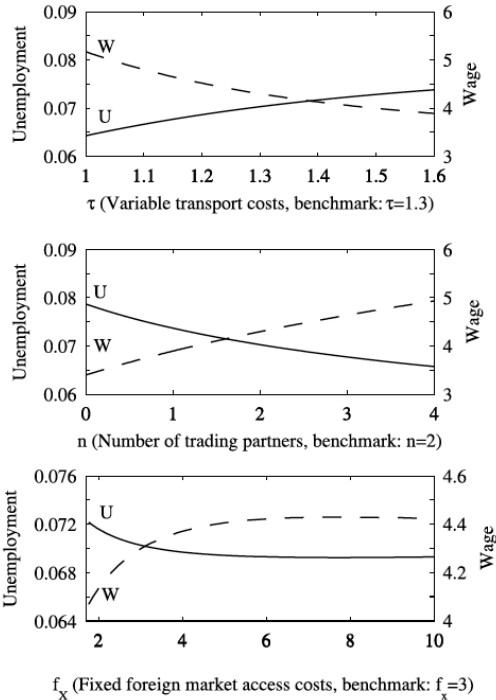
Source: Felbermayr, Prat and Schmerer (2010) p.57

As this thesis will assess the potential of the EU GSP graduation of having distributional effects, particularly for women, the theories on firms' exporting decisions and the impact of trade costs are important to have in mind. Although this thesis does not seek to research an economy-wide equilibrium, it will take in the theories of firms' exporting decisions, and how this in turn could have reallocation effects. As Felbermayr, Prat and Schmerer (2010) point to, changes in both τ and f_x can be affected by decisions on tariffs and other barriers to trade. Also if it would be the consumer that bears the cost of raised customs duties, the exporter's export price would be hollowed out and it might no longer be profitable even for the most productive firms to export. Also for f_x , new rules and procedures for exporting may raise the fixed foreign market entry costs, as it would be more complicated to enter and require more resources. All of these features may impact firms' decisions to export, and consequently have impact on reallocation in domestic markets, also within sectors.

4. Previous research

4.1. Research on trade and employment

There is a growing body of literature that seeks to relate the conclusions of new new trade theory and new empirical approaches to labour markets and to employment, but as stated in Jansen, Peters, and Salazar-Xirinachs (2011, p.3), this has only begun. As also pointed out in Gibson, (2011, p.71), the literature on the impacts of trade on employment is also increasingly dominated by methods like computable partial equilibrium (CPE) or computable general equilibrium (CGE) models built on extensive databases.

This section still seeks to present parts of the vast empirical literature on the different channels through which trade liberalisation could trigger a restructuring of economic activity, i.e. how it can affect wages and/or employment in both high or lower income countries. As will be seen, the empirical conclusions differ. As stated by the ILO, OECD, World Bank, and WTO (2010), the available evidence suggests that trade openness can contribute to growth and employment, but that it is key that trade openness is complemented by other appropriate policies. Similar or even more ambiguous conclusions, that also underline the importance on

complementing policies and a better understanding of countries' particular contexts, have been drawn by those seeking to compile the existing research on trade and employment (Jansen & Lee, 2007; Jansen, Peters, & Salazar-Xirinachs, 2011; Rama, 2003; Winters, McCulloch & McKay, 2002).

One of the earlier papers is by Grossman (1982), who examines effects from trade openness on employment in nine sectors in the United States by estimating the reduced-form wage and employment equations for different sectors, and performing simulations of hypothetical alternative paths of his variables. He finds that wages are not sensitive to competition from abroad, while the effects on employment vary across sectors. Baldwin (1995), on the other hand, summarises earlier studies on the effects on employment and wages from trade and foreign direct investment (FDI) in OECD countries, and suggests that factors such as labour supply, technology and demand are more significant than trade aspects as determining factors of employment levels.

Many of the more recent empirical studies of trade liberalisation and employment are country studies. Attanasio, Goldberg and Pavcnik (2004) use micro level data from household surveys in a Heckscher-Ohlin framework in order to assess effects on the manufacturing sector from drastic tariff reductions in Colombia. They use 2SLS to account for endogeneity and regress the share of skilled workers in each industry against industry tariffs, and industry and time indicators. They mainly focus on wages, find that wage premiums decreased more in sectors where there had been larger tariff cuts. They also find that the employment shares across industries remain stable over the sample period, but that the proportion of skilled workers rose in all industries, likely fuelled by skilled-biased technological change. Finally, they could not find any differences in probability of unemployment in the manufacturing sector compared to non-traded sectors, but they do find that trade reforms could have contributed to an increase of the informal sector.

Topalova (2010) comes to a negative conclusion when she researches the effects of trade liberalisation on poverty in India. She uses household data, and makes use of variation in sector composition and intensity for a difference-in-differences approach. She finds that there was less poverty reduction in rural areas with employment being concentrated in sectors that were exposed to larger reductions in tariffs. Hasan, Mitra, Ranjan and Ahsan (2012) follow the empirical approach of Topalova and use household data on state and industry-level

unemployment and trade protection to research liberalisation and unemployment in India. They do not find evidence of unemployment increasing due to trade reforms, rather that urban unemployment was decreasing. Kis-Katos and Sparrow (2015) also follow the Topalova approach and use a combination of household and regional data to research the effect of trade liberalisation on poverty in Indonesia, under the assumption that poverty reducing effects of international trade can be transmitted through wages and employment. They find a reduction of poverty in districts where sectors were more exposed to input tariff liberalisation. Consequently, they suggest that low-skilled employment and middle-skilled wages were most affected by reductions in tariffs on intermediate goods, rather than to reductions in tariffs on final outputs.

Revenga (1997) uses firm level data in Mexico to assess the effects of trade liberalisation in manufacturing on employment and wages. For employment, she uses both OLS and 2SLS, and instrument output with trade policy variables. She finds that wages appear to decrease but no strong evidence for effects of the liberalisation on employment. She underlines the dynamics of rent-sharing between the firms and workers as an explanatory factor, suggesting that workers could have had a larger share of the rent before the liberalisation.

As already mentioned in the introduction, Autor, Dorn and Hanson (2013) study the effects in the United States of market exposure to Chinese import competition. Their framework includes labour market frictions and relates labour-market outcomes between 1990-2007 to the Chinese import exposure, and separates the local labour markets as sub-economies with their particular patterns of industry specialisation. They use both an OLS and 2SLS approach and a set of controls for the sub-economies' labour force and demographic composition, and cluster the standard errors at the state level in order to avoid spatial correlations. In this setup, they study the sub-economies when being hit by trade shocks. By doing so they can examine changes in both manufacturing and non-manufacturing sectors in the United States in term of employment, earnings, and transfer payments. They suggest that the rising exposure to Chinese import competition increased unemployment, lowered labour force participation and reduced wages in the labour markets in the United States, and that this can explain one quarter of the contemporaneous aggregate decline in manufacturing employment. Interestingly, they suggest that the changes were more noticeable for women (Autor, Dorn & Hanson, 2013, p.2145). They also point out that the response of labour markets is slow, and stresses the view that economic theory needs a much bigger emphasis on the distributional effects of trade,

essentially become better at assessing who gains, who loses, by how much, and under what conditions (Autor, Dorn & Hanson, 2016, p.209).

There is also some literature with broader geographical scope. Wacziarg and Wallack (2004) research how episodes of trade liberalisation could have impacted movements of labour between sectors, to test the hypothesis if trade induces such reallocation. Just as in this thesis, they use sector level panel data from UNIDO but also from ILO, for a number of different countries. They construct three dependent variables, *CH* that measures structural change, *SH* that measures excess job reallocation, and *EM* that measures the growth in aggregate employment. They use these measures in fixed effects regressions with episodes of trade liberalisation as independent dummy variable that takes on the value one when there was an episode of liberalisation. The reason to why they use these three dependent variables is because welfare effects of structural change differ depending on it being from sectoral unequal changes in aggregate employment or being from job reallocation across sectors. They conclude that trade liberalisation has smaller effects on reallocation between sectors than what is commonly believed, but they do see weak evidence of increased sectoral change within the manufacturing sector.

Dutt, Mitra and Ranjan (2009) use a Ricardian model and a Heckscher-Ohlin framework on cross-country data with different measures of trade policy, unemployment and a variety of controls. Among the trade policy measures they use are openness to trade and an overall trade restrictiveness index, and for labour market controls they use strength of labour unions, labour market rigidity, and labour laws. They find support for the Ricardian prediction of a positive relationship between protectionism and unemployment. They do not however find support for the Heckscher-Ohlin prediction of this relationship changing from negative to positive depending on it being a labour-abundant or a capital-abundant country. Felbermayr, Prat and Schmerer (2011) use data on unemployment rates, openness measures and labour market institutions both in a panel data set with OECD countries and in a larger cross-sectional data set to analyse the empirical links between trade and unemployment. They try a number of estimation techniques on the panel data, and underline the importance of avoiding omitted variable bias and the problem that the low level of availability of data on labour market measures poses. In order to avoid problems with simultaneity in the panel data, they use lagged differences and levels as instruments. Finally, they conclude with establishing the

empirical regularity that in the long term, openness to trade is related to a lower structural rate of unemployment, this mainly through its effects on total factor productivity.

In sum, the literature on trade and employment demonstrates the complexities of trying to model and isolate trade effects on labour market outcomes, and brings up a lot of methodological problems that should be addressed. Often quoted reasons for the differing results and difficulties with establishing clear links between trade and employment are a lack of data, difficulties with isolating different aspects of trade, and methodological problems such as endogeneity and simultaneity (Goldberg & Pavcnik, 2007; Jansen, Peters, & Salazar-Xirinachs, 2011), all important factors to have in mind for the empirical analysis of this thesis.

It can be seen that many studies focus on particular countries, to be able to capture their specific contexts. As this thesis will assess employment in a larger amount of beneficiary countries in the EU GSP, the works of Wacziarg and Wallack (2004), Dutt, Mitra and Ranjan (2009) and Felbermayr, Prat and Schmerer (2011) will be extra important to have in mind. In contrast to some parts of the literature, this thesis will not try to capture any economy-wide equilibrium. This thesis will only look at potential link between the EU's unilateral tariff preferences to beneficiary countries, and assess if a sudden withdrawal of these preferences could have led to changes within the manufacturing sector, and particularly for women. Several studies use trade shocks in order to examine trends before and after an event of liberalisation. This thesis will take on a similar but opposite approach, as it will use graduation from EU GSP and the subsequent loss of trade preferences for certain product groups as a dummy variable. Most studies look at multilateral liberalisation, and this thesis differs by only assessing the effect from making it harder for firms in one country to export. A final reoccurring pattern that can be relevant for the research question of this thesis is that trade may lead to reallocation of labour or wages *within* sectors rather than between sectors (Goldberg & Pavcnik, 2007, pp.52-54; Hoekman & Winters, 2005, p.16; Jansen & Lee, 2007, p.5).

4.2. Research on trade and gender equality

In addition to the literature that examines the relationship between gender equality and economic growth (which was mentioned in the introduction of this thesis) it is relevant for the research question of this thesis to present parts of the literature on trade effects on female employment at sector level. A lot of the literature focuses on wage gaps between women and men and on household level effects.

Busse and Spielmann (2006) use a sample of 92 countries to analyse gender inequality and trade flows in a Heckscher-Ohlin model with focus on comparative advantage in manufactured goods. They measure gender inequality in terms of shares between women and men's wages, their access to education, and their access to the labour market. They find that wage inequality between women and men is positively linked comparative advantages in labour intensive goods, but the link between trade and gender inequality and labour market participation rates is more weak.

Sauré and Zoabi (2014) test the Stolper–Samuelson implications of that aggregate female labour force participation should increase when trade expands sectors categorised by high shares of female workers, and they test this on trade between the United States and Mexico before and after the NAFTA agreement. Building on a Heckscher-Ohlin framework, they separate between female intensive sectors and male intensive sectors. Making use of the gravity model intuition, they instrument trade with distance to Mexico, and then regress this on the shares of female labour force participation. Contrary to theory, they conclude that female labour force participation may actually fall if trade expands female intensive sectors.

Juhn, Ujhelyi and Villegas-Sanchez (2013) use a Melitz inspired framework of firm heterogeneity in trade in order to research gender inequality in wages in Mexico. They use a panel of firm level establishment data from Mexico, and use the NAFTA tariff liberalisations as the trade effect. They find that the tariff reductions raise female wage bill and employment shares, which they believe could be a result of the lowered tariffs inducing the more productive firms to modernise their technologies and enter the export market.

Berik (2011) reviews trade literature with a gender perspective and concludes that trade expansion has since the 1970s increased employment for women in labour intensive industries that export. She argues that women could be more adversely affected by trade policies, given that they often work in sectors of what is defined as less skilled work and given that they have less resources compared to men. Women may thus have a more difficult time with the adjustments and taking advantage of new employment or income opportunities generated by trade (Berik, 2011, p.172).

Although the literature on gender and trade is not complete, it points to several relevant aspects for the analysis of this thesis, as this thesis concerns distributional effects. For example, it points out that women may be overrepresented in certain sectors or be affected differently from men within certain sectors that are experiencing restructuring due to increased international trade (Berik, 2011). It shows interesting ways of how to use this, for example by the approach of Sauré and Zoabi (2014) with analysing shares of female employment. It also shows the connections with the predictions of the Heckscher-Ohlin model and of new new trade theory, in line with Juhn, Ujhelyi and Villegas-Sanchez (2013).

4.3. Research on GSP and graduation

There is a body of literature that examines the GSP, including the EU GSP. Much of the literature assesses the links between GSP and trade flows, trade composition and utilisation rates.

As for trade flows, Oguledo and MacPhee (1994) use a gravity model to study a range of preferential trade arrangements, and find a positive and statistically significant effect for trade flows for EU GSP, Mediterranean and Lomé preferences. Nilsson (2002) uses a gravity model over the years 1973-1992 to analyse exports to the EU covered by the EU trade preference arrangements. He finds a positive export effect of both the EU's GSP and ACP preferences. Persson and Wilhelmsson (2007) also analyse EU unilateral preferences through a gravity model but over the years 1960–2002. They cannot find a significant effect of the general GSP on beneficiary countries' exports to the EU. Herz and Wagner (2011) estimate the role of GSP for trade flows in a gravity model for the years of 1953–2006. They argue that GSP can

promote developing countries' exports in the short-run, but that it will hamper them in the long-run. Aiello and Demaria (2012) also use a gravity model to analyse the impact of EU GSP on developing countries' agricultural exports. They conclude that EU GSP has a positive impact on agricultural exports, but that these advantages were not fully utilised by the eligible countries.

As for research on the effects of GSP on composition of trade, Gamberoni (2007) researches diversification of the EU GSP between the years of 1994-2005 and finds that the standard GSP can be related to a positive effect for diversification. As basis for her model, she applies a Melitz (2003) framework. Persson and Wilhelmsson (2016) assess the effects from EU GSP and other EU trade preference arrangements on export diversification in a gravity model between 1962-2007. They find support for EU GSP being associated with increasing ranges of export products.

Regarding the beneficiary countries' own trade policies and GSP program design, Özden and Reinhardt (2005), use a gravity model to research how trade policies of the United States GSP beneficiary countries evolve. They find support for their hypothesis that removing GSP will induce former beneficiary countries to liberalise. Persson (2015) also discusses the policy design of the EU GSP and draws attention to the importance of avoiding unintended consequences such as trade diversion, investment distortions, and obstacles for multilateral trade liberalisation. She suggests that universal product coverage could reduce distortive effects, promote trade growth at the extensive margin and ensure that important products in which the beneficiary countries' have a comparative advantage in are not excluded because of protectionist political pressure.

The EU's GSP graduation scheme has not been extensively researched, and the amount of research of graduation is consequently much more limited and sometimes less established than the literature on GSP in general.

Kirkman (1989) analyses the United States GSP graduation by using an export similarity index between graduating countries and remaining beneficiaries in the context of the 1989 decision to graduate Hong Kong, Singapore, South Korea, and Taiwan from the United States GSP scheme. She concludes that the graduation of Singapore would have a larger effect on the remaining beneficiaries. Mendez and Murray (1990) assess the same decision on

graduation by calculating correlation coefficients and making a product-by-product comparison. They conclude that the removal of these four Asian beneficiary countries from the scheme would not lead to more benefits for other GSP countries, notably on the African continent. Hock and Ow-Taylor (1993) also assess the United States GSP by the means of a Baldwin and Murray model, and focus on the trade-creation and trade-diversion effects of graduation. They do not find any evidence for the graduation of Singapore having adversely impacted Hong Kong, South Korea or Taiwan.

Stevens, Bird, Keane, Kennan, te Velde and Higgins (2011) look at the policy design of the EU GSP and the, at the time, proposed graduation threshold. They include a number of case studies in which they discuss how changes could affect local employment. They conclude that the proposed graduation thresholds ahead of the 2014 revision of the EU GSP would not have major aggregate effects. However, they did not rule out that there could be local effects from the new policy, which in turn could affect poverty alleviation.

Finally, there is a paper by Cuyvers and Soeng (2013) who look at the EU GSP between 1994-2007 and suggest that imports of agricultural products under the EU GSP scheme could have been negatively affected by the changes in the EU GSP system, but that the imports of some industrial products reacted positively. In order to perform their estimations, they use graduation as a dummy variable and one-year lagged reaction to changes in the GSP.

There is also a number of student theses presented at Lund University on the topic of EU GSP and graduation that assess graduation and its potential impacts on trade flows, typically through the use of gravity model (Jildenbäck, 2016; Lidberg, 2012; Ring Eggers, 2017).

The literature on GSP in general is important for understanding the practical impacts of its policy design and its effect on trade flows. However, the literature on graduation is still quite limited, and this thesis could hopefully add to the existing literature on GSP by its novel approach of looking at distributional effects and possible reallocations in relation to the EU GSP graduation mechanism.

5. Method

A large part of the theory and literature on trade and employment has focused on what happens when countries liberalise and open up to trade. This thesis will instead assess a situation when trade barriers are *increased*, i.e. when GSP trade preferences are removed.

In order to examine whether the EU GSP graduation scheme could have distributional effects on employment, the empirical analysis needs to connect the beneficiary countries' graduation status to labour market changes in sectors. As described in Chapter 4, such links are complex and often difficult to isolate.

However, this thesis does not seek to examine the complex question of changed equilibrium unemployment levels or wages as an effect of trade. The analysis is much more narrow as it solely assesses potential reallocation within a given beneficiary country's manufacturing sector in relation to an episode of graduation from EU GSP. Moreover, thesis only assesses exports and employment, since the EU GSP preferences are unilateral from the EU's side and the GSP beneficiary countries do not need to liberalise themselves.

Nevertheless, the empirical analysis of this thesis will require an assumption of that the mechanisms described in Chapter 3 and 4 exist. It thereby bases the analysis on the firm selection mechanism and exporting choices as in the new new trade theory in Chapter 3, and it assumes that firms' decisions affect the level and composition of workers.

In very simplified terms, the thesis seeks to assess the following links:

$$GRADUATION \rightarrow TRADE\ FLOWS \rightarrow PRODUCTION \rightarrow EMPLOYMENT$$

In order to examine these links and potential mechanisms, the thesis will take the insight from previous theory and empirical works on the relationship between trade and employment, and it will model graduation as a shock to trade, that may affect trade flows but also impact firms' export decisions and the firm composition within the manufacturing sector and industries. As regards the step with trade flows, the existence of value chains may mean that one firm's decision to stop export, for example because of increased trade costs, also could affect non-

exporting firms. As the regard the final step, the thesis seeks to not only look at reallocation as such, but also see if such reallocation could have affected women differently, by affecting certain sectors or industries differently. This last link is not underbuilt by stable theory, as we have seen that potential effects on women and gender equality work through countries' social structures and contexts. This thesis therefore lets the data tell if there are any particular gender patterns, and only checks if women more often work in certain industries, and if such industries react differently to graduation.

In order analyse this hypothesis of potential distributional effects of the EU GSP graduation, the subsequent empirical analysis will be performed with employment and graduation data disaggregated at industry level in the manufacturing sector. The data also allows for gender disaggregation. The sample of EU GSP beneficiary countries that is analysed in this thesis consists of beneficiaries of the EU's standard GSP arrangement, of which all had at least one product group graduating between 1995 (when the policy of graduation was introduced) and before the 2014 GSP review (see Table 3 for details).

The thesis will analyse the years between 1990 and 2013. There was no point in extending the analysis after 2013, because a great amount of the countries in the sample had then ceased to be beneficiaries. There was also no point in regressing the data with countries that had other important EU trade arrangements or FTAs. Moreover, the analysis of this thesis will assess product graduation rather than country graduation. A few HS chapters related to coal and steel are left out of the analysis, because of difficulties with aggregation of these HS codes in the EU's graduation scheme and because of the specific connection of these products to the regulation in ECSC treaty and the establishment of the common market for coal and steel. It is therefore believed that the graduation dummy will be more precise when these products are excluded. The variable for graduation was constructed from information in eight different EU GSP regulations from year 1994 and forward.

The potential effect on employment will be measured at industry level, in terms of 23 different industries in the manufacturing sector as classified by the ISIC system (see listed in Table 4 below). The reason to why the analysis will be limited to only manufacturing is a lack of available and sufficiently disaggregated data for other sectors.

Table 4. List of industries in the manufacturing sector in terms of ISIC codes

List of industries in the manufacturing sector in ISIC Revision 3	
ISIC 15	Food and beverages
ISIC 16	Tobacco products
ISIC 17	Textiles
ISIC 18	Wearing apparel, fur
ISIC 19	Leather, leather products and footwear
ISIC 20	Wood products (excl. furniture)
ISIC 21	Paper and paper products
ISIC 22	Printing and publishing
ISIC 23	Coke, refined petroleum products, nuclear fuel
ISIC 24	Chemicals and chemical products
ISIC 25	Rubber and plastics products
ISIC 26	Non-metallic mineral products
ISIC 27	Basic metals
ISIC 28	Fabricated metal products
ISIC 29	Machinery and equipment
ISIC 30	Office, accounting and computing machinery
ISIC 31	Electrical machinery and apparatus
ISIC 32	Radio, television and communication equipment
ISIC 33	Medical, precision and optical instruments
ISIC 34	Motor vehicles, trailers, semi-trailers
ISIC 35	Other transport equipment
ISIC 36	Furniture, manufacturing
ISIC 37	Recycling

A first obstacle for the analysis of this thesis was that the manufacturing level data on employment in the beneficiary countries' manufacturing sectors is classified in terms of economic activity (ISIC), whereas the EU GSP graduation mechanism is built on the product tariff codes in the HS classification system. In order to see which manufacturing industries that could be impacted by the graduation of given product groups, a translation key needed to be constructed. This translation key had to allow for matching the correct HS tariff lines to the corresponding ISIC manufacturing sector and industry in which people work.

To translate the graduated products and their tariff lines from HS into ISIC, a number of concordance tables from World Integrated Trade Solution (WITS) were used. However, and to make things more complicated, the HS nomenclature is regularly updated, meaning that some particular tariff lines that are included in the GSP graduation scheme could have been reclassified over the years in the HS, which also could have impact on the translation to ISIC manufacturing industries. To ensure that the translation between HS and ISIC over the years

is correct, the approach of van Biesebroeck et al (2015, pp.136-138) is followed. In line with van Biesebroeck, the HS1988 nomenclature (H0) is used to translate the HS codes of the product groups up to the years before 1996, the HS1996 nomenclature (H1) is used for the period of 1996-2001, the HS2002 nomenclature (H2) is used for the years 2002-2006, and the HS2007 nomenclature (H3) is used between 2007 and 2011.

After constructing four databases that connect the different versions of the HS tariff lines for the products that at the times were covered by the EU GSP, the HS tariff lines affected by graduation were matched to the corresponding ISIC codes in the manufacturing sector. See Table 5 below for an example of 6 of the total 544 graduation episodes that needed to be translated into ISIC. These results could then be inserted at the level of manufacturing industry in the data on manufacturing sector employment.

Table 5. Concordance between HS and ISIC classifications of graduated products

Examples of translation of graduation from HS to ISIC								
Beneficiary country	Product group sector	Product group section	Product group tariff line in HS	Manufacturing industry code in ISIC	HS version	Year of phase out	Year of graduation	Year of de-graduation
Chile	XV		31	24	H1		1996	2003
China	XVIII		42-43	18, 19, 36	H1		1998	-
China		XIa	50-60	15, 17, 21, 24, 25, 36	H2		2006	-
Russia		VI	28-29, 32-38	15, 23, 24, 26, 36	H2		2006	2009
Thailand	XXXIII		94-96	17, 19, 25, 26, 28, 31, 33, 36	H1	1997	1998	2003
Vietnam		XII	64-67	18, 19, 25, 36	H3		2009	-

The data on graduation is thus merged with data of economic activity in the manufacturing sector in a number of GSP beneficiary countries. The manufacturing data contains numbers of employment and establishments in the different industries. Also merged into this dataset are a number of relevant characteristics of the GSP beneficiary countries, such as their openness to international trade, the nature of their labour and product markets etc. The relationship between graduation and employment is then examined as described in Section 5.2.

5.1. Data

Data limitations are a big challenge, or problem, of this thesis. The difficulties with finding sufficiently disaggregated data did not come as a surprise, given that lack of data is often cited by researchers as an obstacle for empirical analysis of questions related to trade liberalisation and employment (Goldberg & Pavcnik, 2007, p.55), but also given that gender disaggregated statistics often are rather incomplete.

In the end, the thesis makes use of a dataset with panel data covering the years 1990-2013, with recurring observations on industry and country level. The sources and descriptions of the included variables are listed in Table 6.

Table 6. List of variables and data sources

List of variables and data sources			
Variable name	Variable description	Variable unit	Source
empl	Employees	numeric	UNIDO INDSTAT2 (2019a)
lagempl	Lag of *empl*	numeric	
estab	Establishments	numeric	UNIDO INDSTAT2 (2019a)
femempl	Female employees	numeric	UNIDO INDSTAT2 (2019a)
sharefem	Share of female employees (*femempl/empl*)	%	
femaledom	Relatively high share of female employees (*femempl*)	dummy	
grad	Graduation from the EU GSP	dummy	Constructed from information in European Council (1994); European Council (1996); European Council (1997); European Council (1998); European Council (2001); European Council (2003); European Council (2005); European Council (2008)
totimport	Imports World	numeric	UNIDO IDSB (2019b)
totexport	Exports World	numeric	UNIDO IDSB (2019b)
tradeopen	Trade openness	%	World Bank (2019a)
lagtradeopen	Lag of *tradeopen*	%	
freetotrade	Freedom to trade internationally	index	Fraser Institute (2019a)
OTRI	Overall Trade Restrictiveness Index	index	World Bank (2019b), see also Looi Kee, Nicita and Olarreaga (2008)
labourreg	Regulations on the labour market	index	Fraser Institute (2019a)
unemplcov	Coverage of unemployment benefits and ALMP	%	World Bank (2019c)
PMR	Product Market Regulation	index	OECD (2019)
productreg	Regulations affecting the	index	Fraser Institute (2019a)

	product market		
informal	Informal employment	*%*	ILO (2019)

The data from UNIDO INDSTAT2 regards economic activities in the 23 different manufacturing industries in Table 4 and they are measured in number of persons or number of establishments. The observations in the variables *empl* and *femempl* come from the same set of firms, which makes them comparable. After securing that they are measured in the same reporting unit, the new variable *sharefem* was created.

The variable *grad* is a dummy that takes on the value one for a given manufacturing industry in a given country every time that a product group that affects that particular industry has been graduated. The construction of the variable *grad* was explained in the beginning of Chapter 5.

The variables *tradeopen*, *OTRI* and *freetotrade* are variables that in different ways measure how open a country is to international trade. These variables are tested because of the hypothesis that trade openness affects the equilibrium rate of employment (Felbermayr, Prat and Schmerer, 2011, p.741). The variables measure this in different ways. The variable *tradeopen* is calculated as a country's added imports and exports in both goods and services, divided by GDP. The variable *OTRI* is a measure of the weighted average tariff of a given country, but with weights that reflect the composition of imports and the import demand elasticities of each imported product. The variable *freetotrade* is an index from Fraser Institute, and seeks to indicate the degree of freedom to trade internationally. The variables *totexport* and *totimport* are used to assess how much the 23 industries in the beneficiary countries exported and imported in total to the rest of the world.

The variable *labourreg* reflects the degree of regulation on the labour market, where a more free market gives a higher value. It includes dimensions such as hiring and firing regulations, minimum wage and collective bargaining (Fraser Institute, 2019b). The measure *unemplcov* measures the covered part of the population in unemployment benefits and active labour market programmes.

The variable *productreg* reflects the degree of regulation for businesses in the product market, where a more free market gives a higher value. The variable *PMR* measures the regulatory barriers for market entry and competition in a range of policy areas.

The variable *informal* is a measure of the estimated share of informal employment in total employment.

As already mentioned, there are issues with parts of the data. Many of these variables only have observations for a few countries in a few years and some variables are difficult to measure, such as informal employment. Moreover, some of the indexes may be rather subjective. Still, the indexes *labourreg* and *productreg* are used by for example Felbermayr, Prat and Schmerer (2011) in their empirical analysis and therefore also in this thesis. Finally, the employment data from the manufacturing sector has slightly different cut-off levels for when firms report their employment statistics.

5.2. Empirical model

This thesis does not attempt to explain the economy-wide equilibrium relationship between trade and employment. Instead, it assesses if graduation could be connected to employment levels in the manufacturing sector, whose production should be mostly affected by the EU GSP scheme, and subsequently by graduation from this scheme. The empirical model of this thesis is based on the hypothesis that changes in trade can affect firms' production costs and profits, and thereby affect employment and possibly also employment composition within sectors.

The model will to the extent possible follow the approach of Felbermayr, Prat and Schmerer (2011) when they observe empirical regularities in unemployment and openness to trade, this as the dependent variable in this thesis represents the level of employment in the manufacturing sector and the independent variables represent openness to trade and labour and product market regulations. They main independent variable of interest in this thesis is however the dummy for episodes of graduation. Given the nature of the panel data collected for this thesis, a fixed effects model appears to be an appropriate choice and this is also

suggested after a Hausman test (Verbeek, 2012, pp.372-429). The baseline model's specification looks as follows:

$$empl_{ist} = \beta_1 + \beta_2 grad_{ist} + \gamma X'_{it} + \delta_{is} + \theta_t + \delta_{is} * t + \varepsilon_{ist} \qquad \text{(Model 1)}$$

where the dependent variable $empl_{ist}$ is employment for given industry s in a given country i at a specific year t, $grad_{ist}$ is a dummy variable for graduation, and the vector X'_{it} contains the independent variables referring to a given beneficiary country's context. In the baseline specification, the independent variables will be *tradeopen*, *labourreg* and *productreg*. These are chosen to correspond to important potential channels through which literature suggests that trade may affect employment, and these variables display different variation over time. The main specification is run with a fixed effects model, with industry*country fixed effects, time fixed effects and industry*country individual time trends. Both linear and nonlinear industry*country individual time trends are tested. After testing for heteroskedasticity and autocorrelation, the regressions are run with robust standard errors.

The main specification is run for the years 1990-2013, i.e. covering the 1995 GSP reform that established the graduation mechanism and ending at the 2014 review. The specification will also be run for the years of 1990-2005 as a robustness check, i.e. before the 2006 GSP review entered into force, in order to search for variations between the revised schemes. In the time period of 1990-2013, a number of the included countries are removed due to them being on track with implementing other trade arrangements with the EU that may affect the accuracy of the estimation. Hong Kong, Singapore and South Korea are not included in either estimation, due to their country graduations in 1998. China is also removed as a robustness test, due to its large share in the sample and its very special situation of strong growth.

Table 7. Countries included in the estimations for 1990-2005 and 1990-2013

Countries included in the sample and in the estimations		
Countries in sample	Regression 1990-2005	Regression 1990-2013
Argentina	Included	Included
Brazil	Included	Included
Chile	Included	-
China	Included	Included
Colombia	Included	-
Costa Rica	Included	-
Hong Kong	-	-

		Included	Included
India		Included	Included
Indonesia		Included	Included
Kazakhstan		Included	Included
Kuwait		Included	Included
Macau		Included	Included
Mauritius		Included	-
Mexico		Included	-
Morocco		Included	-
Philippines		Included	Included
Russia		Included	Included
Saudi Arabia		Included	Included
Singapore		-	-
South Africa		Included	-
South Korea		-	-
Thailand		Included	Included
Ukraine		Included	Included
Uruguay		Included	Included
Vietnam		Included	Included

5.3. Descriptive statistics

Table 8 presents the descriptive statistics of the whole data set, i.e. for all countries in the sample and not only the variables that feature in the estimations but also the ones that were tested and examined in other ways. This table also shows that some variables were very limited in observations, such as *OTRI*, *PMR* and *informal* that consequently cannot serve in the estimations.

Table 8. Descriptive statistics of whole data sample

Variable	Obs	Mean	Std. Dev.	Min	Max
year	12,742			1990	2013
country	12,742			1	25
ISIC	12,742			15	37
empl	10,926	235014.1	794002.7	0	9890000
femempl	4,160	42755.68	158391.7	0	4590452
sharefem	4,120	.292056	.2101203	0	.9671293
estab	9,095	3048.443	7840.261	0	143974
grad	12,742	.1692042	.3749469	0	1
totimport	10,965	941997.6	3310409	0	9.35e+07
totexport	10,652	1152313	6951835	0	2.32e+08
tradeopen	12,742	.9347714	.8200858	.1499086	4.43
freetotrade	7,567	7.153316	1.172839	2.67	10
OTRI	482	.1075357	.0690079	0	.2169706

labourreg	7,360	5.866471	1.327884	3.16	9.46
unemplcov	778	.0809219	.0796744	.0059718	.2533946
productreg	6,946	6.00818	1.352094	2.18	9.5
PMR	391	2.550291	.5034318	1.74848	3.399369
informal	1,012	.4722591	.1234176	.3168	.753

A simple ttest shows a difference in means in *empl* depending of the graduation dummy being equal to 1 or 0. Whether this difference means anything is to be seen in the analysis in Chapter 6.

Table 9. ttest of employment by graduation

	grad=0	grad=1	Mean1	Mean2	diff	SE	t_value	p_value
empl by grad:	5380	936	202000	1370000	-1170000	32983.54	-35.5	0

To connect these statistics with what has been pointed out in literature, the countries in the sample differ in characteristics, such as the way in which their markets are regulated and in how open they are to international trade. The following figures show the countries' mean value of some of these variables in the data set. Figure 2 of *labourreg* suggests that Hong Kong and Saudi Arabia seem to have a higher mean, indicating less regulated labour markets, whereas Brazil, Morocco, Indonesia and South Korea may have more regulated markets. Figure 3 of *productreg* indicates that Hong Kong and Singapore have the highest means, suggesting the most free product markets, whereas the lower mean in Brazil and Ukraine would indicate less free product markets. Macao and Mauritius do not have any observations in these two variables, and that is the reason to their non-existing bars. Figure 4 illustrates the measure for trade openness, in which Hong Kong and Singapore dominate as most open.

Figure 2. Mean values of variable for labour market regulations
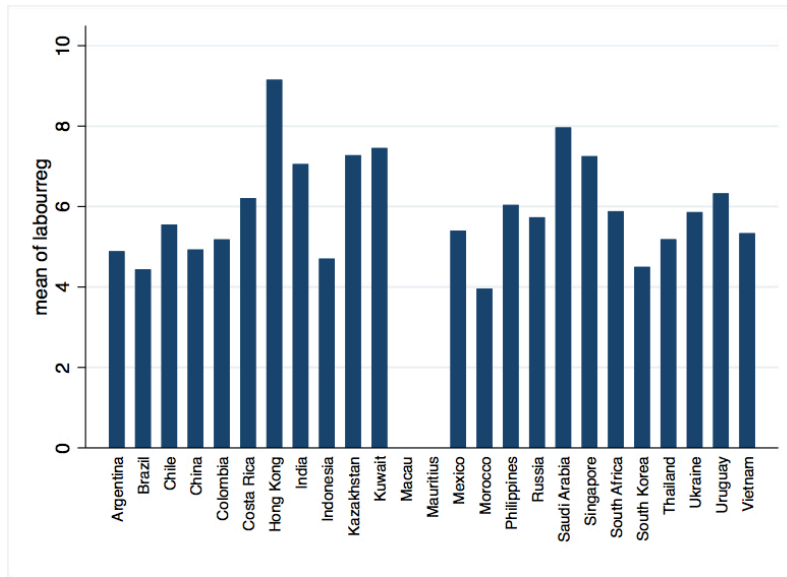
Figure 3. Mean values of variable for product market regulations
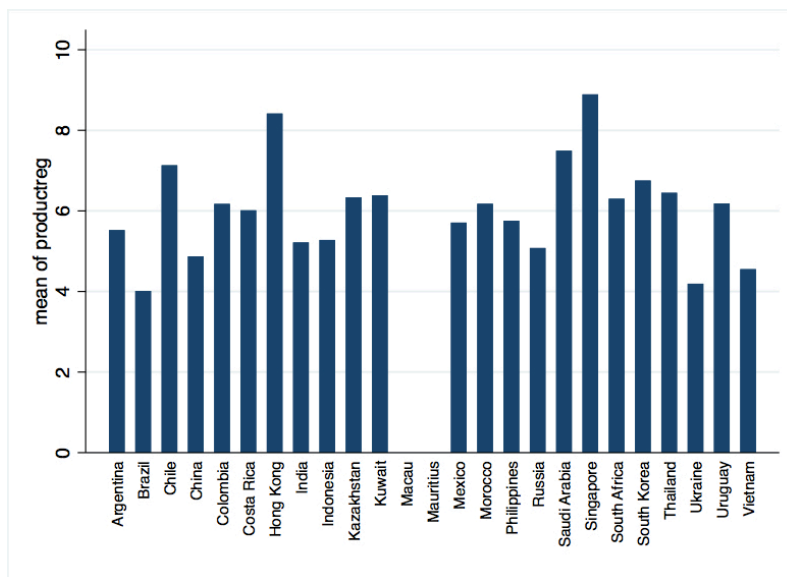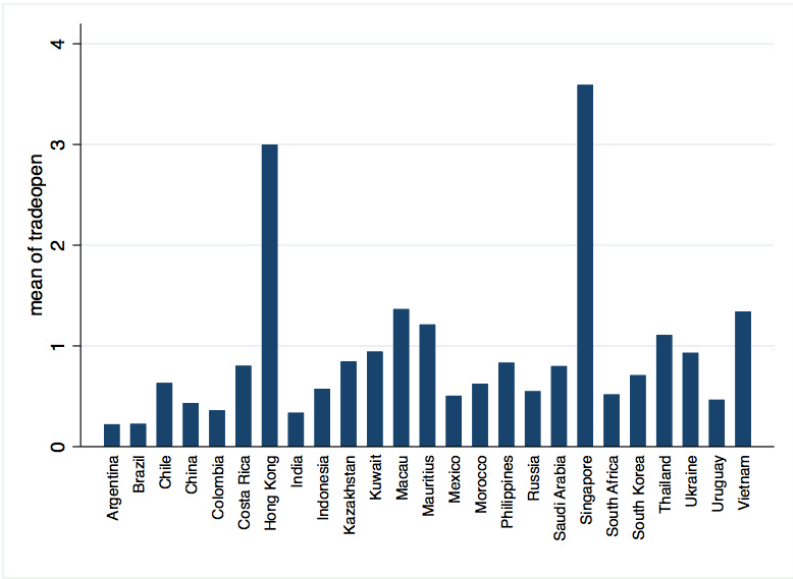
Figure 4. Mean values of variable for trade openness

Some of the variables at the manufacturing industry level are extra interesting to display, such as the different industries' total exports and average shares of female employment. Figure 5 and 6 illustrate these values by industry (ISIC code) over time.

Figure 5. Total exports by ISIC code and year

Graphs by ISIC
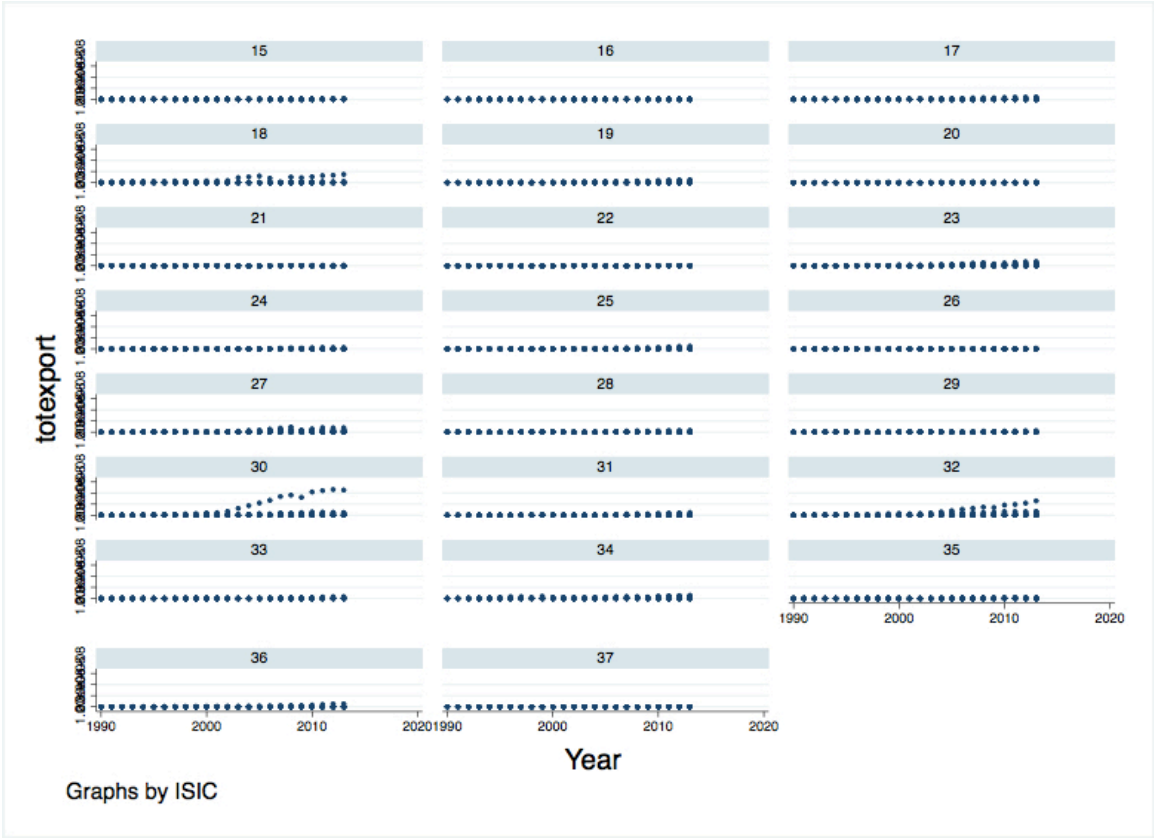
Figure 5 plots the total exports from the beneficiary countries in the sample to the rest of the world, separated by industries and displayed over time. Despite it being a very basic graph, it points to some general trends in the manufacturing industries of the beneficiary countries. Some industries do appear to have experienced a more notable growth in exports, such as industry 18 (wearing apparel, fur), 30 (office, accounting and computing machinery), and 32 (radio, television and communication equipment). If one were to speculate in the reasons for the growth in these particular industries, one must first mention the technological development, and the digital boom. As for the industry of wearing apparel, one can note that it started to grow more intensely just before 2005, which was the last year of the Agreement on Textiles and Clothing (ATC), a WTO arrangement which helped phasing out import quotas on textiles and clothing.

Figure 6. Share of female employees by ISIC code and year

Figure 6 plots the share of female employees for the beneficiary countries in the sample by ISIC code and year. This basic graph illustrates that some industries seem to have a greater share of female employees than other. As seen a bit more clearly in Table 10 , the mean

values in share of female employees do seem particularly high in industry 18 (wearing apparel, fur) and 30 (office, accounting and computing machinery), with means over 50%, but also in 17 (textiles), 19 (leather products and footwear), and 32 (radi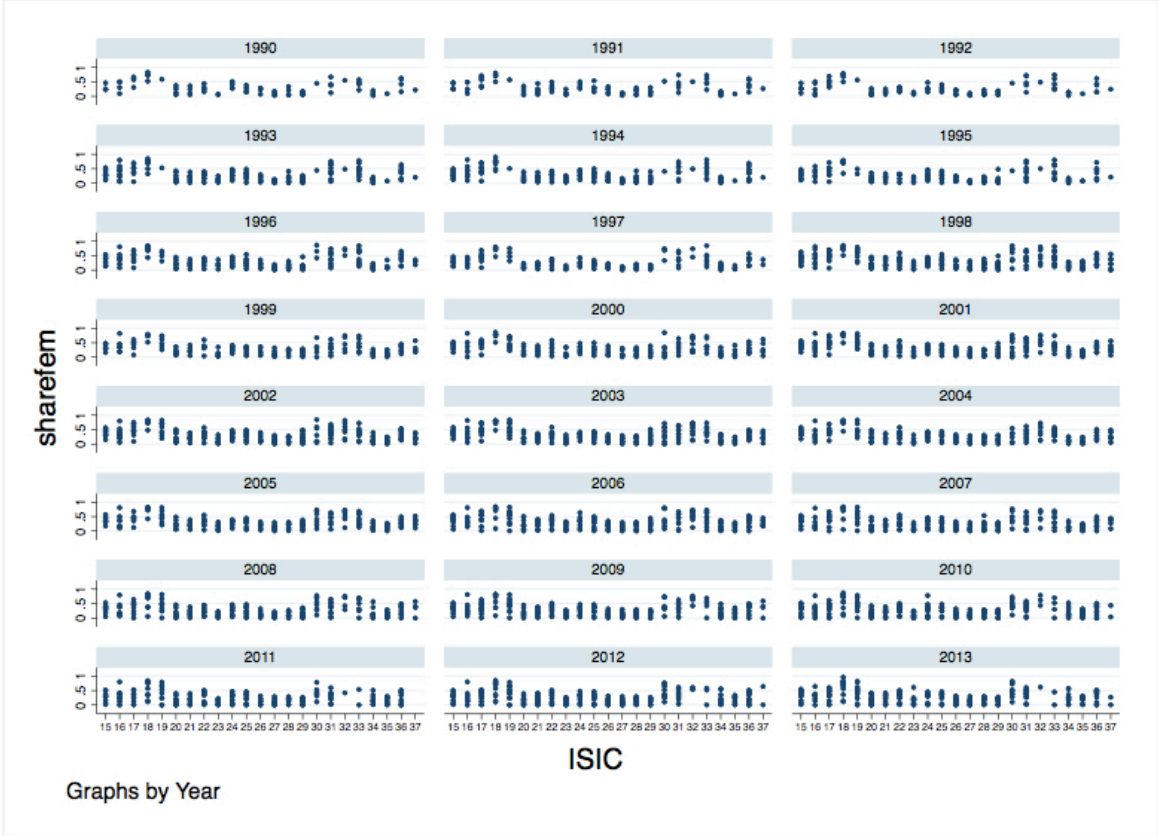o, television and communication equipment) and 33 (medical precision and optical instruments). This also corresponds rather well with the industries in Figure 5 that experienced a growth in exports. The industries for textile and clothing are rather known to be female-dominated which turns out to be the case also in this data sample. The information in Figure 6 is very interesting for the analysis of this thesis and the potential effects of graduation, as the data here tells us which were the industries with a relatively higher share of women in this sample.

Table 10. Mean of the share of female employees in industries in the manufacturing sector

Mean share of female employees in industries in the manufacturing sector				
ISIC	Mean	Std. Err.	[95% Conf.	Interval]
15	.3372694	.009727	.3181992	.3563396
16	.3435942	.0161362	.3119585	.3752299
17	.4185288	.0134857	.3920894	.4449681
18	.6714909	.014453	.6431553	.6998265
19	.4808999	.0173422	.4468997	.5149
20	.1855346	.009379	.1671467	.2039226
21	.209943	.0082415	.1937852	.2261008
22	.2915763	.0106931	.2706121	.3125405
23	.1291441	.0078963	.1136631	.1446251
24	.287886	.0093874	.2694817	.3062904
25	.2682292	.0096415	.2493266	.2871318
26	.1595134	.0068751	.1460345	.1729923
27	.1121044	.0063969	.0995631	.1246458
28	.1632967	.0072551	.1490727	.1775207
29	.166522	.0081969	.1504517	.1825923
30	.427523	.0214029	.3855618	.4694843
31	.374321	.0145157	.3458625	.4027796
32	.5149084	.020632	.4744585	.5553583
33	.4167774	.0165394	.3843513	.4492035
34	.160253	.0089725	.1426622	.1778439
35	.1493203	.0085879	.1324833	.1661573
36	.3235443	.0118647	.3002832	.3468055
37	.2789134	.0166115	.2463459	.3114809

5.4. Estimation issues

The two biggest issues are the issue of poor data and the difficulties with finding an appropriate model for the estimations.

As regards data, the sector data on employees and trade flows from the UNIDO databases INDSTAT2 and IDSB is relatively good, but not for all industries. The variable for female employees contains a lot of missing observations and it was difficult to find sufficient data for the control variables. Many controls have been tried out, but only a very limited amount of them work. Although the model makes the best possible use of fixed effects, the panel is unbalanced and lack controls that may have been suitable. The missing observations also raise questions of potential selection bias (Verbeek, 2012, pp.372-429), as it could be that the countries not reporting had another employment pattern during some years that they did not want to report, and that the countries reporting on for example female employees were happy to do so because of a good gender balance.

Regarding model, it is pointed out in Jansen, Peters and Salazar-Xirinachs (2011) that it is preferable to analyse trade liberalisation and employment in economy-wide rather than partial analyses, or in a country-specific evaluation with more detailed information on firms and workers' decisions, linking it to the particular context of the given countries. This as it in general is difficult to separate effects from trade liberalisation from other changes such as in technology, macro economic policies etc. (Jansen & Lee, 2007). The model used now is also a bit limited for the amount of data, and this became clear when trying to regress nonlinear trends and more complicated combinations of fixed effects.

Normally when assessing effects of trade policy on the labour market, a big problem is endogeneity. Trade policy is the outcome of a political process that takes into consideration the general status in a country, particularly in the labour market. For example, the policymakers of a country may adjust its trade policy in order to protect its labour market. Employment can thus decide trade policy and vice versa. GSP graduation is not decided by the policymakers of the beneficiary countries, but by the EU. Still, EU GSP is designed in order for preferences being removed from countries that export too much to the EU, i.e. so

that they are removed when the beneficiary firms have become too productive. This relationship will make it very hard to isolate effects of graduation.

Moreover, in order to capture the full picture, the data should not only consist of manufacturing data. Although the EU GSP is focused on industrial goods and hence the manufacturing sector, there are still agricultural products included and the GSP effects should indeed be able to reach other sectors than manufacturing. The translation of the HS codes to ISIC codes of the beneficiary countries' graduated product groups also confirmed this. It is therefore regrettable to not have data that comprises employment in other parts of a country's economy.

In addition, and relating to the country-specific contexts, it is hard to capture the informal economy. Informal economy is defined by the ILO as the economic activities by workers and economic units that are, in law or in practice, not covered or insufficiently covered by formal arrangements, and pointed out by Sinha (2011, pp.125-170), many jobs in developing countries still remain in the informal economy. In fact, around 60% of the employment in developing countries is estimated to be in the informal sector. As the informal economy often makes up the majority of economic activity in developing countries, a lot of information is missing. In addition, as pointed out in Jansen, Peters and Salazar-Xirinachs (2011), only focusing on a subset of sectors may lead to an exaggerated conclusion, whether it is negative of positive.

Despite that it would have been preferable to perform the empirical analysis in another and more suitable specification, the partial analysis may contribute to ideas of how to take the hypothesis of the thesis further.

6. Empirical results

6.1. Estimation results

The main regression results are presented below in Table 11 and 12. Additional tables mentioned in the robustness Section 6.2. are to be found in Appendix B.

Table 11. Estimation results Model 1

	Baseline		Lag dep. var		Excl. China	
	(a)	(b)	(c)	(d)	(e)	(f)
Dependent variable:	*empl*	*empl*	*lagempl*	*lagempl*	*empl*	*empl*
grad	-16,821	22,893	-30,365	2,637	7,919	13,602
	(31,631)	(29,323)	(34,609)	(34,592)	(10,393)	(13,947)
tradeopen	255,071**	510,239**	114,926	249,766	84,233***	48,840*
	(125,998)	(225,379)	(106,578)	(181,814)	(29,984)	(26,211)
labourreg	36,886**	-10,110	40,986**	-5,659	6,192	12,154***
	(15,563)	(7,769)	(16,900)	(7,023)	(3,898)	(3,468)
productreg	81,281***	57,794***	99,964***	53,242***	-5,959*	517.1
	(27,617)	(19,100)	(27,525)	(19,917)	(3,464)	(3,676)
Industry*Country Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Time Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Linear Industry*Country Individual Time Trends	Yes	Yes	Yes	Yes	Yes	Yes
Nonlinear Industry*Country Individual Time Trends	No	Yes	No	Yes	No	Yes
Observations	3,676	3,676	3,702	3,702	3,356	3,356
R-squared	0.551	0.753	0.575	0.808	0.778	0.883
Number of CountryISIC	317	317	320	320	294	294

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Column (a)-(b) present the baseline specification, with fixed time effects, fixed industry*country-specific effects and industry*country individual time trends. Column (a)

contains an industry*country-specific linear time trend and column (b) contains an industry*country-specific nonlinear time trend. The industry*country-specific time trends seek to control for time trends particular for the industries in the beneficiary countries.

Column (c)-(d) present the specification with a lagged dependent variable, with fixed time effects, fixed industry*country-specific effects and industry*country individual time trends. Column (c) contains an industry*country-specific linear time trend and column (d) contains an industry*country-specific nonlinear time trend. The purpose of this specification is to capture the slow movements of the labour market, if the graduation did not come with a sufficient warning. In should however be noted that the graduation dummy is equal to one during every year of graduation, and that most graduations last longer than only a year.

Column (e)-(f) present the standard specification but excluding China, with fixed time effects, fixed industry*country-specific effects and industry*country individual time trends. Column (e) contains an industry*country-specific linear time trend and column (f) contains an industry*country-specific nonlinear time trend. China is excluded due to its particular growth and economic expansion, which stands out from the other beneficiary countries in the sample.

As can be seen, no significant effects from graduation can be distinguished for the number of employees in the manufacturing sectors in the beneficiary countries. This could mean that graduation did not have any effect on these industries in the manufacturing sector, which perhaps already were relatively competitive. It could also be a result of an imperfect model, and because of the difficulties with isolating the effects of graduation, a policy tool that in itself is endogenous.

Trade openness has a positive and significant sign in the standard specification, both with and excluding China. This is in line with the reasoning that trade can expand employment, either by allowing more productive firms to grow more, or due to a particular sector, such as manufacturing, could contain industries of comparative advantage for the beneficiary country. The relationship does however not hold when the dependent variable is lagged. The coefficients for labour market regulation are positive and significant in column (a), (c), and (f) which would suggest that a less regulated (more 'free') market is connected to higher employment levels in this sample. The significant and positive coefficients for product market regulation in column (a)-(d) indicate that a less regulated product market also is

connected with higher employment. This changes when removing China from the sample, and column (e) indicates that a more regulated product market is connected to higher employment.

In order to take the analysis a bit further and look more into distributional effects, the industries characterised by a higher average share of female workers are examined in closer detail. As seen in Section 5.3., some of the industries in the data sample appeared to have a higher average share of female employees. Could such female-dominated industries be affected differently when graduation hits those particular industries? In order to analyse this, the regressions are re-run but only for the subsample of the industries with a higher mean share of female employees, more precisely those exceeding 40% and mentioned in Section 5.3. The regressions are performed only for the observations with a positive sign of a dummy variable called *femaledom*, which is constructed to take on the value 1 for the female-dominated industries mentioned in Section 5.3. The estimations in Table 12 present the result of the regressions of this subsample.

Table 12. Estimation results Model 1, subsample

Dependent variable:	Baseline		Lag dep. var		Excl. China	
	(a) *empl*, if femaledom	(b) *empl*, if femaledom	(c) *lagempl*, if femaledom	(d) *lagempl*, if femaledom	(e) *empl*, if femaledom	(f) *empl*, if femaledom
grad	-58,048	94,297	-19,938	32,105	-33,730*	-11,357
	(65,896)	(82,865)	(25,504)	(35,434)	(18,909)	(12,385)
tradeopen	612,034**	1.125e+06**	430,825*	688,317*	91,319	127,294**
	(298,936)	(533,627)	(218,330)	(372,791)	(54,849)	(56,690)
labourreg	-13,139	-7,067	-18,561	-10,877	-4,225	14,831**
	(30,650)	(27,444)	(20,981)	(22,896)	(8,158)	(6,837)
productreg	6,026	82,955*	83,141*	100,992	-4,865	9,254
	(46,394)	(48,576)	(43,602)	(64,906)	(6,687)	(7,238)
Industry*country Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Time Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Linear Industry*Country Individual Time	Yes	Yes	Yes	Yes	Yes	Yes

Trends

Nonlinear Industry*Country Individual Time Trends	No	Yes	No	Yes	No	Yes
Observations	866	866	884	884	790	790
R-squared	0.493	0.662	0.673	0.759	0.761	0.859
Number of CountryISIC	81	81	83	83	75	75

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Column (a)-(b) in Table 12 present the baseline specification without lags, with fixed time effects, fixed industry*country-specific effects and industry*country individual time trends, for the subsample of female-dominated industries. Column (c)-(d) present the specification with a lagged dependent variable for the subsample of female-dominated industries, and column (e)-(f) present the standard specification but excluding China, for the subsample of female-dominated industries. Just as in Table 11, all versions are tested with two versions of industry*country-specific time trends, linear and nonlinear.

The baseline specification, also with the dependent variable as lagged, shows no significant relationship between graduation and employment. However, if excluding China, the graduation dummy becomes significant and negative, which could indicate that graduation could have had a negative effect on employment in industries with a higher share of women in the beneficiary countries in the sample. The trade openness coefficient however becomes insignificant in the same column (e). As in the full sample, trade openness otherwise has a generally significant and positive coefficient, this time also when the dependent variable is lagged. Labour market regulation is only significant in column (f), where its positive sign indicates that a less regulated market has been connected with more employment in these beneficiary countries. Product market regulation is significant and positive in column (b) and (c), indicating that a more free product market is connected to higher numbers of employees in this sample.

If one were to draw any general conclusions from the estimations, the first would be that the model cannot establish any significant effects from graduation on employment. The second

could be that the model does not produce stable results, which implies that it might not be able to isolate the potential effect from graduation on employment. For this, a more rich dataset would be needed, also with less missing observations. This would also allow for better controls for potential endogeneity.

It is however interesting that the graduation dummy becomes negative and significant for the subsample of industries with a higher relative share of female employees when excluding China, although it must be noted that the result is not very robust. This could perhaps imply a strong comparative advantage in those industries in China, which can handle shocks of graduation, whereas the female-dominated industries in the other beneficiary countries may have reacted differently by not being able to afford the increase in trade costs and smaller profit. Regardless of the weak results, it is of course very difficult to draw any conclusions in terms of gender equality from the regressions of the subsample of countries, simply because there is no clear theory to rely on in this area. As already mentioned, women are affected through a mix of socio-cultural, political and economic factors and structures, and trade policy decisions and firms' decisions also work through such structures. Therefore, this thesis only looks at the distribution of employment part of the question of gender-specific effects.

6.2. Robustness

In addition to the modifications already discussed in Section 6.1, a lot of different measures have been tried to check the robustness of the model and seek for better specifications.

The dependent variable has been changed to a measure of establishments rather than employees, but this does not change the dummy variable and the variable for trade openness becomes insignificant. The other controls do generally become significant and positive in all specifications (see table B.1. in Appendix B), possibly implying that more free markets have a positive connection with more establishments.

The independent variable *tradeopen* has been lagged in several ways, in order to reduce the potential endogeneity and simultaneity. For the different lagged combinations tried, the signs of the coefficients remain the same. In addition, different measures of trade openness have

been tried, such as the variable *freetotrade*. The sign or significance of the graduation dummy does not change, but according to the *freetotrade* measure, freedom to trade internationally is in general less positively connected to employment levels (see table B.2. in Appendix B), which stands in stark contrast to the *tradeopen* measure. Other combinations of independent variables than those in the specifications displayed in this thesis have been tried, but these are in general a bit too insufficient in observations in comparison to the other independent variables included.

The model has also been regressed from 1990 but only until 2005, i.e. only covering the first EU GSP scheme with a graduation mechanism. The graduation dummy remains insignificant in the full sample, but it becomes significant and negative in one of the most basic versions of the baseline specification in the subsample of industries with relatively higher shares of women (see table B.3. in Appendix B). This holds when running this specification with lagged dependent variable or with lagged trade openness variable.

The setup of fixed effects and time trends has also been done at country level instead of industry*country. The graduation dummy remains insignificant in these regressions.

7. Summary and conclusion

The objective of the EU GSP is to alleviate poverty and create jobs in developing countries. Given these objectives, it is interesting to analyse its policy design and see if the past design could have had distributional effects, i.e. different effects for different groups and particularly so for women. The research question of this thesis is novel, and that makes it more interesting. At the same time, it makes the analysis more difficult.

The hypothesis of this thesis is based in a theoretical framework where trade liberalisation triggers restructuring of the economic activities in a given country. That restructuring may present itself in the shape of job losses in some parts of the economy, at the same time as other parts of the economy are growing. Firms' production decisions are a key factor in this equation. The short-term effects of the restructuring may look very different given the set of country-specific policies regarding labour and product markets (Jansen & Lee, 2007). The

literature still points to the potential for distributional effects within sectors, which can affect some groups negatively or positively in different degrees.

This thesis used the conclusions from literature in a novel way by analysing the potential effects of unilaterally *increased* trade barriers instead of liberalisation. This in the form of the *increased* trade barriers that EU GSP beneficiary countries face when they experience product graduation. Relating to literature, graduation could mean that some firms choose to no longer export or will not seek to enter the export market, as the marginal as well as the fixed costs from trade increase. Depending on which product groups that are graduated, different groups in society may be affected. The thesis looked deeper into this by analysing not only the effect on the manufacturing industry employment from graduation, but by also analysing industries with a larger relative share of female employees compared to the others.

In order to examine the effects of the unilaterally increased trade barriers, EU GSP beneficiary countries' graduation episodes needed to be translated from HS codes to ISIC codes. This allowed for creating a dummy variable for episodes of graduation, which could be merged with industry level firm data on manufacturing employment volumes and composition. The graduation dummy and manufacturing employment data were included in a fixed effects model controlling for time fixed effects, industry*country fixed effects and industry*country individual time trends.

The results are ambiguous, but generally do not point to any significant effects for employment from graduation. If one would relate this to theory, this could perhaps be because the manufacturing sector is one of comparative advantage in many of the countries in the sample, meaning that firms in this sector generally are productive enough to handle increased trade costs. However, when excluding China from the analysis, the subsample of industries with a relatively higher share of female employees indicates a weak but significant negative relationship between graduation and employment levels. Also when looking at the subsample of industries with a relatively higher share of female employees up to year 2005, the negative and significant relation between graduation and employment appears in the most basic baseline specification. Although one should be very careful in interpreting results that are not robust, such links could possibly indicate that the higher costs and lower profits from exporting due to graduation led to reallocation away from industries that were not productive enough to handle these costs. This thesis cannot answer how the women in the relatively

female-dominated industries would have been affected by the potential reduced employment levels, that would require a deeper analysis taking into account the country- or region-specific socio-cultural, political and economic factors and structures.

The weak and ambiguous results are not a surprise. The more recent development of theory has pointed to the complex links and empirical literature has reached very different results. It should also be underlined that the analysis only looks at the manufacturing sector. If employment decreases in some manufacturing industries because of graduation, where do the workers go? Are they unemployed, or do they easily find jobs in other industries, in agriculture or in the informal sector? As this thesis cannot offer an economy-wide picture, we cannot know. What this thesis offers is only a part of the total picture of a country, but it is nevertheless an important sector, in which different groups in society may work to a greater extent in certain industries, such as women in apparel.

Although the results of this thesis are generally not significant and not very robust, the issue of its potential for distributional effects remains interesting for future research. One approach could be analysis on country level that allows for more in-depth understanding of the country-specific context and policies. It would also be interesting to look at other sectors that could be affected, not the least agriculture and mining. Other examples of factors that were not covered in this thesis are the presence of Export Processing Zones (EPZ) and magnitude of the informal economy. Another approach would be to make use of the measures constructed by Wacziarg and Wallack (2004), and fine-tune them to perhaps also include shares of female employment. Finally, it could be interesting to look at other GSP schemes than the EU's, and take into account the different proportions of trade.

EU GSP should be an instrument for supporting job creation and alleviate poverty in countries all over the world. It is seen as an important instrument in the EU's toolbox, alongside development cooperation and aid. As the current EU GSP is once again approaching the time for another renewal, the interest in improving and fine-tuning this instrument will probably remain strong, particularly so given the EU's interest of increasing the gender perspective in its external policies. This thesis will hopefully shed more light on the mechanism for graduation and its potential for within sector employment effects.

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Appendix A

Table A.1.

Sectors year 1995-2005 for EU GSP graduation		
Sector name	Corresponding HS chapter	Description
I	01-02	Live animals and meat
II	03 and codes 1604, 1605, 1902010	Fishery products
III	04	Edible products of animal origin
IV	05	Other products of animal origin
V	06-08	Trees, plants, cut flowers, edible vegetables and nuts
VI	09	Coffee, tea, maté and spices
VII	10-11	Cereals and malt and starches
VIII	12	Grains, seeds, fruits and plants
IX	13	Lac, gums, resins
X	15	Fats, oils and waxes
XI	16-23 excl. 1604, 1605 and 19022010	Edible preparations and beverages
XII	24	Tobacco
XIII	25-27	Mineral products
XIV	28-38 excl. 31	Chemicals except fertilisers
XV	31	Fertilisers
XVI	39-40	Plastics and rubber
XVII	41	Leather, raw hides and skins
XVIII	42-43	Articles of leather and furskins
XIX	44-46	Wood
XX	47-49	Paper
XXI	50-60	Textiles
XXII	61-61	Clothing
XXIII	64-67	Footwear
XXIV	68-70	Glass and ceramic products
XXV	71	Jewellery and precious metals
XXVI	Parts of 72 and 73	Iron or steel (products under the ECSC Treaty)
XXVII	Parts of 72 and 73 plus 74-83	Base metals and articles of base metal other than products of sector XXVI
XXVIII	Parts of 84-85	Electro-mechanics
XXIX	Parts of 84-85	Consumer electronics
XXX	86, 88, 89	Transport equipment
XXXI	87	Vehicles

XXXII	90-92	Optical, clocks and musical instruments
XXXIII	94-96	Miscellaneous

Table A.2.

Sections year 2006-2014 for EU GSP graduation		
Section name	Corresponding HS chapter	Description
I	01-05	Live animals and animal products
II	06-14	Vegetable products
III	15	Animal or vegetable fats and oils
IV	16-24	Prepared foodstuffs, beverages, spirits and vinegar, tobacco
V	25-27	Mineral products
VI	28-38	Products of the chemical or allied industries
VII	39-40	Plastics and rubber
VIII	41-43	Raw hides and skins, leather, furskins
IX	44-46	Wood
X	47-49	Pulp of wood, paper
XI(a)	50-60	Textiles
XI(b)	61-63	Apparels and clothing
XII	64-67	Footwear, headgear, umbrellas
XIII	68-70	Articles of stone, ceramic products, glass
XIV	71	Pearls and precious metals
XV	72-83	Base metals and articles of base metal
XVI	84-85	Machinery and mechanical appliances
XVII	86-89	Vehicles, aircraft, vessels and transport equipment
XVIII	90-92	Optical, clocks, and musical equipment
XIX	93	Arms and ammunition
XX	94-96	Miscellaneous
XXI	97	Works of art

Table A.3.

Sections year 2014- for EU GSP graduation		
Section name	Corresponding HS chapter	Description
1a	01-02, 04-05	Live animals and animal products excluding fish
1b	03	Fish and crustaceans, molluscs and other aquatic

		invertebrates
2a	06	Live plants and floricultural products
2b	07-08	Vegetables and fruit
2c	09	Coffee, tea, maté and spices
2d	10-13	Cereals, products of the milling industry, lac
3	15	Animal or vegetable oils, fats and waxes
4a	16	Preparations of meat and fish
4b	17-23	Prepared foodstuffs (excl. meat and fish), beverages, spirits and vinegar
4c	24	Tobacco and manufactured tobacco substitutes
5	25, 27	Mineral products
6a	28-29	Inorganic and organic chemicals
6b	31-38	Chemicals, other than organic and inorganic chemicals
7a	39	Plastics
7b	40	Rubber
8a	41	Raw hides and skins and leather
8b	42-43	Articles of leather and fur skins
9a	44	Wood and wood charcoal
9b	45-46	Cork, straw and plaiting
11a	50-60	Textiles
11b	61-63	Apparels and clothing
12a	64	Footwear,
12b	65-67	Headgear, umbrellas, sun umbrellas, sticks, whips, feathers and down
13	68-70	Articles of stone, ceramic products and glass
14	71	Pearls and precious metals
15a	72-73	Iron, steel and articles of iron and steel
15b	74-76, 78-79, 81-83	Base metals (excl. iron and steel), articles of base metals (excl. articles of iron and steel)
16	84-85	Machinery and equipment
17a	86	Railway and tramway vehicles and products
17b	87-89	Road vehicles, bicycles, aviation and space, boats and parts thereof
18	90-92	Optical, clocks, and musical equipment
20	94-96	Miscellaneous

Appendix B

Table B.1.

	estab		estab if femaledom	
	(a)	(b)	(c)	(d)
Dependent variable:	estab	estab	estab	estab
grad	379.4	609.2	845.0	1,538
	(777.0)	(778.0)	(1,695)	(1,036)
tradeopen	2,549	2,293	6,267	5,285
	(1,728)	(3,038)	(4,014)	(5,820)
labourreg	1,406***	400.6**	1,365*	688.2**
	(354.5)	(180.3)	(774.6)	(325.2)
productreg	1,327***	696.8**	893.2*	755.3
	(371.4)	(327.9)	(533.6)	(588.2)
Industry*Country Fixed Effects	Yes	Yes	Yes	Yes
Time Fixed Effects	Yes	Yes	Yes	Yes
Linear Industry*Country Individual Time Trends	Yes	Yes	Yes	Yes
Nonlinear Industry*Country Individual Time Trends	No	Yes	No	Yes
Observations	2,988	2,988	701	701
R-squared	0.341	0.662	0.458	0.828
Number of CountryISIC	293	293	74	74

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table B.2.

	lagtradeopen		lagtradeopen, if femaledom		freetotrade		freetotrade, if femaledom	
	(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)
Dependent variable:	empl	empl	empl	empl	empl	empl	empl	empl
grad	-11,812	27,483	-31,605	140,294	-17,787	29,558	-54,051	89,811
	(30,882)	(29,069)	(72,913)	(95,642)	(32,788)	(29,707)	(67,707)	(80,028)
lagtradeopen	453,563***	574,589**	656,104	1.178e+06**				
	(141,892)	(218,844)	(397,068)	(558,261)				
labourreg	40,484**	-6,077	-11,185	1,757	33,937*	-14,474	-28,834	-19,685
	(16,269)	(7,618)	(28,699)	(28,138)	(17,617)	(9,374)	(39,147)	(31,440)

productreg	70,059***	40,630***	-12,377	49,303	78,243***	52,456***	-1,059	64,670
	(26,140)	(13,839)	(40,727)	(34,049)	(27,653)	(17,981)	(45,327)	(45,030)
freetotrade					-35,281	37,534*	11,833	65,636
					(22,005)	(21,398)	(62,046)	(58,774)
Industry* country FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Linear Industry* Country Ind. Time Trends	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Nonlinear Industry *Country Ind. Time Trends	No	Yes	No	Yes	No	Yes	No	Yes
Observations	3,676	3,676	866	866	3,676	3,676	866	866
R-squared	0.556	0.756	0.494	0.665	0.550	0.749	0.486	0.649
Number of CountryISIC	317	317	81	81	317	317	81	81

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table B.3.

	empl,1990-2005		empl,1990-2005, if femaledom	
	(a)	(b)	(c)	(d)
Dependent variable:	*empl*	*empl*	*empl*	*empl*
grad	-19,012	-54,329	-81,713*	-140,320
	(26,747)	(49,418)	(46,657)	(151,593)
tradeopen	98,058**	429,301**	6,121	64,146
	(42,383)	(201,197)	(48,179)	(174,821)
labourreg		14,221**		46,557
		(6,555)		(42,057)
productreg		3,679		-49,818
		(8,088)		(54,343)

Industry*Country Fixed Effects	Yes	Yes	Yes	Yes
Time Fixed Effects	Yes	Yes	Yes	Yes
Linear Industry*Country Ind. Time Trends	Yes	Yes	Yes	Yes
Observations	6,164	2,353	432	186
R-squared	0.457	0.489	0.772	0.839
Number of CountryISIC	487	420	40	35

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1