

DOES THE EFFECT OF TRADE
PREFERENCES DEPEND ON SUPPLY-SIDE
CONDITIONS IN THE PREFERENCE-
RECEIVING COUNTRIES?

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Abstract

Trade preferences used as a policy tool to promote exports from developing countries has been criticized for not being effective, as the increase in the share of imports to the European Union from developing countries has been disappointing. There has also been concerns regarding the underutilization of trade preferences among least developed countries. Both these arguments have led many to believe that trade preferences do not work. The aim of this paper is to examine if the effects of trade preferences depend on underlying conditions in the preference-receiving countries. I will estimate the effect of trade preferences and further the effect of various geographical and supply-side constraints on the least developed countries' exports to the European Union. In addition to their separate effects the combined impact of trade preferences and the constraints will be estimated to see if the effects of trade preferences varies depending on the countries' underlying conditions. An augmented gravity model is estimated for exports from all least developed countries to the EU-15 over the period 1997-2007 using a fixed effects Poisson Pseudo-Maximum-Likelihood model.

Key Words: Trade Preferences, Everything But Arms, Least developed countries, European Union, Gravity Model

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1 Introduction

For more than 50 years, industrialized countries have used unilateral trade preferences as a tool to alleviate poverty and promote export growth in developing countries, and as of today there exists a complex web of various preference programs targeting different groups of developing countries. The European Union (EU) offers reduced tariff rates for developing countries through the Generalized Scheme of Preferences (GSP). Within this program, the Everything But Arms (EBA) initiative offers the most generous preferential scheme, in terms of product coverage and tariff reductions, to the least developed countries (LDCs).

Trade preferences used as a policy tool has been debated by researchers among which several have criticized the effectiveness of the GSP, claiming that it has failed to increase developing countries' share of EU imports. However, as Persson (2015) argues, even if trade flows have been unsatisfactory, it is possible that the traded volume would have been even less without preferences. Many empirical studies actually do find significant increases in exports when applying the gravity model. Furthermore, there have been reports about the underutilization of EBA preferences among LDCs, another argument for the inefficiency of trade preferences. Although stringent rules of origin are often considered to be the main reason for the underutilization of the EBA preferences, there are also other possible explanations.

Page and Hewitt (2008) and Stevens and Kennan (2001) argue that national conditions and especially the supply capacity of the recipient country has a large impact on the ability to utilize trade preferences. As the EBA initiative targets the poorest countries in the world, it is reasonable to assume that their capacity to produce and export more goods are limited. If the supply-side constraints of the LDCs are not solved, trade preferences will not have the desired effect on exports for these countries. Poor infrastructure and malfunctioning institutions might be some of the conditions explaining the ineffective participation of the EBA arrangement. Furthermore, geographical conditions, such as landlockedness, impose costs to trade and limits the ability to expand the export sector. With poor local conditions, the preference receiving countries cannot make the necessary adjustments to the production structure and thereby are not able to increase their exports.

The aim of this paper is to examine if the effects of trade preferences depend on underlying conditions in the preference-receiving countries. I will examine the influence of the EBA preferences and further investigate the impact of various geographical and supply-side

constraints on the LDCs' exports to the EU. In addition to their separate effects the combined impact of EBA and the constraints will be analyzed to see if the effects of the EBA preferences varies depending on underlying conditions. A gravity model expanded with variables for EBA preferences and the constraints is estimated for exports from all LDCs to the EU-15 over the period 1997-2007 using fixed effects PPML.

The paper will be organized as follows. The next chapter will focus on trade preferences and the economic effects of these. Chapter 3 will discuss local supply-side conditions that might influence export capacity. A literature review with empirical studies on trade preferences and utilization rates will be provided in chapter 4. The empirical strategy is presented in chapter 5, where a suitable gravity equation is specified. Chapter 6 presents the results obtained from estimating the gravity model. Finally, some conclusions are outlined in chapter 7.

2 Trade Preferences

2.1 Preferential Trade Agreements

The majority of the countries of the world are part of the World Trade Organization (WTO), founded in its present form in 1995 as a development from the General Agreement on Tariffs and Trade (GATT). WTO regulates trade by the principle that the global trading system should be without discrimination meaning that all countries should meet the same tariffs and quotas. This principle, known as the most-favored nation (MFN) principle, is the first article of GATT and states that “a country should not discriminate between its trading partners...” (WTO, 2018b). However, in addition to the general regulations, there are certain permitted exceptions, where the most important one is known as the Enabling Clause. Paragraph 1 of the Enabling Clause permits members to provide differential and more favorable treatment to developing countries in spite of the MFN obligation (WTO, 2018a), including specific trade preferences for developing countries. The European Economic Community (EEC) imposed preferential treatment when trading with colonies already in 1957 with the Treaty of Rome. Since then, many new and more complex preferential trade agreements have been introduced, and today the European Union (EU) offers preferential treatment to almost all developing countries. These could broadly be divided into preferences for African, Caribbean and Pacific (ACP) countries, preferences for Mediterranean countries¹, the GSP (Persson & Wilhelmsson, 2007).

¹ The EU grants special trade preferences directed at ACP countries which are since 2000 governed by the Cotonou Agreement. Yaoundé and Lomé Conventions are earlier versions of this preferential system. For more information on ACP and Mediterranean preferences: see Persson and Wilhelmsson (2007).

2.2 The EU's Generalized System of Preferences

The EU has unilaterally offered nearly all developing countries non-reciprocal trade benefits through the GSP since 1971. From the beginning, these preferences primarily meant duty-free quotas and ceilings, but in 1995 the quantitative restrictions were replaced by preferences in the form of tariff cuts, giving GSP recipients vital access to the EU market and aims at contributing to their growth. Some products are not included in the scheme, and the products included are divided into sensitive and non-sensitive goods, where the first category is objective to reduced tariffs whereas the latter has been given duty free access to the EU market. The latest GSP regulation has been in force since 2014 and covers approximately 6350 products (European Commission, 2018b; Persson & Wilhelmsson, 2007).

The GSP has three main objectives. First, it aims to contribute to poverty reduction by expanding the export sector in poor countries, and thereby support economic growth and job creation in the recipient country through increasing revenues from trade. Second, it pursues sustainable development and good governance in the beneficiary countries, and third, it seeks to protect the EU's financial and economic interests. The GSP regulation includes preferences of different degrees within three schemes to meet the diverse needs of developing countries: Standard GSP for low and lower-middle income countries, GSP+ for vulnerable low and lower-middle income countries, and Everything But Arms (EBA) for least developed countries (LDCs) (European Commission, 2018b).

2.1.2 The Everything But Arms Initiative

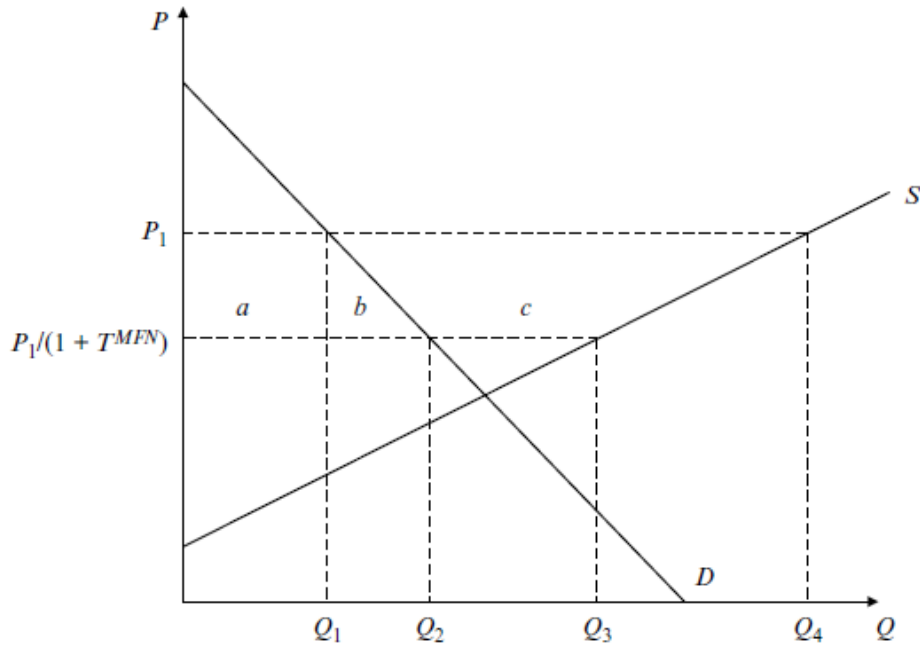
Countries that are listed as LDCs by the UN Committee for Development Policy (UNDP) are eligible to export to the EU under the EBA initiative. As of the implementation in 2001, the EBA preferential scheme grants full duty free and quota free access to the EU Single Market for all products except arms and ammunition (European Commission, 2018a). A developing country is considered to be an LDC if it meets three criteria taking into account the general national income of the country, the indicators of the Human Assets Index and the Economic Vulnerability Index (United Nations, 2018). A major benefit of the EBA arrangement is the unlimited time period of its implementation (Brenton, 2003). Unlike the standard GSP scheme, the EBA arrangement is not subject to periodical revising, which offers higher certainty for the exporting LDCs and further facilitates investment decisions. Furthermore, the EBA scheme is the most generous of all preferential trade agreements in terms of product and country coverage as well as tariff reductions (European Commission, 2018a; Inama, 2003; Persson & Wilhelmsson, 2007).

Before the introduction of the EBA scheme, the group of ACP countries within the LDCs were able to export to the EU under the Cotonou Agreement. This preferential scheme continued to be in force even after the EBA initiative, making ACP LDCs eligible for two preferential arrangements. UNCTAD (2007) reports that most of the ACP countries continued to export mainly under the conditions of the Cotonou Partnership Agreement even after the EBA initiative was introduced. A possible reason is the different rules of origin and administrative requirements of both agreements. The Cotonou Agreement has more generous rules of origin compared to the EBA arrangement, as it offers the ACP countries the right of full cumulation, meaning that all countries are together regarded as one customs territory and the production can be carried out in every preference-receiving country (Brenton, 2003; Gradeva & Martínez-Zarzoso, 2010). When analyzing the effects of EBA preferences, it is therefore important to take into account the different situation for ACP LDCs and non-ACP LDCs.

2.3 Trade Effects of Preferential Trade Agreements

The economic effects of trade preferences can be illustrated using a partial equilibrium model with three trading entities, the donor country, the receiving country, and a third country (Figure 1). Before the trade preferences are implemented, the same ad valorem MFN tariff, T^{MFN} , is applicable for all trading partners' exports. With a domestic price of P_1 in the importing country, the exporting countries will face the price of $P_1/(1 + T^{MFN})$ for their exported goods and the traded quantity will be $(Q_3 - Q_2)$. Introducing a preferential trade agreement to a number of small countries means that this group of exporters can sell their products to the higher domestic price P_1 , and still be competitive at the export market. With a lower cost of exporting, the receiving country are now able to increase its export volume to $(Q_4 - Q_1)$.

Figure 1. Simple analysis of the effects of trade preferences for the recipient country.



Source: (Persson, 2015)

As a consequence, the consumers in the preference-receiving country will be worse off as the domestic price will increase due to the higher export price. The consumer surplus will therefore decrease with areas *a* and *b* in Figure 1. At the same time the producers gain, both because they are now able to charge a higher price but also since they will increase output. In Figure 1 the producer surplus increases with areas *a*, *b*, and *c*. In total, the net welfare gain equals area *c*. As the difference between preferential and non-preferential export prices represents the tariff revenue, the preferences are merely a voluntary transfer of resources from the donor country to the recipient country (Persson, 2015). Not only will the removal of trade barriers lead to an increase in the intensive margin of trade as illustrated above, it will also affect the extensive margin as it will be easier for other firms in the receiving country to enter the export market (Chaney, 2008; Melitz, 2003; Persson, 2015).

3 Geographical and Supply-Side Conditions

Determinants of export performance can be divided into external and internal components, where the former relates to demand side factors and other market access conditions, such as transportation costs and geography. Internal components refer to supply-side conditions, which are highly important for the production and export capacity of a country. For a given level of market access, better geographical and supply-side conditions are likely to positively affect the export volume of a country (Fugazza, 2004). Funke and Holly (1992) argue that previous

researchers incorrectly have emphasized demand side factors in their attempts to explain export performance. By taking into account both supply side and demand side factors when investigating the West German manufacturing sector, they conclude that supply side factors have much stronger explanatory power than demand side factors.

There are many elements that have a potential effect on supply capacity. First of all, the size of the economy determines the size of the internal market and is therefore likely to affect the supply capacity. For instance, the size of the internal market affects the country's vulnerability to rules of origin. Small countries that rely on imported intermediate goods are affected more by stringent rules of origin than large countries that have an internal intermediate goods market. Furthermore, the export performance of a country is expected to be affected by geographical factors as well, such as distance to importing countries and whether the country is landlocked or not (Fugazza, 2004). Foreign direct investment (FDI) can be expected to increase a country's competitiveness on the global market by enhancing technological upgrade, i.e. it will have a positive effect on productivity and further export diversification and growth (Nadeem, Azam, & Islam, 2012). Good infrastructure and institutions are also necessary for the development of the export sector (Fugazza, 2004). This section will review the literature for various geographical and supply-side conditions and further analyze what impact these underlying conditions might have for the ability to use trade preferences. Naturally, there is a possibility that the effects of trade preferences are depending on other factors as well, not mentioned in this paper.

3.1 Landlockedness

Landlockedness imposes additional costs on trade, as transport costs are higher on land than on sea, and reduces international competitiveness (Faye, McArthur, Sachs, & Snow, 2004; Kharel & Belbase, 2010). Paudel and Cooray (2018) compare the export performance of landlocked developing countries (LLDCs) and non-landlocked developing countries and find that the overall export performance of LLDCs is lower than that of non-landlocked developing countries due to the inherent additional trade costs associated with landlockedness. Furthermore, they show that export performance is supported by economic openness also for LLDCs, but distance-related trade costs have a greater negative impact on exports from LLDCs than on other developing countries. If the additional trade costs associated with landlockedness exceeds the benefits from trade preferences, the preferences will not have the desired effects on exports.

3.2 Foreign Direct Investment

FDI is a major source of finance and could lead to technological transfer from industrialized countries to developing countries making the host countries better equipped to compete in international markets (Tekin, 2012). Furthermore, FDI enhances the efficiency of production and promotes specialization and productivity in the host country (Xing & Pradhananga, 2013). There are many channels through which FDI plays an important role for export performance. For example, FDI improves employment, job skills, managerial expertise and tax revenues (Mahmoodi & Mahmoodi, 2016).

An analysis by Fontagné (1999), based on an aggregate of 14 countries, demonstrated that in the short term, host countries enjoy many benefits from FDI, such as technology transfer, job creation and local subcontracting. In the long term, FDI tends to increase exports. Based on a theoretical model, Aizenmana and Noy (2006) show that developing countries attracting FDI inflows, increases its international trade. The authors further show that the effects of FDI on exports is stronger in developing countries than in industrialized ones. Similarly, Majeed, Ahmad, and Khawaja (2006) analyses the relationship between FDI and exports using a panel of 49 countries over the period 1970-2004. The results show that FDI has a significantly positive effect on exports.

Developing countries with poor technology, limiting their capacity to produce and export more goods, will not experience a positive effect of trade preferences. Technology transfers and other benefits from FDI could improve productivity and the export sector in a developing country and enable it to expand its exports. It is therefore reasonable to believe that countries with greater FDI inflow are experiencing larger benefits from its trade preferences.

3.3 Infrastructure

Poor infrastructure isolate countries and impedes their participation in global trade. Using firm-level data, Albarran, Carrasco, and Holl (2013) investigate the impact of domestic transport cost reductions on firms' export market participation and find that infrastructure improvements positively affect small and medium-sized firms' probability of exporting. Moreover, in a gravity model framework, Ismail and Mahyideen (2015) quantify the impact of transport infrastructure on trade volumes for a range of Asian countries. They show that improvements in hard infrastructure (i.e. the road density network, air transport, railways, ports, and logistics) have resulted in increased trade flows. Limão and Venables (2001) show in their study that poor transport infrastructure accounts for 40% of the transport costs for coastal countries and 60%

for landlocked. Hence, improving transport infrastructure would significantly lower transport costs and increase trade flows. Furthermore, they suggest that the relatively low level of trade flows among African countries largely is due to poor transport infrastructure.

Investment in transport infrastructure reduces the cost of trade and enables countries to establish contacts over larger distances (Albarran et al., 2013; Clarke et al., 2004). If poor infrastructure imposes trade costs too high for a country to engage in international trade, preferential treatment will have no effect. Thus, countries with better transport infrastructure would be better equipped to expand their exports and thereby enjoy the benefits from trade preferences.

3.4 Institutional Quality

Well-functioning institutions have shown to facilitate bilateral trade, while weak institutions restrain trade in extents comparable to those associated with the introduction of tariffs (Anderson & Marcouiller, 2002; De Groot, Linders, Rietveld, & Subramanian, 2004; Francois & Manchin, 2013). By extending the Ricardian model of comparative advantage, Levchenko (2007) shows that institutional differences across countries are important determinants of trade patterns. He argues that there will be gains from trade for both trading partners, as differences in institutional quality themselves can be a source of comparative advantage.

Specific institutional dimensions have also been found to affect trade. For instance, Nunn and Trefler (2014) provide evidence that contract enforcement is a very important source of long-run gains from trade. Guiso, Sapienza, and Zingales (2009) show that low levels of trust lead to lower bilateral trade among European countries. On the other hand, both efficient rule of law and a good endowment of informal institutions has been found to facilitate trade (Yu, Beugelsdijk, & de Haan, 2015). Moreover, the quality of institutions affect the investment climate, which in turn has an impact on the supply capacity of the economy (Clarke et al., 2004). Álvarez, Barbero, Rodríguez-Pose, and Zofío (2018) suggest that institutional factors could compensate and re-adjust developing countries' specialization in agricultural products and raw materials in the short run. This means that better regulatory quality in the management of agriculture and resource wealth can lead to an increase in trade among developing countries. Another aspect is that an effective government could have an important function as provider of information about trade preferences and also assist in the application process.

There are many channels through which well-functioning institutions could affect the supply capacity and the export performance of a country and further its ability to utilize trade

preferences. Countries with better institutions should therefore see larger effects of its trade preferences.

3.5 Foreign Aid

The expected positive effects of foreign aid on the recipient country's economic development could be diminished due to potentially negative effects on export performance through a real exchange rate appreciation (Munemo, Bandyopadhyay, & Basistha, 2006; Nowak-Lehmann D., Martínez-Zarzoso, Cardozo, & Klasen, 2010). The empirical research, however, provides mixed results. Munemo et al. (2006) study the long-term relationship between foreign aid and export performance in developing countries and find negative effects of foreign aid on exports, implying that a large amount of foreign aid negatively affects export performance. In contrast, Nowak-Lehmann D. et al. (2010) find that the net impact of aid on recipient countries' exports is positive for countries in Asia, Latin America and Caribbean, but negative in Africa. By employing a gravity model to investigate the link between foreign aid and exports in recipient countries they find that the average return for successful recipients' exports is about USD 1.50 for every aid dollar.

A study by Gradeva and Martínez-Zarzoso (2010) compare the impact of official development assistance on exports from ACP LDCs with trade preferences under the EBA regime using a gravity model for the period 1995-2005. They find negative effects for both aid and trade preferences on ACP LDCs exports. Furthermore, they analyze the combined effect of aid and EBA preferences on exports and find positive results, indicating that aid and trade preferences are complementary assistant strategies.

If foreign aid assists the development of the export sector in a country to the extent that developing countries are able improve their export performance, trade preferences will have a larger impact for aid receiving countries. However, if the positive effects on export performance are diminished due to exchange rate appreciation, developing countries might not afford to compete on the international market. In the latter case, trade preferences will have no effect on exports.

4 Previous Research

Having reviewed the literature of various underlying conditions affecting countries' export performance, this section will focus on the previous research about trade preferences with a focus on empirical studies examining the GSP and the EBA initiative.

One of the first studies analyzing GSP is provided by Sapir (1981) who investigates if the preferences generated any trade benefits for the beneficiary countries. The study estimates a gravity equation with yearly cross-sectional OLS for the period 1967-1978 and concludes that the implementation of the GSP scheme has generated positive effects on exports from developing countries to the EEC. Using a different approach, Zhou and Cuyvers (2012) limit their study to ten of the ASEAN recipients of the scheme and examine how the level of exports has been affected by the GSP scheme. By using export data on different levels – aggregated, sectoral and country - the study adds an extra element to the existing research. The results show that using the EU's GSP has very limited effectiveness in promoting export growth for the ASEAN countries. However, the least developed ASEAN successfully used GSP preferences to increase their exports to the EU. Furthermore, the findings on the disaggregated level suggest that the industrial sector particularly gained a lot from the scheme.

Besides the GSP scheme, some researchers have investigated other preference systems as well as special regimes within the GSP. Nilsson (2002) uses a gravity model estimated with OLS on three-year-averages for 1973-1992 and shows that GSP and Lomé preferences have had positive effects for most years. Moreover, countries that had access to Lomé preferences experienced larger effects than countries within the GSP scheme. Oguledo and Macphee (1994) find significant effects for GSP, Mediterranean and Lomé preferences, where Lomé preferences generates the largest effects followed by Mediterranean and GSP. Persson and Wilhelmsson (2007) reviews and compares different preferential schemes that the EU has made accessible for developing countries. The effects of ACP preferences (within the Yaoundé and Lomé Conventions), preferences for Mediterranean countries, GSP and special regimes within the GSP are analysed using panel data for the period 1960-2002. The results imply that the preferential schemes lead to gross trade creation through an increase in exports from the developing nations to the EU. ACP countries have experienced the largest increase, followed by Mediterranean countries. Countries only having access to GSP have not had any significant increases in exports except for LDCs, receiving additional benefits within the GSP scheme, who experienced substantial effects on their exports. Gamberoni (2007) analyze the impact of the EU unilateral trade preferences on both the intensive and the extensive margin of trade using a tobit and probit estimation. They find that the preferences did not change the export pattern for the LDCs, while the standard GSP and the GSP+ successfully promoted export diversification.

There are a few studies concerned about the low utilization rate for the countries that are eligible for trade preferences. For example, Brenton (2003) shows that only 50 percent of EU imports from non-ACP LDCs, which are eligible for EBA preferences, actually request preferential access to the EU, even though the EBA initiative offers duty-free access for practically all goods and is the best system on offer for these countries. He further argues that the likely explanation is that rules of origin imposes costs to trade too high to make it worthwhile to apply for the EBA preferences. Bureau, Chakir, and Gallezot (2007) investigate the export flows from beneficiary countries in the agricultural, food and fisheries sector and assess how trade preferences granted to developing countries are utilized, and what are the determinants of the possible under-utilization of the various possible regimes. They conclude that even though the findings show that the rates of utilization generally are high, the preferential regimes fail to generate significant export flows from LDCs. The main obstacles seem to lie outside the scope of the preferential regimes. For example, political conditions and poor governance are potentially major constraints to FDI and transfers of technology, without which preferences are unlikely generate export effects. They further suggest that LDCs would need technical and financial assistance with their infrastructure and administration and high levels of inward investment, which would increase the size of export flows, and hence the use of preferential agreements.

Export effects of trade preferences seem to differ depending on the preferential regime. ACP preferences seem to generate the largest increase in exports followed by Mediterranean preferences. However, the results are inconclusive when it comes to export growth for countries within the GSP. Some studies find positive effects on exports to the EU for countries within the standard GSP, while others find no such significant effects. The literature is also somewhat inconclusive when it comes to countries receiving additional benefits, such as LDCs within the EBA initiative. The concern about the under-utilization of preferences were addressed by a few studies, where rules of origin are argued to have a large effect on the ability to utilize preferences. Moreover, some results point out that underlying conditions might affect the export performance of developing countries, explaining the inefficiency of trade preferences to increase exports.

In conclusion, it seems that LDCs receiving preferential treatment under the EBA initiative would have been expected to increase their exports were they not constrained by underlying conditions limiting their ability to utilize these preferences. To my knowledge, no study has

empirically investigated if the effects of trade preferences depend on underlying geographical and supply-side conditions in the preference-receiving countries.

5 Empirical Strategy

5.1 Gravity Model Specification

In order to estimate whether the effect of trade preferences varies with the underlying conditions in the preference receiving countries, I have specified an augmented gravity model where the dependent variable is exports from LDCs to the EU-15 countries. The regression is estimated using panel data from 1997 to 2007. The gravity model was introduced by Tinbergen (1962) and further developed and theoretically justified (Anderson, 1979; Anderson & van Wincoop, 2003; Bergstrand, 1985). Today, the gravity model is commonly used when investigating bilateral trade flows or examining trade creation and diversion effects of free trade areas (Oguledo & Macphee, 1994). By linking trade flows directly to the economic size of countries and with trade costs, the gravity model captures regularities in the pattern of international trade. I have chosen to use a parsimonious specification of the baseline gravity equation and augment it to fit the purpose of this study.

I will use a range of variables representing the underlying geographical and supply-side conditions. These will be added to the equation one at a time and interacted with an EBA dummy variable to capture if the effect of the EBA preferences varies with these underlying conditions. Other independent variables are the importer's GDP, the exporter's GDP, the distance between the country pairs' capital cities, as well as dummies for whether the country pair shares a common official language and if the country pair shares colonial history.

The exporting countries consists of all countries that were ever listed as LDCs, of which many belong to the group of ACP countries. As previously mentioned, this means that these countries can choose to export under the preferences under the Cotonou Arrangement or the EBA preferences. Due to this, the effect of the EBA preferences are likely to be different for the group of ACP LDCs compared to the non-ACP LDCs in the sample. To account for this, I have included an interaction variable between the EBA dummy and a dummy for whether the exporter is an ACP country. This interaction variable is further combined with the variables for the underlying geographical and supply-side conditions to let the effect of trade preferences be different depending on underlying conditions and if the country is an ACP LDC.

Moreover, bilateral fixed effects are included. i is the importer, j is the exporter, and t signifies time. The augmented gravity model is expressed in equation 1:

$$\begin{aligned} Exports_{ijt} = & \beta_1 EBA_{jt} + \beta_2 SupplyCond_{jt} + \beta_3 (EBA_{jt} * SupplyCond_{jt}) + \\ & \beta_4 (EBA_{jt} * ACP_j) + \beta_5 (EBA_{jt} * ACP_j * SupplyCond_{jt}) + \beta_6 lnDistance_{ij} + \beta_7 lnGDP_{it} + \\ & \beta_8 lnGDP_{jt} + \beta_9 ComLang_{ij} + \beta_{10} Colony_{ij} + \gamma_{ij} + \varepsilon_{ijt} \end{aligned} \quad (1)$$

A list of the variables and their sources are found in section A3 of the appendix.

The logarithmic form of the gravity equation makes the interpretation of the estimated coefficients simple, as they can be viewed as elasticities i.e. the percentage change in the dependent variable following a one percent change in one of the independent variables, all others equal. However, for dummy variables, the effect from going from 0 to 1 is found by calculating the estimated coefficient using $exp(b) - 1$, where b is the estimated coefficient (WTO & UNCTAD, 2012).

The dependent variable, $Exports_{ijt}$, is aggregated exports from the LDCs to the EU-15 countries. The data is from the Eurostat (2018) database on international trade. Since data over imports is considered to be more reliable (WTO & UNCTAD, 2012) I have chosen to use data over imports rather than exports. A list of the importing countries is found in appendix, section A1. The exporting countries and what year they obtained LDC status are listed in section A2 of the appendix.

EBA_{jt} , is a dummy variable taking the value one if the exporting country is granted EBA preferences, and zero otherwise. This variable is capturing the effect of the EBA preferences on the export volume. The effect takes place when the EBA came into force in 2001 for all countries that had LDC status at that time. Some of the exporting countries in the sample lose their LDC status either before or during the sample period, making them lose their EBA preferences. This provides further variation in the data. Being granted more beneficial preferences are expected to positively affect exports, hence the coefficient of the EBA dummy is expected to take a positive value. This variable is manually constructed by the author.

$EBA_{jt} * SupplyCond_{jt}$ is an interaction variable between the EBA dummy and the variable representing the underlying geographical and supply-side conditions. It is intended to capture if the effect of the EBA preferences varies with the underlying conditions. As the LDCs receive the EBA preferences basically at the same time, with a few exceptions, the variation in this

variable comes from the underlying conditions for the preference-receiving countries. If the EBA dummy is combined with a continuous variable, the interaction variable captures the additional effect for every one percent change in the variable for the underlying condition. Thus, the total effect of the EBA preferences, if the underlying condition changes by one percent, is obtained by adding the coefficient for this variable to the calculated effect for the EBA dummy. If the interaction is between two dummy variables the effect of this variable is simply added to the effect of the EBA dummy. The different variables that is used to represent the underlying geographical and supply-side conditions are presented in the next section.

$EBA_{jt} * ACP_j$, is an interaction variable taking the value one if the exporting country is granted EBA preferences and belong to the group of ACP countries, and zero otherwise. This variable captures the additional effect of EBA preferences for the ACP countries. Thus, the total effect of EBA preferences for ACP countries will be obtained from adding the effect to the effect of the EBA preferences. Whether the coefficient takes a positive or negative value is difficult to predict due to the complexity of the preference systems for ACP countries.

$EBA_{jt} * ACP_j * SupplyCond_{jt}$ is the interaction variable between the EBA-ACP interaction variable and the variables for the underlying conditions. This variable capture if the effect of the EBA preferences varies with the underlying conditions for the countries belonging to the group of ACP countries. If the EBA-ACP interaction variable is combined with a continuous variable, it captures the additional effect for the ACP countries for every one percent change in the variable for the underlying condition. Thus, the total effect of the EBA preferences for ACP countries, if the underlying condition changes by one percent, is obtained by adding the coefficient for this variable to the calculated effect for the EBA dummy plus the calculated effect for the EBA-ACP interaction variable. If the interaction is between the EBA-ACP interaction variable and a dummy variable the effect of this variable is simply added to the effect for the EBA-ACP interaction variable and the effect for the EBA dummy.

$Distance_{ij}$ measures the distance in kilometers between the country pairs' capital cities. This variable is one of the most commonly used proxies for trade costs, as it is believed to be costlier to trade with countries farther away. The variable is expected to have a negative impact on exports. The data is from the CEPII (2018a) GeoDist database.

The importing country's as well as the exporting country's GDP, GDP_{it} and GDP_{jt} , are used as proxies for the economic sizes of the exporting and importing countries. Both the importer's and the exporter's GDP are expected to have positive effects on exports, as a larger GDP

represents a larger demand for imports or a larger supply of exports, respectively. The GDP data is expressed in nominal Euro, and is from the CEPII (2018b) Gravity database.

$ComLang_{ij}$ is a dummy variable taking the value one when the country pair shares a common official or primary language, and zero otherwise. Countries that share a common official or primary language are likely to trade more than countries that do not, as sharing a common language may decrease trade costs since communication becomes easier and less costly. The variable is expected to have a positive impact on exports. $Colony_{ij}$ takes the value one if the country pair were ever in a colonial relationship, and zero otherwise. Measures of colonial links are positively correlated with trade, as historical ties are likely to reduce cultural differences between the countries. The data for the dummy variables are from the CEPII (2018b) Gravity database.

γ_{ij} is a fixed effect for the bilateral pair, intended to capture specific characteristics for a bilateral country pair that may affect trade between the two. ε_{ijt} is a disturbance term.

5.2 Variables for the underlying geographical and supply-side conditions

This section will present the variables used to represent the underlying geographical and supply-side conditions for the preference-receiving countries. The variables are chosen based on the discussion in chapter 3. A list of the variables and their sources is found in section A3 of the appendix.

The variable for landlockedness is a dummy variable taking the value 1 if the exporting country is landlocked, and zero otherwise. Being landlocked is associated with higher transportation costs and therefore has negative effects on exports. The coefficient for this variable is therefore expected to take a negative value. The coefficient for the interaction variable between the EBA dummy and landlockedness is a categorical variable taking the value one when the country is granted EBA preferences and is being landlocked. It is expected to take a negative value as being landlocked might impose trade costs constraining the countries' exports and thereby their ability to benefit from the EBA preferences. The data comes from CEPII (2018a) GeoDist database.

The variable for FDI is the log of net inflows of FDI. FDI inflows is positively affecting exports through, for example, technological transfer from advanced economies. Hence, the coefficient for FDI is expected to take a positive value. As poor technological advancement might be a constraint for exporting countries to produce and export certain products, they might be unable

to benefit from their EBA preferences. The coefficient for the interaction variable between the EBA dummy and FDI is therefore expected to take a positive value as greater FDI inflows would enable LDCs to utilize its EBA preferences. The data comes from World Bank (2018a) World Development Indicators database.

As a measure for the quality of infrastructure in the exporting country I have used the share of paved roads as a percentage of total roads. This variable has been used as a proxy for infrastructural quality in several studies, for instance in Fugazza (2004). As better infrastructure reduces trade costs, the coefficient for this variable is expected to have a positive effect on exports. Moreover, if the trade costs of having poor infrastructure is constraining the export sector, the LDCs might not be able to take advantage of their trade preferences. Hence, better infrastructure will positively impact the ability to utilize EBA preferences. Thus, the coefficient for the interaction variable between the EBA dummy and the paved road variable is expected to take a positive value. This measure comes from World Bank (2018a) World Development Indicators database.

The variables used as proxies for governmental quality represents three dimensions of governance: control of corruption, government effectiveness and rule of law. Control of corruption is capturing the extent to which public power is exercised for private gain (Kaufmann, Kraay, & Mastruzzi, 2010). The effect of corruption on exports depends on the specific country. It might be destructive since it could induce costs and inefficiencies in the export sector. However, corruption could also be considered as a way to save time and effort and thus improve the efficiency of the export process (Ben Ali & Mdhilat, 2015). Control of corruption could, thus, take either a positive or a negative value. The coefficient for the interaction variable between the EBA dummy and this variable is expected to take a positive value if improved control of corruption increases efficiency in the export sector and thereby enables the country to utilize its trade preferences. Although, it could take a negative value if efficiency is lost due to better control of corruption.

Government effectiveness are capturing the capacity of the government to effectively formulate and implement sound policies (Kaufmann et al., 2010). The coefficient for this variable is expected to take a positive value due to positive export effects from decreased transaction costs. Rule of law is primarily referring to the quality of contract enforcement (Kaufmann et al., 2010). This variable is expected to increase exports as it decreases uncertainty and transaction costs in the export sector, hence, the coefficient is expected to take a positive value. The interaction variables between these variables and the EBA dummy is expected to take a positive value if

the reduced transaction costs decrease and enables the LDCs to utilize their trade preferences. The measures are from World Bank (2018b) Worldwide Governance Indicators database and are based on over 30 individual data sources produced by a variety of survey institutes, think tanks, non-governmental organizations, international organizations, and private sector firms.

The variable for foreign aid is the log of net official development assistance (ODA) received per capita. The expected sign of the coefficient for this variable is hard to predict as the conclusions from the literature is inconclusive. If foreign aid assists the development of the export sector in a country to the extent that developing countries are able improve their export performance, trade preferences will have a larger impact for aid receiving countries. However, if the positive effects on export performance are diminished due to exchange rate appreciation, developing countries might not afford to compete on the international market. In the latter case, trade preferences will have no effect on exports. Thus, the interaction variable between EBA preferences and foreign aid could take either a negative or positive value. The data is from World Bank (2018a) World Development Indicators database.

5.3 Method of Estimation

There are many methods to choose from when estimating the gravity model, each one with its own advantages and disadvantages. This section will review some of the most common issues when estimating the gravity model and outline the choice of estimation method for this study.

When estimating gravity models, one often has to deal with unobserved heterogeneity (WTO & UNCTAD, 2012). Unobserved heterogeneity emerges when there are some unobserved differences between individuals or years, which is not accounted for in the model. This causes the estimation to become biased and will affect the standard errors. The problem of unobserved heterogeneity can be solved by using panel data and by adopting a fixed effect model (e.g. fixed effect OLS or fixed effect PPML) (Gómez-Herrera, 2013). However, using a fixed effect model comes at a cost. For instance, including year fixed effect makes it impossible to estimate the effects of time-specific variables that do not vary much across individuals, as they would be perfectly collinear with the fixed effect. Bourdet and Persson (2012) argue that it might be problematic to include fixed effects in some cases as they would capture the trade effects of interest. In this study, the variation in the EBA variable occurs mainly over time and including year fixed effects would probably eliminate this variation.

Heteroskedasticity refers to when the variance of the error term is not constant for all observations and makes the estimation inefficient. When estimating the gravity model,

heteroskedasticity is typically a problem. One solution to the problem of heteroskedasticity is to use robust standard errors (Shepherd, 2016). However, using OLS on the logarithmic version of the gravity equation in presence of heteroskedasticity would still lead to an inconsistent estimation. A more appropriate solution is to estimate the gravity equation in its multiplicative form using a non-linear estimation like PPML (Santos Silva & Tenreyro, 2006).

When using OLS one must use the natural log of the export variable, meaning that all observations with a zero value will be dropped as the log of zero is undefined. However, two countries might not trade due to high trade costs in case some useful information will be lost if these observations were to be dropped (WTO & UNCTAD, 2012). To avoid this problem, one can instead use a non-linear model such as PPML, as this enables the model to be estimated in its multiplicative form, and hence all zeros will be included (Santos Silva & Tenreyro, 2006).

Thus, in order to address the estimation issues discussed above, the main method of estimation for the gravity equation is a fixed effects PPML model. Fixed effects for the bilateral pair are included. By using PPML, the gravity equation can be estimated in its multiplicative form and the issue of zero trade flows is avoided. The fixed effects are intended to capture unobserved heterogeneity for the bilateral pair. Furthermore, robust standard errors are used in all estimations, reducing the issue of heteroscedasticity.

6 Empirical Results

The augmented gravity model is estimated with export data using pair fixed effects PPML. Table 1 presents the results from the equation without any of the underlying geographical or supply-side conditions included. Due to the pair fixed effects, bilateral distance as well as the dummy variables are dropped as they are constant within the country pair. In line with the expectations, the exporter's GDP is positive and highly significant, and the importer's GDP is positive but not significant. The coefficient for the EBA dummy is 0.247 and significant, implying that the EBA preferences has positive effects on exports to the countries in EU-15 for the average LDC. The coefficient for the EBA-ACP interaction variable is -0.334 and negative. Adding this to the main effect of trade preferences means that the group of ACP countries are experiencing negative effects of EBA preferences on exports to the EU-15².

Table 1. Estimation results from the gravity equation

² $0,256 + (-0,334) = -0,078$

Dependent variable: Exports

EBA	0.256** (0.123)
EBA * ACP	-0.334** (0.131)
GDP exporter	0.596*** (0.142)
GDP importer	0.277 (0.360)
Observations	6,838
Pair effects	Yes

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

6.1 Supply Side Factors

To estimate whether the effect of trade preferences varies with the underlying conditions in the preference receiving countries, I have estimated the augmented gravity model using a range of variables representing the underlying conditions. These were added to the equation one at a time and interacted with an EBA dummy variable to capture if the effect of the EBA preferences varies with these underlying conditions.

The results from estimating the gravity equation including the variable for landlockedness is presented in Table 2. Due to the pair fixed effects the landlocked dummy is dropped as it is constant during the whole sample period. Column (b) presents the results from including the interaction variable between the EBA dummy and landlockedness as well as the combination between the dummy for landlockedness and the EBA-ACP interaction variable. The coefficients for the EBA dummy and the EBA-ACP interaction variable are increasing to 0.306 and -0,282, respectively. This means that the group of ACP countries are now experiencing positive effects from the EBA preferences³. The coefficient for the interaction variable between the EBA dummy and the landlockedness dummy is negative, meaning that trade preferences are negatively affecting exports for the countries that are landlocked. Adding this effect to the main EBA effect generates a negative result, which implies that landlockedness imposes trade costs that are preventing the average LCD's ability to utilize its trade preferences. The

³ $0,306 + (-0,282) = 0,024$

interaction variable between the EBA-ACP interaction variable and landlockedness is insignificant, which implies that EBA preferences is not additionally affecting exports for landlocked ACP countries.

Table 3. Estimation results from including landlockedness

Dependent variable: Exports	(a)	(b)
EBA	0.256** (0.123)	0.306** (0.119)
EBA*ACP	-0.334** (0.131)	-0.282* (0.149)
EBA*Landlocked		-0.775*** (0.203)
EBA*ACP*Landlocked		0.294 (0.257)
GDP exporter	0.596*** (0.142)	0.584*** (0.143)
GDP importer	0.277 (0.360)	0.279 (0.359)
Observations	6,838	6,838
Pair effects	Yes	Yes

Note: Robust standard errors in parentheses. *** p<0.01, ** p<0.05,

* p<0.1.

The results from including FDI as an underlying supply-side condition are presented in Table 3, column (a). The coefficient for EBA is significantly positive, and the coefficient for the EBA-ACP interaction variable is significantly negative. The group of ACP LDCs are hence affected negatively by EBA preferences. The coefficient for FDI is not significant in this specification, suggesting that FDI inflow fails in explaining exports for the average LDC, at least in the short run.

In column (b) the results from including the interaction variable between the EBA dummy and FDI as well as the combination between the FDI and the EBA-ACP interaction variable. The EBA dummy is changing and becomes negative and highly significant, which is surprising as it indicates that the EBA preferences now have negative effects on exports. In contrast, the EBA-ACP interaction variable is significantly positive, although the total effect of EBA preferences for ACP LDCs is negative. The coefficient for FDI is now negative and highly significant, suggesting that FDI has a negative effect in exports. The interaction variable between EBA and FDI is positive and significant meaning that the effect of EBA preferences is increasing with increasing FDI inflows. However, after adding this effect to the main EBA effect, the total effect of the EBA preferences is still negative. The coefficient for the combination of the EBA-ACP interaction variable and FDI is significantly negative implying that the effect of trade preferences is decreasing with increasing FDI inflows for ACP LDCs. However, adding the coefficients results in a negative effect.

Dependent variable: Exports	(a)	(b)
EBA	0.295** (0.123)	-3.331*** (0.656)
EBA*ACP	-0.352*** (0.133)	2.639** (1.036)
FDI	0.0239 (0.0282)	-0.0713*** (0.0207)
EBA*FDI		0.192*** (0.0371)
EBA*ACP*FDI		-0.156*** (0.0587)
GDP exporter	0.580*** (0.139)	0.589*** (0.139)
GDP importer	0.214 (0.329)	0.160 (0.323)
Observations	6,245	6,245
Pair effects	Yes	Yes

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

The variable that is intended to capture the quality of infrastructure in a country, paved roads as a percentage of total roads, is included in the next gravity model specification and the results are presented in Table 4. The first thing to notice is that the coefficient for the EBA dummy variable is increasing in both size and significance in column (b), while the EBA-ACP interaction variable is decreasing. However, in column (b), the added effect of EBA preferences is positive for ACP LDCs. Furthermore, the coefficient for paved roads is positive but not significant in column (a). Although, it is highly significant in column (b), indicating that better road infrastructure has a positive effect on exports. The interaction variable between the EBA dummy and the road variable is significantly negative, indicating that having better road infrastructure together with EBA preferences would negatively affect exports. The interaction variable between the road variable and the EBA-ACP interaction variable is insignificant.

Table 4. Paved roads

Dependent variable: Exports	(1)	(2)
EBA	0.257** (0.113)	0.628*** (0.108)
EBA * ACP	-0.336** (0.135)	-0.506** (0.221)
Road	0.985 (1.305)	1.148*** (0.296)
EBA * Road		-2.733*** (0.456)
EBA * ACP * Road		1.501 (0.973)
GDP exporter	0.527*** (0.189)	0.526*** (0.191)
GDP importer	0.358 (0.320)	0.262 (0.279)
Observations	6,419	6,419
Pair effects	Yes	Yes

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

Table 5 presents the results from including the variables used as proxies for government quality: Control of Corruption, Government Effectiveness, and Rule of Law. The coefficients for the EBA dummy are significantly positive in column (a), (c), and (e), and the coefficients for the EBA-ACP interaction variable are significantly negative. The coefficients for both the EBA

dummy variable and the EBA-ACP interaction variable lose their significance in column (b), (d), and (f). The variables for institutions are insignificant in all specification except for column (e), where the coefficient for rule of law is significantly positive. This indicates that this aspect of institutional quality has a positive effect on exports. The interaction between the EBA dummy and government effectiveness is negative and significant in column (e), indicating that a more efficient government combined with EBA preferences has a negative effect on exports. The same seems to be the case for rule of law, in column (f), even if the total effect of EBA preferences is positive. For the group of ACP countries, more effective institutions, column (d) as well as better quality for rule of law, column (f) has positive effect on exports when combined with EBA preferences.

Tabell 5. Institutional quality

Dependent variable:	Control of Corruption		Government Effectiveness		Rule of Law	
	(a)	(b)	(c)	(d)	(e)	(f)
Exports						
EBA	0.293** (0.122)	-0.0658 (0.289)	0.276*** (0.102)	-0.185 (0.155)	0.295** (0.115)	-0.385 (0.314)
EBA*ACP	-0.357*** (0.134)	-0.0194 (0.333)	-0.347*** (0.130)	0.163 (0.234)	-0.377*** (0.117)	0.264 (0.314)
Institutions	0.0729 (0.175)	0.0548 (0.248)	0.0712 (0.230)	0.224 (0.225)	0.256 (0.247)	0.794*** (0.291)
EBA*Institutions		-0.281 (0.259)		-0.646*** (0.209)		-0.761** (0.313)
EBA*ACP*Institutions		0.284 (0.315)		0.717*** (0.271)		0.730** (0.334)
GDP exporter	0.638*** (0.145)	0.638*** (0.136)	0.639*** (0.148)	0.646*** (0.142)	0.621*** (0.146)	0.619*** (0.146)
GDP importer	0.103 (0.321)	0.126 (0.316)	0.132 (0.329)	0.154 (0.323)	0.0777 (0.337)	0.116 (0.333)
Observations	5,031	5,031	5,031	5,031	5,042	5,042
Number of pair	714	714	714	714	715	715

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

The results from including foreign aid as an underlying supply-side condition are presented in Table 6, column (a). The coefficient for EBA is significantly positive, and the coefficient for the EBA-ACP interaction variable is significantly negative. The group of ACP LDCs are hence affected negatively by EBA preferences. The coefficient for foreign aid is negative and significant in this specification, suggesting that foreign aid has a negative effect on exports for the average LDC.

In column (b) the results from including the interaction variable between the EBA dummy and foreign as well as the combination between foreign aid and the EBA-ACP interaction variable. The EBA dummy is changing in magnitude. In contrast, the EBA-ACP interaction variable is increasingly negative. The coefficient for foreign aid is now positive and significant, suggesting that foreign aid has a positive effect on exports. The interaction variable between EBA and foreign aid is negative and significant meaning that the effect of EBA preferences is decreasing with increasing foreign aids. However, after adding this effect to the main EBA effect, the total effect of the EBA preferences is still positive. The coefficient for the combination of the EBA-ACP interaction variable and foreign aid is significantly positive implying that the effect of trade preferences is increasing with increasing foreign aid for ACP LDCs. However, adding the coefficients still results in a negative effect.

Dependent variable: Exports	(a)	(b)
EBA	0.237* (0.124)	0.694*** (0.212)
EBA*ACP	-0.258** (0.130)	-1.215*** (0.443)
Aid	-0.155* (0.0797)	0.309* (0.170)
EBA*Aid		-0.167*** (0.0614)
ACP*Aid		-0.567*** (0.166)
EBA*ACP*Aid		0.328** (0.142)
GDP exporter	0.533*** (0.141)	0.552*** (0.142)
GDP importer	0.410 (0.382)	0.301 (0.372)

Observations	6,838	6,838
Pair effects	Yes	Yes

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

7 Conclusions

The aim of this paper was to examine if the effects of trade preferences depend on underlying conditions in the preference-receiving countries. I examined the influence of the EBA preferences on exports and included an EBA-ACP interaction variable to see if the effect of EBA preferences was different for the group of ACP LDCs. In a simple regression, I found the export effects of the EBA initiative to be significantly positive for the average LDC. However, separating the impact of EBA preferences for ACP countries resulted in negative effects on export performance.

I further investigated if the effects of trade preferences depend on underlying conditions in the preference-receiving countries. I also separated this effect for ACP countries in an interaction variable between the EBA-ACP interaction variable and the variables for the underlying conditions. Including an interaction variable between the EBA dummy and the variables representing the underlying geographical conditions generated mixed results. The most interesting find was that landlocked LDCs was constrained from utilizing their EBA preferences. However, EBA preferences was not additionally affecting exports for landlocked LDCs in the group of ACP countries.

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9 Appendix

A1. Importing countries: EU15

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

A2: Exporting countries and year obtaining LDC status

Exporter	LDC	Country	LDC
Afghanistan	1991-	Malawi	1991-
Angola	1997-	Maldives	1991-2004
Bangladesh	1991-	Mali	1991-
Benin	1991-	Mauritania	1991-
Bhutan	1991-	Mozambique	1991-
Botswana	1991-1998	Myanmar	1991-1997, 2012-
Burkina Faso	1991-	Nepal	1991-
Burundi	1991-	Niger	1991-
Cabo Verde	1991-2011	Rwanda	1991-
Cambodia	1993-	Samoa	1991-2019
Central African Republic	1991-	Sao Tome and Principe	1991-
Chad	1991-	Senegal	2002-
Comoros	1991-	Sierra Leone	1991-
Congo, Dem. Rep.	1993-	Solomon Islands	1993-
Djibouti	1991-	Somalia	1991-
Equatorial Guinea	1991-	South Sudan	2013-
Eritrea	2002-	Sudan	1991-

Ethiopia	1991-	Tanzania	1991-
Gambia, The	1991-	Timor-Leste	2005-
Guinea	1991-	Togo	1991-
Guinea-Bissau	1991-	Tonga	1991-1998
Haiti	1991-	Tuvalu	1991-
Kiribati	1991-	Uganda	1991-
Lao PDR	1991-	Vanuatu	1993-
Lesotho	1991-	Yemen, Rep.	1991-
Liberia	1993-	Zambia	1993-
Madagascar	1993-		

A3. Variables and Data Sources

Variable	Definition and Data Source
Exports	Exports in nominal Euros. Data source: Eurostat (2018).
Bilateral distance	Distance in km between the capital cities in two countries. Data source: CEPII (2018a)
GDP	GDP in nominal Euro. Converted from USD using data from XXX. Data Source: CEPII (2018b)
Common official language	Dummy variable that is equal to unity if two countries share a common official or primary language. Data source CEPII (2018b)
Colony	Dummy variable that is equal to unity if two countries were ever in a colonial relationship. Data source: CEPII (2018b)
Landlocked	Dummy variable that is equal to unity if a country is landlocked. Data source: CEPII (2018a)
FDI	FDI in nominal Euros. Converted from USD using data from XXX. Data Source: The World Bank (2018a)
Paved roads	Share of paved roads as a percentage of total roads. Data source: The World Bank (2018a)
Control of Corruption	Data source: The World Bank (2018b)
Government Effectiveness	Data source: The World Bank (2018b)
Rule of Law	Data source: The World Bank (2018b)
Foreign aid	Data source: The World Bank (2018a)

