Argentina's import restrictive policies and their effects on trade

Abstract

The main aim of this study was to investigate whether the non-automatic import license systems Declaración Jurada Anticipada de Importación (DJAI) and the Certificado de Importacion (CI) had impact on the Argentinian import and whether this had been positive or negative. This panel data study has been conducted over 159 countries between the period 2009-2018 at 6-digit HS level (HS2007). The model used for this study is the Gravity model, and the two methods used are the 'linear regression with many fixed effects' and the 'Poisson Pseudo-Maximum-Likelihood with multiple levels of fixed effects'. This study finds significant negative results for the DJAI in both the methods used. However, for the non-automatic import license CI, this study only finds significant negative results when the linear regression is used.

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Table of contents

1 Introduction 1

2 DJAI and CI 3

2.1 DJAI 4

2.2 CI 5

3 Related literature 7

4 Methodology 9

4.1 Gravity model 9

4.2 Linear regression & PPML 12

5 Data 13

5.1 Data used in this study 13

5.2 Stylized facts 14

6 Results 16

6.1 Linear regression with many levels of fixed effects 16

6.2 PPML with multiple levels of fixed effects 21

7 Discussion 27

8 Conclusion 28

9 Literature 30

10 Appendix 32

List of abbreviations

AAP	Partial Scope Economic Complementarity Agreement
AFIP	'Administración Federal de Ingresos Públicos' or Argentine Tax and Customs Authority
CEPII	Database from the 'Centre d'Etudes Prospectives et d'Informations Internationales'
CI	'Certificados de Importación' or Import Certificates
DJAI	'Declaración Jurada Anticipada de Importación' or Anticipated Sworn Declaration of Imports
EU	European Union
f.e	Fixed effect
GDP	Gross Domestic Product
GSTP	Global System of Trade Preferences
HS	Harmonised System
IMF	International Monetary Fund
MERCOSUR	'Mercado Común del Sur', a common market between Argentina, Brazil, Paraguay and Uruguay
MFN	Most Favored Nation
NTB	Non-tariff barriers
OLS	Ordinary Least Square
PPML	Poisson pseudo-maximum-likelihood
r.e	Random effect
RTA	Regional Trade Agreement
RTRR	Restrictive Trade Related Requirements
SIMI	'Sistema Integral de Monitore de Importaciones'
TBT	Technical barriers to trade
UN COMTRADE	United Nations International Trade Statistics Database
USA	United States of America
WITS	World integrated Trade Solutions
WTO	World Trade Organization

1 Introduction

At the start of the last century Argentina was one of the wealthiest countries in the world, richer than many European countries. However, over the last century, Argentina's ranking as one of the wealthiest countries has dropped enormously, even falling behind many of the economically fast-growing Asian countries. Studies state that this downfall was due to the political instability in Argentina. These studies often emphasize the different aspects of the political instability, ranging from different political beliefs to extensive use of tariffs and protectionist measures (Glaeser, Tella, & Lucas, 2018). The argument of political instability can be shown by looking at the presidents Argentina has had over the past 30 years and their trade related policies. In the 1990's during the presidency of Carlos Menem, liberalization of trade took place. His reforms were implemented in two phases. The first phase was from 1989 to 1991, where his reforms led to the average tariff declining from 30 to 18 percent. Furthermore, there were less disparities in the tariff rates and more reductions in other non-tariff barriers (NTBs). The second phase took place from 1991-1996 and involved the adaption of MERCOSUR. This was a regional trade agreement between Argentina, Brazil, Paraguay, and Uruguay, where the intra-zone tariff in most cases was reduced to zero and a common external tariff (extra-zone) was negotiated between its members (Brambilla, Galiani, & Porto, 2018). However, from 2003 to 2015 first under the rule of the late president Néstor Kirchner and subsequently under his wife and successor Cristina Fernández, protectionist measures returned in Argentinian policies. Her presidency had showcased three main protectionist measures. These measures even led to a full-on dispute at the World Trade Organization (WTO) between Argentina and the United States of America (USA), Japan and the European Union (EU).

The first measure that showcased protectionism was the requirement for approval of import in the form of a non-automatic import license, namely the Declaración Jurada Anticipada de Importación (DJAI). In order to import products into Argentina, the Argentinian government required all importers to request and receive approval from the 'Secretariat of Commerce' and the 'Argentine Tax and Customs Authority' (AFIP). The processing time officially took 15 days, although many requests were put on hold for indefinite periods of time for review. This led to systematic delays or failures in granting import approvals (Export.gov, 2016). The second protectionist measure discussed in this study is the non-automatic import

license system that was required for the importation of certain goods, which were called the Certificados de Importación (CI). The third big protectionist measure of the government of pres. Fernandez was the Restrictive Trade Related Requirements (RTRRs). For importers to gain a grant of import approval they were often to comply with certain requirements (Clark-Esposito, 2016). The scope of this study is to look at the effects of the protectionist measures implemented by the government of president Fernández. However, this study will only focus on the DJAI and the CI measures. The reason for this is that there is no specific way to identify all the different kinds of RTTR requirements the Argentinian government had implemented in this period. In 2016, Argentina replaced DJAI by introducing the "Sistema Integral de Monitore de Importaciones" (SIMI) as the new integral system of import monitoring and verification. A more precise description of non-automatic import license DJAI, the product-specific non-automatic import license CI and the Restrictive Trade Related Requirements (RTRRs) will be discussed in section two of this study. The question arises whether Argentina's trade policy of import restriction by using the non-automatic import licensing systems DJAI and CI, indeed had any effect on the Argentinian imports and what the magnitude of these policies had been. This brings us to the research question of this study:

- *What was the effect of the non-automatic import licenses DJAI and CI on the Argentinian imports?*

This section will be followed by a precise description of the DJAI and the CI. Hereafter, some related literature on the topics of import licensing, RTRRs and other non-tariff barriers (NTBs) will be discussed in section 3. The purpose of showing this is to provide the readers with background information on main findings and methods found by studies investigating a similar subject. Section 4 will then present the methodology used in this study. This study will use the Gravity model of trade to find an answer for the research question. Two methods will be used. At first, the method of 'linear regression with many fixed effects' will be used to obtain results. After this the 'Poisson Pseudo-Maximum-Likelihood (PPML) with multiple levels of fixed effects' will be used in order to account for the zero-value problem of the dependent variable import. A full description and reasoning for using both these methods will be conducted in the methodology section. Following this, section 5 will first present the data used in this study, and then some stylized facts about the origin of the Argentinian imports will be displayed. Section 6 will then show the results obtained in this study and the

interpretation. This will be done by first showing the results obtained for the linear regressions with fixed effects, and then by showing the results obtained for the PPML regressions. Subsequently, this section will be concluded by testing the two hypotheses of this study. The two hypotheses that will be tested in order to answer the research question are:

- Hypothesis 1
    - H_0 *(1): The DJAI requirement had no significant impact on the Argentinian import*
    - H_A *(1): The DJAI requirement had significant impact on the Argentinian import*
- Hypothesis 2
    - H_0 *(2): The CI requirement had no significant impact on the Argentinian import*
    - H_A *(2): The CI requirement had significant impact on the Argentinian import*

Finally, section 7 will present the conclusions.

2 DJAI and CI

In the first decade of the 21st century, Argentina had implemented aggressive trade protectionist measures of which it had described it as 'trade management' and 'import substitution'. The goals of the Argentinian government had been twofold. Firstly, the Argentinian government tried to discourage the importers with burdensome and costly customs procedures. By doing this the Argentinian government hoped that by restricting the importation of foreign goods this would lead to a shift to more investments and purchases of local production. Secondly, by using these measures, they thought that it would reinforce the country's economy and would make them less dependent on foreign goods and services (Bendini, 2012). To achieve these goals, Argentina subjected imported goods to several licensing and administrative requirements.

This section will continue as follows. First, there will be an explanation on the non-automatic import licensing regime known as the Anticipated Sworn Declaration of Imports (DJAI) and the Restrictive Trade Related Requirements (RTRR's) that came along with this regime. Second, there will be an explanation on the non-automatic licenses that were subjected on the importation of certain goods into Argentina. This was in the form of a Certification of Importation ('Certificados de Importación or CI).

2.1 DJAI

On the 10th of January 2012, the 'Administración Federal de Ingresos Públicos' (AFIP) which is the Argentinian Tax and Customs Authority, passed General Resolution No. 3252/2012. This Resolution had been implemented as of 1 February 2012 and stated that all importers had to file an online 'Anticipated Sworn Declaration of Imports' (Declaración Jurada Anticipada de Importación or in short 'DJAI'), which was a non-automatic import licensing procedure prior to importing any type of goods into Argentina from any country in the world (Ropolo, 2013). In order to obtain the DJAI, importers would have to give business details about transactions in advance and then wait for government review. The DJAI could then be reviewed by at least seven governmental agencies among also the AFIP. Once the authorities approved the DJAI, import was permitted. Goods that did not have a valid DJAI authorization number would not be able to enter Argentina (Baracat, Finger, Thorne, & Nogués, 2013). However, if any of the governmental agencies had registered an 'observacion' (observation) of the DJAI, then this would mean that the importer was not allowed to proceed with the import transaction. This remained the case until the refusing agency was satisfied with the importer's response to the 'observacion'. The introduction of the DJAI and its legal framework imposed the governmental agencies with no constraint in registering an 'observacion', which resulted in DJAI's often remaining in the 'observed' status for a long period of time without proper explanation.

The DJAI applications were made by using the online MARIA Information System provided by the Argentinian government and were written in Spanish. The importers had to submit all of the data the MARIA kit required, which were data on shipping and arrival dates, tax identification code, import filer information and any descriptive information about the imported products (type, quality, condition etc.) (WTO, 2013). The DJAI also impacted the importers in the procedures of buying currency to pay for imports in advance. In order to obtain foreign currency, the Central Bank demanded that the DJAI had been approved by the relevant agencies. This was often in the case of a prepayment complicated, time consuming or even not possible (Trade Risk Group, 2016). From the moment a DJAI was granted, it would be valid for 180 days and could be extended for an additional 180 days. The complete status of the DJAI would be viewable from the website of the AFIP (Ministry of Foreign Affairs and Worship, 2012). One way to escape a status of 'observed' was often to comply with Restrictive Trade Related Requirements (RTRR's). One example of a RTRR was the one-to-one

requirement some importers had to comply with in order to import. This measure was put in place to balance the trade account by ensuring that the Argentinian domestic companies exported in value at least as much as they imported. This way the importer would offset the value of its import with an equal value of its exports. The consequence of this policy was that some companies now had to take on activities that were unrelated to their business. One example for this was that some car manufactures had to start exporting wine in order to meet this one-to-one requirement (Bergman, Fjose, & Brøther, 2017). Importers were also to comply with the requirement to reduce the price or volume of the imports, or to incorporate local services into domestically produced goods. Furthermore, to escape the status of 'observed', importers were also required to invest more in Argentina and refrain from repatriating money from Argentina to foreign countries. Due to the different kinds of RTTR's the Argentinian government had implemented within this period, it is not possible to bundle all the requirements and create one specific variable that identifies all the RTTR requirements. Therefore, the RTTR requirements will not be used within this study.

2.2 CI

Argentina is one of the members of the MERCOSUR customs union. MERCOSUR is a common market created in 1991 between its founding members Argentina, Brazil, Paraguay and Uruguay. Since its creation it has gradually eliminated almost all the trade restrictions among its members (Oliveira, 2005). Since Argentina is a member of the MERCOSUR customs union, it is prohibited from changing the tariffs on its own. For this reason, the Argentinian government had used non-automatic import licensing systems as a protectionist measure and as way of circumventing WTO and MERCOSUR rules (Bendini, 2012). The DJAI procedure was not the only requirement in order to import. The Argentinian government furthermore required that many imported products would need an automatic and a non-automatic license in order to enter the country. An automatic import license is mostly maintained to collect statistical information about the imports and is in all cases approved and generally free of charge. The non-automatic license is the opposite of an automatic license and is used to administer trade restrictions (e.g. quantitative restrictions). For this kind of measure, it is obliged that this be justified by the authority within the WTO legal framework (Bendini, 2012). Both the automatic and non-automatic licenses saw an increase in the period 2008-2012. However, in 2012 Argentina had a substantial reduction in the number of tariff lines subjected

to automatic licensing (WTO, 2013). One difference between an automatic and a non-automatic license was that the products that needed a non-automatic import license were generally subjected to specific technical regulations. These product-specific non-automatic import licenses were called 'Import Certificates' (Certificado de Importacion, or "CI") (WTO, 2013). These CIs were not supplementary to the DJAI and were therefore processed separately (Ministry of Foreign Affairs and Worship, 2012). The CI were mainly applied to manufacturing goods that were deemed import sensitive by the Argentinian government. These were products like automobiles, paper, iron and steel, toys and textiles among others (Bergman et. al, 2017). However, when the dispute between Argentina and the USA, EU and Japan about the DJAI and the CIs started, the Argentinian government decided in 2013 to eliminate all of the non-automatic import licenses (CI) that were required in order to gain some goodwill with the disputing countries and with the WTO. In 2016 when the dispute had been settled and the SIMI had been introduced as the replacement for the DJAI, the Argentinian government again introduced a large range of product-specific non-automatic import licenses. Table-1 below shows a clear view of the years the DJAI was in effect for all products for all countries. Table-2 below shows a clear view of the years in which at least one product needed an 'Import Certificate' (CI). What is evident when looking at the tables, is that every year of the sample period showed at least one trade restriction. 2012 was the only year in which there was an overlap of DJAI and CI. The rest of the years had only one of the two requirements.

Table-1: Years the DJAI was in effect

Year	Yes/No
2009	*No*
2010	*No*
2011	*No*
2012	***Yes***
2013	***Yes***
2014	***Yes***
2015	***Yes***
2016	*No*
2017	*No*
2018	*No*

Table-2: Years in which at least for one product a CI was needed

Year	Yes/No
2009	***Yes***
2010	***Yes***
2011	***Yes***
2012	***Yes***
2013	*No*
2014	*No*
2015	*No*
2016	***Yes***
2017	***Yes***
2018	***Yes***

3 Related literature

This section tries to present research done in the field of import licenses. However, due to there not existing that many studies that solely look at the effects an import license has on the importation of a country and rather combine the effects import licenses and other non-tariff barriers (NTB's) have on trade, this section will also present some studies investigating trade effects of other NTB's. An import license is a nontariff barrier. Some examples of NTB's are quotas, prohibitions, technical barriers to trade (TBT) and monopoly rights to import. Nontariff barriers mostly lack transparency, are often put in place to benefit powerful interest groups and are rarely to help poor people (Hoekman, Michalopoulos, Schiff, & Tarr, 2001).

One example of a similar study that looked at the effects of an import license on the trade of a country is that of Imbruno (2016). He investigated the effectiveness of different trade policy instruments on product-level Chinese imports over the period of 2000 to 2006. The study uses Chinese imports at the 6-digit product level and focuses on quantitative nontariff barriers (NTB's) such as import quotas and import licenses. Imbruno investigates the impact the gradual removal of non-tariff barriers had on imports. The study concludes that the manufacturing imports mainly increased due to the tariff cuts and that the agricultural imports increased due to the elimination of import licenses. This meant that the tariffs and import licenses reduced the imports to China in the period between 2000 and 2006 (Imbruno, 2016).

A study similar of that of Imbruno (2016) is that of Bao and Qiu (2010). They investigate the impact technical barriers to trade (TBT's) had on Chinese imports. They do this by looking at the imports at the 2-digit sector-country level for the period of 1998 to 2006. By controlling for tariffs, quotas and import licenses, they found mixed results across sectors, time periods and methodologies. They show their results by using two different methodologies, namely the frequency index and the coverage ratio. The results of the frequency index show that the TBT's are trade restrictive. According to this methodology, a one unit increase in TBT will decrease the import value by 0.8%. When using the coverage ratio methodology, they state that they find insignificant negative results. However, they do show contradicting results of TBT's having trade promotion effects when shifting the focus of their data to 1998-2001, rather than 1998-2006. Finally, they showed that the TBT's have been trade restricting for the Chinese agricultural goods and trade promoting for the manufacturing goods (Bao & Qiu, 2010).

The study of Henn and Mcdonald (2011) investigated how discriminatory measures implemented during the global financial crisis had affected the trade flows. They studied this by matching data on behind-the-border measures (e.g. subsidies and bailouts) and data on border measures that had been implemented through April 2010, to monthly bilateral trade data on HS 4-digit product level. Their estimation strategy had been a first-differenced gravity equation and time varying fixed effects. This way they had been able to unravel the impact of new discriminatory measures. Their study showed that the import had decreased with 5% because of border restrictions and had decreased by 7% due to behind-the-border measures. Furthermore, they also broke down the protectionist dummies according to the measure types. When doing this, they showed that both the traditional and non-traditional non-tariff measures were more effective than tariffs. Examples of these non-tariff barriers (NTBs) were the quota, import ban and the licensing requirements among others. They state that within the NTBs, the new licensing requirements drove the impact on trade with a 9% decrease at the product level (Henn & McDonald, 2011).

Dean, Signoret, Feinberg, Ludema, & Ferrantino (2008) estimate the average impact of core NTBs on prices of 47 consumer products by using city level retail price data. They do this by grouping the sectors into four separate sectors for more than 60 countries for the year 2001. These core NTBs consists of import licenses, import quotas, prohibitions and export restraints. They investigate this by using an instrumental variable approach in order to incorporate the endogeneity of NTBs. Their results show that the core NTBs are highly restrictive for many goods in many countries. The NTBs appear in some sectors to be complements to tariffs, while in other sectors the presence of a tariff reduces the price impact a NTB has. Furthermore, their study suggest that in some of their investigated sectors the restrictiveness of a NTB is highly correlated with the countries income (Dean, Feinberg, Signoret, Ferrantino, & Ludema, 2008).

Lastly, the study of Yalcin, Felbermayr and Kinzius investigate non-tariff barriers (NTBs) and the implications it has for international trade. They do this by investigating the results by industry, by income group and by country groups. They show that their estimated coefficients are highly significant and are negative for all types of NTBs. Public procurement and localization policies have on average the highest negative effect on the import, with 16.7% decrease if at least one of these two policies are implemented. The smallest impacted NTBs are state aid and subsidies, which have on average a negative impact of 6%. Lastly they show

that the direct import controls (e.g. import licenses) and capital controls have on average a negative impact of 10% on trade (Yalcin, Felbermayr, & Kinzius, 2017).

4 Methodology

The methodology section of this study will go as follows. First, the model used in this analysis will be treated and the regressions will be discussed. Second, the methods used in this study will be examined. The methods used within this study are the 'Linear regression with many levels of fixed effects' and the 'Poisson pseudo-maximum-likelihood (PPML) with multiple levels of fixed effects'.

4.1 Gravity model

The gravity model of international trade is used to answer the research question of this study. This model is developed by Jan Tinbergen (1962) and is inspired by Isaac Newtons' Gravity law. This model states that countries trade in proportion to their size and distance. This means that the total of the trade is assumed to be increasing in their size (e.g. GDP) and decreasing in the cost of transport between two countries (distance) (Bacchetta, et al., 2012). In order to test both hypotheses, the Hausman test will be conducted to choose the proper estimation method. The choice is between the fixed effect (f.e) and the random effects (r.e) estimation method. The Hausman test states that if the p-value is less than the significance value of 0.05, then the null hypothesis will be rejected, and the alternative hypothesis will be accepted. The results of the Hausman test show that the null hypothesis is rejected (0.00<0.05), which implies that the fixed effects is the preferable estimation method (Marchionni & Veranian, 2018). The reason for using the fixed effect estimator is the assumption that there might be correlation between the error term and the independent variables, which could result in a bias. This bias is eliminated by using the fixed effect estimation method. By eliminating this bias, it becomes possible to determine the net effect the independent variables have on the dependent variable (Torres-Reyna, 2007). This brings us to the first basic gravity equation used in this study, which is expressed as follows:

(1)	$Ln\,(X_{jht}) = \beta_1 \ln GDP_{jt} + \beta_2 CI_{ht} + \beta_3 Tariff_{jht} + \delta_t + FE_{jht} + u_{jht}$

Here the dependent variable ln(X) stands for the log of the Argentinian import from the imported country. The independent variable GDP stands for the Gross Domestic Product in current US dollars. CI is the dummy variable used within the study and takes the value of one for the years a non-automatic import license was in place for that specific product, and zero otherwise. The independent variable Tariff stands for the product-specific bilateral tariffs that are implemented for the imported goods and are in percentage points. The j stands for imported country, t stands for time and h stands for the product code. δ stands for the time fixed effects that are included in this study. The time fixed effects are added in order to capture the influence of the aggregate time-series trend. These 'year dummies' will be included for every year, excluding the first year. By adding these year dummies, the model will consider any variation in the outcome that has happened in the examined period of 2009-2018 and which is not attributed to any of the independent variables. This means that economic shocks that are restricted to a specific year will be captured by the year dummies. These economic shocks could for example be governmental policy which had been detrimental to the Argentinian economy, or even foreign policy that had indirect effects on the Argentinian economy. In the case of this study, the year dummies will capture the effects the DJAI importing regime had on the Argentinian import. Thus, by adding the year dummies in the regression, this will result in a more accurate model than the case would have been when time fixed effects would not have been added.

This paper will also interact both the DJAI and the CI with some dummy variables. These interactions will be done with contiguity, common language, distance, Regional Trade Agreement (RTA) and whether the exporting country is landlocked. By interacting the DJAI and the CI with these dummy variables, it will be possible to look whether the effects of the DJAI and the CI will differ. By interacting with contiguity, it could be interesting to investigate whether the DJAI had any different effects on the countries that share a border with Argentina. The DJAI had been completely written in Spanish. Therefore, by accounting for common language we could account for the benefit of the lower effort these Spanish-speaking countries would had to exert in order to completely understand this import licensing regime compared with non-Spanish-speaking countries. However, since all Spanish-speaking countries (excluding Spain) are neighboring countries of Argentina, the DJAI importing regime could also have had more negative effects on the imports from these specific countries compared with the overall average effect of the DJAI on imports from all the countries. This is

due to there being an inverse relationship between trade and distance, which means that Argentina will be more inclined to trade with their neighboring countries (Chaney, 2011). Therefore, the DJAI could also have induced more negative effects on the most common trading partners of Argentina. By adding an interaction between DJAI and distance, this study will also be able to account for the distance between the trading countries. By doing this, we will be able to find out whether the inverse relationship of the gravity model between trade and distance holds in the case of this study. For this interaction variable, the natural log of distance has been used. Furthermore, interaction variables will be created with RTA for both the DJAI and CI. This way, it will be possible to find out whether the results differ when accounting for the fact that the trading partner is within a regional trade agreement with Argentina. Lastly, it could also be interesting to analyze whether the effects of the DJAI and the CI were different for trading partners that were landlocked. This leads to the following two equations of this study. Equation 2 includes an interaction variable between DJAI and one of the above given dummy variables. Equation 3 includes an interaction variable between CI and one of the above given dummy variables.

(2)	$Ln\,(X_{jht}) =$	$\beta_1 \ln GDP_{jt} + \beta_2 CI_{ht} + \beta_3 Tariff_{jht} + \beta_4 DJAI_t\ Interaction + \delta_t + FE_{jht} + u_{jht}$
(3)	$Ln\,(X_{jht}) =$	$\beta_1 \ln GDP_{jt} + \beta_2 CI_{ht} + \beta_3 Tariff_{jht} + \beta_5 CI_{ht}\ Interaction\ + \delta_t + FE_{jht} + u_{jht}$

Furthermore, there will also be two additional regressions per method that will use every interaction variable mentioned above into one regression, except for the interaction variable with the dummy variable common language. The reason for excluding common language from these regressions is due to the expectation that contiguity and common language are collinear with each other. Contiguity is chosen above common language, due to it containing five of the biggest South American trading partners of Argentina, four of which have the same language as Argentina. The following two equations will be used for these regressions. Equation 4 includes all interactions with DJAI, while equation 5 includes all interactions with CI. The i stands for Argentina in these equations.

(4)	$Ln\,(X_{jht}) =$	$\beta_1 \ln GDP_{jt} + \beta_2 CI_{ht} + \beta_3 Tariff_{jht} + \beta_6 DJAI_t * Contiguity_{ij} + \beta_7 DJAI_t * Distance_{ij} + \beta_8 DJAI_t * RTA_{ij} + \beta_9 DJAI_t * Landlocked_j + \delta_t + FE_{jht} + u_{jht}$
(5)	$Ln\,(X_{jht}) =$	$\beta_1 \ln GDP_{jt} + \beta_2 CI_{ht} + \beta_3 Tariff_{jht} + \beta_{10} CI_{ht} * Contiguity_{ij} + \beta_{11} CI_{ht} * Distance_{ij} + \beta_{12} CI_{ht} * RTA_{ij} + \beta_{13} CI_{ht} * Landlocked_j + \delta_t + FE_{jht} + u_{jht}$

4.2 Linear regression & PPML

The above equations will be first regressed by using the 'linear regression with many fixed effects', developed by Sergio Correia (2015). This method is used to control for unobservables that remain constant within an economic unit. For the above regressions the following options will be included: absorb and vce(robust). The absorb option will be used in order to list the categorical interactions that identify the fixed effects to be absorbed. The vce option specifies the type of standard error that will be reported. Particularly, the vce(robust) option estimates heteroskedasticity-consistent standard errors. It still assumes independence between the observations (Correia S. , 2015).

However, this method could lead to bias. One reason for this is that within the dataset of this study there exist zero values in the imports. This could lead to bias when using a log-linearized model. The dataset shows that for certain years there has been no trade between Argentina and that specific country for certain products (at hs6 level). There are several ways to account for this. Santos Silva & Tenreyro (2006) state that the two most commonly used methods are either to drop the years that have no trade ($T_{ij} = 0$) and estimate the log-linear form by using an Ordinary Least Square (OLS) method, or to estimate the model by T_{ij}+1 for the dependent variable. The latter method will also lead to inconsistent estimators of the parameters of interest. The 'linear regression with many fixed effects' uses the former method. This means that by taking the natural log of the import value, some import data will be dropped from the gravity model when regressing the equations. As stated before, this dropping of the zeros could lead to bias. Furthermore, in the presence of heteroskedasticity, the estimates that are obtained by using this log-linearized model will lead to a distortion of the model. This bias could then lead to misleading conclusions. A solution for these estimation problems is the 'Poisson Pseudo-Maximum-Likelihood' (PPML) method. Thus, in order to account for the zero values problem, the 'Poisson Pseudo-Maximum-Likelihood with multiple levels of fixed effects' method will be used. This method is developed by Correia, Guimarães & Zylkin (2019). Another key difference of the PPML regressions will be that now the dependent variable import will be estimated in levels rather than log-linearized, as is the case with the linear regressions (Santos Silva & Tenreyro, 2006).

5 Data

This section will first start with an examination of the variables used within this study. Thereafter, some stylized facts about Argentina's import in the examined period will be given.

5.1 Data used in this study

The research question will be analyzed by looking at yearly Argentinian import data from 159 countries based on the Harmonised System (HS2007) at the 6-digit level for the years 2009 until 2018 for at most 5052 unique product codes. This gives us 3 years of trade data before the implementation of the DJAI in 2012, 4 years of trade data during the implementation of the DJAI and three years of trade data after the DJAI had been dissolved. The data on import is collected from the UN COMTRADE. The data on import is reported in current US dollar values. These values are calculated by using an average annual exchange rate, which is created by weighting the monthly exchange rate with the monthly volume of trade. The data for import used within this study accounts for around 97% of the total Argentinian import from all countries. This is due to some countries, like small island countries or islands that fall under European rule not being included in the dataset. The data on Gross Domestic Product (GDP) of the trading countries is collected from the IMFs' World Economic Outlook Database and is reported in current US dollar values. Since there is for some countries no available data on the GDP for the year 2018, this study will use the estimates prepared by IMF staff members. As was the case with the data on the import, the values of the GDP are based on the data of GDP in national currency which then is converted to US dollars by using the yearly average exchange rates.

For most countries the Most Favored Nation (MFN) bilateral tariff is applied, while for some other countries non-MFN bilateral tariffs are applied due to agreements between Argentina and those countries. The data on the MFN tariffs is collected from the Tariff Download Facility of the WTO and the non-MFN tariffs are collected from the World integrated Trade Solutions (WITS). The latter consists of countries that fall under either the MERCOSUR union, the Global System of Trade Preferences (GSTP) or the Partial Scope Economic Complementarity Agreement (AAP). The countries that fall under the MERCOSUR tariff rates are Brazil, Paraguay and Uruguay. The GSTP tariffs in this study are for 32 developing countries and are only for a limited amount of 6-digit product codes. The products that do not have a GSTP tariff, are given MFN tariff rates. A total of seven Latin American

countries fall under the AAP bilateral tariff rates. Columbia, Ecuador and Venezuela fall under the AAP.CE N° 59. Bolivia, Chili, Mexico and Peru fall respectively under the AAP. CE N° 36, AAP. CE N° 35, AAP. CE N° 06 and AAP. CE N° 58. The six-digit product codes that do not have a preferential tariff for the complete period of 2009 until 2018, are given the MFN tariff rates. The six-digit product codes that do not have a preferential tariff only for some years of the period of 2009 until 2018, are only given the MFN tariff rates if and only if the MFN rates had been zero for those specific years. All tariffs are given in percentage points.

In order to find the effects of the Argentinian protectionist measures, dummy variables will be used. In order to find the effects of the DJAI policy, year fixed effects will be used. It is not necessary to create a separate dummy variable for the DJAI, due to the year dummies already capturing the DJAI effect. Furthermore, for the product-specific non-automatic import license CI, this study will also include a dummy variable. As stated before, this variable will take the value of one if the non-automatic import license was in place for that specific good for that year, and zero otherwise. The data on the non-automatic import license CI is collected from the Trade Monitoring Database of the WTO and from the Global Trade Alert. In the period of 2009-2018, there were a total of 1430 unique products at hs6 product level that required a CI for at least one year.

Lastly, for both the DJAI and CI new interaction variables will be created with the following dummy variables: contiguity, common language, distance, RTA and whether the trading partner is landlocked. The data on the dummy variables are collected from the 'Centre d'Etudes Prospectives et d'Informations Internationales' (CEPII) database. Table-A1 of the Appendix summarizes all variables used within this study.

5.2 Stylized facts

In order to show where the Argentinian imports come from, some stylized fact will be given. This way some facts about the origin of the Argentinian import can be shown. Table-A2 of the Appendix shows the total import of the 159 countries that are used in this study. Percentages of exports to Argentina will be given per continent and region. As can be seen, most of the Argentinian import comes from other South American countries, ranging from 38.62% in 2009 to 32.97% in 2018. In the period the DJAI had been in effect, the export of the South American countries to Argentina had decreased and steadily started increasing after the DJAI had been dissolved at the end of 2015. North America accounts for around 15% of the Argentinian

import. The export of the Central American countries to Argentina has stayed around 3% in this ten-year period. The export of the European countries account for around one-fifth of the total export to Argentina. Half of this comes from the countries that fall under the Western Europe region, which are Austria, Belgium, Switzerland, Germany, France, Luxembourg and the Netherlands. The Southern European countries account for around 4.5% of the total export to Argentina, while the Eastern European countries account for between 1% and 3%. The Northern European countries, which consist of the Scandinavian countries, the Baltic countries and Great Britain, account for between 2% and 3% of the total export to Argentina. The export from the continent Asia ranges from 22.27% in 2009 to 29.72% in 2018. Most of the Asian export to Argentina comes from Eastern Asia, which accounts for between 17% and 24% in this ten-year period. The Eastern Asian countries are China, Japan, South Korea and Mongolia, where China accounts for more than three-fourth of the Eastern Asian export to Argentina. Western Asian countries accounted for between 0.51% and 2.29%, while the Central Asian countries accounted for less than 0.6%. The South-Eastern Asian countries and the Southern Asian countries accounted together for around 5% of the total export to Argentina. The African countries had the lowest amount of export to Argentina. The total African export had been below one percent in the period 2009-2013, while after this period the African export to Argentina peaked in 2015 with around 2% of the total export. The countries that fall under the Oceania region exported less than one percent of the total export to Argentina.

What could also be interesting to analyze is the export of Argentina's biggest trading continent, namely their neighboring South American countries. This can be seen in Table-A3 of the Appendix. Looking more specific to the exports of the South American countries to Argentina, one can see that more than three-fourth of the South American export comes from Brazil. The two other MERCOSUR partners of Argentina, Paraguay and Uruguay, account for 2% to 10% and 2% to 2.8% respectively of the total South American export to Argentina of the last ten year. The Bolivian export to Argentina started with only 1.51% of the total South American export in 2009 but saw a peak in 2014 with a total of 13.18% of the South American exports to Argentina until it decreased to 6.81% in 2018. Chili's export to Argentina has stayed around the 4% of the total South American export and changed minimally in the last ten years. The rest of the countries seen in the table all had a lower share in the total South American

export to Argentina compared to the above-mentioned countries, namely below the 2-percentage point mark.

6 Results

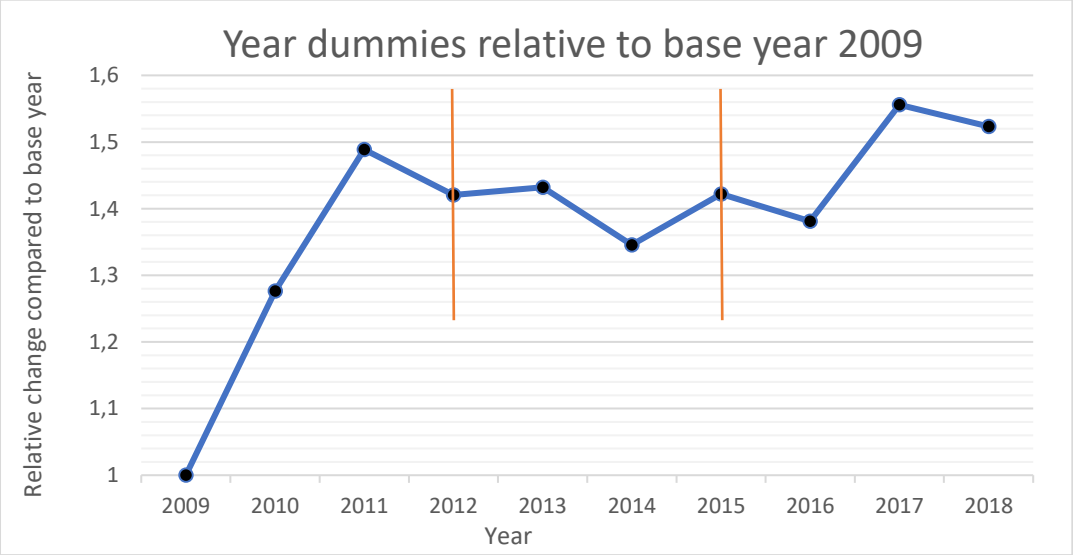
This section will first showcase the results obtained by using the 'linear regression with many levels of fixed effects'. After this the 'Poisson pseudo-maximum-likelihood (PPML) with multiple levels of fixed effects' will be used. This section will conclude with the testing of the hypotheses.

6.1 Linear regression with many levels of fixed effects

Table-A4 and Table-A5 of the Appendix show the results of the linear regressions of the first three equations discussed in the methodology section. Table-A6 shows the results of the linear regressions of equation 4 and 5. Table-A4 includes the dummy interactions with DJAI, while Table-A5 includes the dummy interactions with CI. The results of these three tables are recalculated by taking the antilog of the coefficients. This has been done in order to find the effects of the independent variables on the dependent variable import, rather than on the natural log of import. Column one of Table-A4 shows the results of equation 1.

Analyzing the first variable, Ln GDP, we can state that every percentage variation in the Ln GDP, the import is positively affected by 44.05% and is highly significant. The independent variable 'Tariff' also shows a negative effect on import. So now with every percentage increase in the Tariff, the import is negatively affected by 0.2%, holding all other variables constant. This coefficient is furthermore significant at the 10% level. The CI coefficient is significant at the 1% level and has a value of -0.0324. This means that in the years the product-specific CI was in effect, this had on average a negative impact of 3.24% on import, holding all other variables constant. The year dummies for each year, excluding the first year, are included to allow the model to attribute some of the variation in the data to events that took place during those years. In the case of this study, this has been the DJAI policy in the period of 2012-2015. Looking at the results of the year dummies, one can see that every year is significant at the 1% level. Interpreting the results of the year dummies will be in relation to the base year, which is in the case of this study 2009. This means that the import in 2010 was on average 27.63% higher than in 2009, holding all other variables constant. The rest of the year dummies can be interpreted in the same manner. The emphasis of this study lays on the years 2012 to 2015, which were the years the DJAI policy was in effect. Looking at 2012, one

can see that the import relative to the base year was lower than the year prior. Now the import in 2012 was on average 42.05% higher than in 2009, compared with 2011 which was on average 48.88% higher than 2009, holding all other variables constant. This shows that on average the import decreased from 2011 to 2012 when the DJAI policy came into effect. Figure-1 below shows the plot of the year dummies relative to the base year of 2009. The period between the vertical orange lines are the years the DJAI was in effect (2012-2015).



One can see now that when the DJAI came in effect, on average the import started to decrease. The years 2012 and 2014 saw on average the import decrease compared to the years prior. As stated before, the import in 2012 was on average 42.05% higher than in 2009, compared with 2011 which was on average 48.88% higher than 2009, holding all other variables constant. The same could be seen in 2014, where the import was on average 34.58% higher than in 2009, compared with 2013 which was on average 43.19% higher than 2009, holding all other variables constant. Furthermore, the year dummies show that the year effects in the years the DJAI was in effect, namely 2012 to 2015, were lower than that of 2011, which was the year prior to the DJAI. The reason for 2016 having a decrease relative to the year prior might be due to the introduction of the SIMI importing system, which was the replacement for the DJAI importing system. Countries would now have to get accustomed to the new importing regime, which could have influenced the amount of import of that given year. However, to give a full definitive analysis on the effects of SIMI, one should include this importing regime in their study. This has not been done in this research, thus further in-depth interpretation of the years after the DJAI had been replaced by the SIMI regime will not be conducted in this study. From 2016 on, these year effects start to increase. This shows that

when the DJAI was abolished, the import started on average to increase relative to the base year. Table-3 below shows the change of the year dummies relative to the year prior. In order to find what the effect of the DJAI had been on the Argentinian import, a simple average of the yearly change has been taken for the years 2012-2015. By doing this, we find that the average effect of the DJAI on the import had been -2.298%, holding all other variables constant.

Table-3: Relative change in % compared to the year prior

Year	Column 1
2010	27.634
2011	76.909
2012	**-13.973**
2013	**2.711**
2014	**-19.935**
2015	**22.007**
2016	-9.623
2017	45.764
2018	-5.811

Notes:

- The years the DJAI policy was in effect, are made bold
- Average effect of the DJAI = (2012+2013+2014+2015)/4
  ➔ Column 1 = -2.298%

Column 2 to 6 of Table-A4 show the results of the regression where dummy variables are made to have an interaction with the DJAI importing policy. These columns show the results of equation 2. The results for Ln GDP, Tariff and CI differ minimally compared with column 1 where the interaction dummy variable was not included. In the case of column 2, where an interaction variable between DJAI and contiguity is included, we obtain a significant result at the 1% level. It shows that for the countries that shared a border with Argentina, the DJAI importing regime had on average a negative effect of 12.72% compared to countries that did not share a border, holding all other variables constant. This result is higher than the average effect of the DJAI that was calculated for column 1 (-2.298%). A reason for this could be that now the effect of the DJAI has been calculated only for a certain amount of countries that share a border with Argentina. As was shown in section 5.2 Stylized facts, the South American countries are the biggest trading partners of Argentina (Table-A2). Of the South American countries, the top 5 trading partners are also the ones who share a border with Argentina (Table-A3). Thus, this result shows that for the countries that share a border with Argentina, the DJAI had on average a bigger negative effect on the import originated from those countries than was the case when looking at the overall average effect of the DJAI.

Column 3 includes an interaction variable between DJAI and common language. Due to the DJAI being completely written in Spanish, it could be interesting to investigate whether the effects of the DJAI differed for these specific countries. We now obtain a value of -0.0338 that is significant at the 5% level. This means that for the countries that share a common language with Argentina, the DJAI importing regime had on average a negative effect of 3.38% compared to countries that did not have a common language, holding all other variables constant. This result is slightly higher than the overall average effect of the DJAI (-2.298%), but lower than the case when the interaction variable DJAI*Contiguity is included (-12.72%). A reason for a lower result than that of column 2 could be due to the countries that are now considered for this new interaction variable. Now one of the biggest trading partners, Brazil, is not taken into account, while many of the Spanish-speaking South American countries that do not share a border with Argentina and are small trading partners are taken into account. A possible reason for a higher result than that of column 1 could be found behind the intuition of the gravity model. As previously stated, trade and distance have an inverse relationship, which means that trade would be theoretically more inclined to happen between neighboring counties (Chaney, 2011). Therefore, this could also mean that a policy that was meant to be negative to trade, as was the case with the DJAI, could have had more negative effects on the neighboring countries than it would had been for countries that were located far away. This could explain why the effects of the DJAI importing requirement had been more negative in the cases when the interaction variables DJAI*Contiguity (column 2) and DJAI*Common Language (column 3) were included. However, this interpretation could also be investigated. This brings us to the next interaction variable, namely DJAI*Distance.

Column 4 shows that we obtain a result of 0.0455 that is significant at the 1% level. This result shows that when the DJAI importing requirement was in effect, the distance between Argentina and the trading partner had a positive effect of 4.55% on import, holding all other variables constant. This means that how bigger the distance was, how bigger the positive effect had been. This result does in some way explain why the results of the interaction variables of column 2 and 3 were higher than the overall effect of the DJAI. Particularly, it shows that the DJAI had a lower positive impact for the countries that were nearest by Argentina than for countries that were far away. The countries that are accounted for when interacting the DJAI variable with contiguity and common language are all neighboring countries (excluding Spain). Therefore, this result shows that the distance could

indeed been one of the reasons for obtaining a bigger negative effect when interacting the DJAI with contiguity and common language.

With column 5 an interaction variable between DJAI and RTA has been included. This way it is possible to find out whether the effects of the DJAI differ for countries that are in a regional trade agreement with Argentina. We now obtain a result of -0.0315, which is significant at the 1% level. This means that for countries that were in a RTA, the DJAI had on average a negative effect of 3.15% on import, holding all other variables constant. With column 6, a new interaction variable is created between DJAI and whether the trading partner is landlocked. However, we obtain insignificant results for this interaction variable. This means that further interpretation is unnecessary.

Table-A5 includes the dummy interactions with CI. This table shows the results of equation 3. Column 7, 8 and 9 find insignificant results for respectively CI*Contiguity, CI*Common language and CI*Distance. This means that further analysis and interpretation on these interaction variables are not necessary. With column 10, we obtain a significant result of 0.0293 at the 10% level for the interaction variable CI*RTA. This means that in the years the product specific CI was in effect for countries that were in a RTA with Argentina, this had on average a positive impact of 2.93% on import, holding all other variables constant. In the case of the interaction variable CI*Landlocked (column 11), we obtain a significant result at the 5% level of 0.0531. This means that in the years the product specific CI was in effect for countries that are landlocked, this had on average a positive impact of 5.31% on import, holding all other variables constant. This is an odd result. One would intuitively expect that countries that are landlocked would have a harder time to export to Argentina than countries that are not landlocked due to these countries being dependent on their neighboring countries. These neighboring countries could for example put pressure on their landlocked neighbor by closing their borders. This would mean that an inclusion of a non-automatic import license (CI) should then have made exporting to Argentina even harder. However, the opposite is true. What could be a reason for this odd result is that products that now required a CI could have had an indirect positive effect on the determination of the landlocked countries to export to Argentina. With the inclusion of the CI, these countries now would have to be more certain whether they would accept to put more effort into exporting to Argentina. Due to most of the landlocked countries being developing countries and therefore dependent on trade, these countries most likely would accept the increase in effort of the CI. Therefore, in the case of

these type of countries the inclusion of a CI would not create negative effects on the amount of trade.

Table-A6 includes all interactions, except for the interaction with common language, in one specification. Column 12 shows the regression with the four DJAI interactions (equation 4), while column 13 shows the regression with the four CI interactions (equation 5). The results of column 12 show that we only obtain a significant result for the DJAI*Contiguity interaction variable. We now obtain a significant result at the 1% level of -0.1614. It shows that for the countries that shared a border with Argentina, the DJAI importing regime had on average a negative effect of 16.14% compared to countries that did not share a border, holding all other variables constant. This result is higher than that of column 2. One possible reason for a higher result could be due to a possible correlation between the interaction variables themselves and the year dummies, which then overestimates this DJAI*Contiguity coefficient. This possible correlation is also visible in the results of the year dummies. Now for the years the DJAI was in effect (2012-2015), the year dummies show bigger effects than was the case when there was only one DJAI interaction variable included (Table-A4). The results of column 13 show that we obtain significant results for the interaction variables CI*Distance and CI*Landlocked. For CI*Distance we obtain a significant result at the 10% level of 0.0398. Thus, in the years the product specific CI was in effect, the distance between Argentina and the trading partner had a positive effect of 3.98% on import, holding all other variables constant. In the case of the interaction variable CI*Landlocked, we obtain a significant result at the 5% level of 0.0628. This means that in the years the product specific CI was in effect for countries that are landlocked, this had on average a positive impact of 6.28% on import, holding all other variables constant.

6.2 PPML with multiple levels of fixed effects

As stated in the methodology, the PPML regressions are in order to account for the zero-value problems of the dependent variable import, which could lead to a bias. Furthermore, the dependent variable import will now be estimated in levels rather than log-linearized. Table-A7 and Table-A8 of the Appendix shows the results of the PPML regressions of the first three equations discussed in the methodology section. Table-A7 includes the dummy interactions with DJAI, while Table-A8 includes the dummy interactions with CI. Table-A9 will showcase the results of the regressions of equation 4 and 5.

Columns 14 shows the first regression. Looking at the first variable, Ln GDP, we can state that every percentage variation in the Ln GDP, the import is positively affected by 67.66% and is highly significant, holding all other variables constant. In contrast with the linear regression model, now the variables Tariff and CI are insignificant. Although these variables are negative, the insignificance prevents us from further interpretations. The year dummies are included to study the effect of the DJAI requirement. Looking at the results of the year dummies, one can see that every year is significant at the 1% level. As was before, interpreting the results of the year dummies will be in relation to the base year, which is in the case of this study 2009. Furthermore, table-4 of the next page shows the relative change of the year dummies in relation to each year. Thus for 2010, the Argentinian import was on average 28.58% higher than in 2009, holding all other variables constant. The import saw an increase in 2011 and was on average 44.51% higher than in 2009. When the DJAI came into effect in 2012, the import saw a decrease compared to the year prior. Now the import was on average 40.3% higher than in 2009, holding all other variables constant. The year 2013 shows an increase of the import compared with the year prior. The import was now on average 46.76% higher than in 2009, holding all other variables constant. However, the last two years the DJAI requirement was in effect, 2014 and 2015, saw a decrease compared with the years prior. Now the import was respectively 32.34% and 31.31% higher than in 2009, holding all other variables constant. 2016 followed this trend of the on average decrease in import. Now the import was respectively 24.61% higher than in 2009. A reason for this further decrease of the year dummies, could be due to the new import regime SIMI being introduced. Now the trading partners of Argentina would had to get used to the new importing regime, which could have led to an on average decrease of the import. Finally, 2017 saw an on average increase of the import compared to the year prior, while 2018 saw a decrease of the import compared to the year prior. As can be seen in Table-4, the average effect of the DJAI requirement on the Argentinian import had been -6,86%.

Table-4: Relative change in % compared to the year prior	
Year	Column 12
2010	28.58%
2011	55.74%
2012	**-9.46%**
2013	**16.03%**
2014	**-30.84%**
2015	**-3.18%**
2016	-21.4%
2017	50.83%
2018	-13.52%

Notes:

- The years the DJAI policy was in effect, are made bold
- Average effect of the DJAI = (2012+2013+2014+2015)/4
  ➔ Column 12 = -6.86%

Column 15 to 19 of Table-A7 show the results of the regressions where dummy variables are made to have an interaction with the DJAI importing requirement. As can be seen in column 15 when an interaction is created between DJAI and Contiguity, we obtain a significant result of -0.2194. This means that for the countries that shared a border with Argentina, the DJAI importing regime had on average a negative effect of 21.94% compared to countries that did not share a border, holding all other variables constant. This result is now comparably higher when using this method than was the case with the linear regression (-12.72% in column 2). Although we obtain a positive result for the interaction variable DJAI*Common Language (column 16), the result is insignificant. Thus, further interpretation of this interaction variable is unnecessary. Column 17 shows that we obtain a result of 0.0844 that is significant at the 1% level. This result shows that when interacting distance with the DJAI importing policy, the distance between Argentina and the trading partner had a positive effect of 8.44% on import, holding all other variables constant. This means that in the years the DJAI had been in effect, a bigger distance between Argentina and the trading partner had more positive effects on the import. Thus, one could also state that this result shows that the DJAI importing policy had fewer negative impacts for countries that were far away than for countries that were nearby. When interacting the DJAI with RTA, we obtain a result significant at the 1% level of -0.1495. This means that for countries that were in a RTA, the DJAI had on average a negative effect of 14.95% on import, holding all other variables constant. With column 19, an interaction variable between DJAI and whether the trading partner is landlocked is created. However, we obtain insignificant results for this interaction variable. This means that further interpretation is unnecessary.

Table-A8 includes the dummy interactions with CI. Using the PPML method, we only obtain significant results for the interaction variable CI*Common language. Now we see that in the years the product specific CI was in effect for countries that had the same language as Argentina, the CI's had on average a positive impact of 12.7% on import, holding all other variables constant. This result shows that the CI had not created negative effects when only focusing on the countries that had the same common language as Argentina. The rest of the interaction variables are insignificant and therefore won't need any further interpretation.

With Table-A9, all the interaction variables expect for DJAI*Common language are included in one specification. Column 25 shows that we only obtain a significant result for the interaction variable DJAI*Contiguity. This result shows that for the countries that shared a border with Argentina, the DJAI importing regime had on average a negative effect of 37.5% compared to countries that did not share a border, holding all other variables constant. This result is evidently higher than that of column 15 (-21.94), and might as stated before be slightly biased. Column 26 shows that we only obtain a significant result for the interaction variable CI*Contiguity and CI*RTA. For CI*Contiguity, we find that in the years the product specific CI was in effect for countries that shared a border with Argentina, this had on average a negative impact of 33.18% on import, holding all other variables constant. For CI*RTA, we find that in the years the product specific CI was in effect for countries that were in a RTA with Argentina, this had on average a positive impact of 19.4% on import, holding all other variables constant.

6.3 Hypotheses

This brings us to the hypotheses formulated in the introduction. The first hypothesis was:

- H_0 *(1): The DJAI requirement had no significant impact on the Argentinian import*
- H_A *(1): The DJAI requirement had significant impact on the Argentinian import*

In order to find the effects of the DJAI requirement on import, the results of the year dummies were studied. In both the linear regression (column 1) as the PPML regression (column 14), the year dummies have been significant at the $p<0.01$ level. Interpreting the year dummies was in relation to the base year 2009 (Table-A4 and Table-A7 of the Appendix). However, in order to look at yearly changes of the year dummies, two new tables were created, namely Table-3 and Table-4. In the linear regression, one could see that the introduction of the DJAI

in 2012 had as effect that the import relative to the base year was on average lower than the year prior. The introduction of the DJAI in 2012 showed that the import had on average decreased with 13.97% relative to the year prior. As can be seen in Table-3, the introduction of the DJAI did not bring any balance in the growth of the import. The year dummies showed that in 2013 the import increased very little compared with the year prior. However, 2014 saw a decrease of on average 19.94% of the import. On the other hand, 2015 saw on average an increase of 22% of the import. Looking at the overall change of the import in the period the DJAI was in effect shows that the DJAI had on average a negative effect of 2.3% on the Argentinian import.

Furthermore, in order to account the DJAI for certain characteristics, five new interaction variables were created. For the interaction variables DJAI*contiguity and DJAI*Common language, we found that the effect of the DJAI had become more negative. Now we found that the effects of the DJAI had become respectively -12.72% and -3.38% on the import, holding all other variables constant. This means that the average negative effect of the DJAI is higher when either accounting for the fact that the partner country has a common language as Argentina, or when accounting that the partner country shares a border with Argentina. One possible reason for this could have been the fact that the countries that either share a border with Argentina or share a common language, belong to the top trading partners of Argentina. The intuition behind this reasoning is that a policy that complicates trade, in this case the DJAI, shows more negative effects when only focusing on the top trading partners than when looking at the total average effect of the DJAI on the whole world. Another possible reason for this bigger negative effect can be found by looking at one of the base principles of the gravity model, namely that trade and distance have an inverse relationship. This means that trade would theoretically be more inclined to happen between neighboring counties (Chaney, 2011). Thus, this could therefore mean that a policy that is meant to have negative effects on the overall trade, could result in bigger negative effects for neighboring countries of Argentina that either speak the same language or share a border, as these countries are according to the gravity model more inclined to trade with each other.

This idea has been investigated by adding the interaction variable DJAI*Distance. The result of this interaction variable shows that the DJAI had a lower positive impact for the countries that were nearest by Argentina than for countries that were far away when interacting with distance. One could also say that this result shows that the DJAI importing

policy had fewer negative impacts for countries that were far away than for countries that were nearby. Therefore, this result shows that the distance could indeed been one of the reasons for obtaining a bigger negative effect when accounting for contiguity and common language, compared with when only looking at the total average import from the world. Lastly, we also found significant results for the interaction variable DJAI*RTA. The results of this interaction variable show that for countries that were in a RTA, the DJAI had on average a negative effect of 3.15% on import, holding all other variables constant. Looking at the PPML regression, one could see that the overall effect of the DJAI had been -6.86% (Table-4). When looking at the interaction variables of the PPML regressions, we found significant results for all interaction variables expect that for common language and landlocked. As can be noticed for the significant interaction variables, the direction of the effect remains the same. However, the effect now has become larger compared to the linear regressions.

To conclude, the year dummies were all significant (column 1 and 14) and the overall effect of the DJAI on the yearly change of the import has been negative in both cases. Thus, the null hypothesis is rejected, and the alternative hypothesis is accepted. This means that the DJAI requirement had significant impact on the Argentinian import. The second hypothesis was:

- H_0 *(2): The CI requirement had no significant impact on the Argentinian import*
- H_A *(2): The CI requirement had significant impact on the Argentinian import*

In order to find the effects the product specific import license CI had on Argentinian import, a dummy variable was created equaling one if the non-automatic import license was put in place for that specific product for that given year, and zero otherwise. First, by looking at the linear regressions (Table-A4) one could see that the CI has been significant at the 1% level for all equations. The results of column 1 show that in the years the product specific CI was in effect this has had on average a negative effect of 3.24% on import, holding all other variables constant. For the CI there has also been five interaction variables created (Table-A5). Of these five interaction variables, we only found significant results for RTA and landlocked.

For the interaction variable CI*RTA, we found that in the years the product specific CI was in effect for countries that were in a RTA with Argentina, this had on average a positive impact of 2.93% on import, holding all other variables constant. In the case of the interaction variable CI*Landlocked (column 11), we see that in the years the product specific CI was in

effect, this had on average a positive impact of 5.31% on the Argentinian import coming from countries that are landlocked, holding all other variables constant. These results show that for both interaction variables, the effect of the CI has become positive rather than negative when interacting with a dummy variable. Although we obtain negative coefficients for the CI variable when using the PPML method, we do obtain insignificant results. This means that further interpretation is unnecessary. However, when looking at the interaction variables in the case of the PPML method, we only obtain significant results for CI*Common language (column 21). This means that when accounting the CI for common language we find that in the years the product specific CI was in effect for the Spanish-speaking countries, this has had on average a positive effect of 12.70% on import, holding all other variables constant.

To conclude, this means that under the linear regression, the null hypothesis is rejected, and the alternative hypothesis is accepted. This means that the CI requirement had significant impact on the Argentinian import. However, this result changes when using the PPML method. Now the alternative hypothesis is rejected, and the null hypothesis is accepted, which means that the CI requirement had insignificant impact on the Argentinian import.

7 Discussion

Like many other studies, this study also has some shortcomings. In order to find what the effects of the DJAI was, the year dummies were analyzed. To find what the average effect of the DJAI was in the period of 2012 to 2015, the average was taken of the relative yearly change of the year dummies for the period 2012-2015. The year dummies control for time-specific fixed effects, i.e. economic shocks. This study allocates the complete result of these year dummy coefficients only to the non-automatic import license DJAI. However, what could also be the case is that other shocks within those years could also have had some effect on the coefficients of the year dummies. This means that, although by investigating the year dummies to interpret the results about the DJAI, the year dummies might not explicitly only be investigating the DJAI. One possible example of this can found in the result of the year dummy for 2013. In both the linear regression and the PPML, the year 2013 showed an increase of the import compared to the year prior. However, the year 2013 had also been the year in which all the CI's had been temporarily completely removed by the Argentinian government in order to gain some goodwill with the WTO. This elimination of all the CI's could have impacted the import, and therefore also the result for the year dummy 2013. Thus, by only investigating the

year dummies in order to find the effect of the DJAI, might create limitative results and could create some bias.

Furthermore, when looking at the product specific non-automatic import license CI, one could see that this study obtains significant results only for the linear regressions. For the PPML regressions this study finds insignificant results. This is therefore also a shortcoming of this study. A follow up research could correct for these problems. The results of the regressions that included all interaction variables into one specification (Table-A6 and Table-A9) might also be biased. The reason for this could be due to a possible collinearity between the many interaction variables included and the year dummies, which has resulted in a possible overestimation of some of the coefficients and therefore could be biased results.

Also, as stated in the methodology section, the linear regressions could lead to bias. The intuition behind this is found by using the findings of Santos Silva & Tenreyro (2006). The reason for this is that by taking the natural log of the import value, some import data will be dropped from the gravity model when regressing the equations. This dropping of the zeros could lead to bias. Furthermore, in the presence of heteroskedasticity, the estimates that are obtained by using this log-linearized model will lead to a distortion of the model. This bias could then lead to misleading conclusions. Therefore, a solution for these estimation problems in this study has been the Poisson Pseudo-Maximum-Likelihood (PPML) method.

Lastly, the RTTR's could also have impacted the amount of import. As was stated in section two of this study, many RTTR's complicated trade with Argentina. Since the Argentinian government had implemented many kinds of RTTR's, it was not possible to bundle all the requirements and create one specific variable that identified all of the RTTR requirements. Therefore, the RTTR requirements were not used within this study. This could therefore also have led to biased outcomes.

8 Conclusion

The main aim of this study was to assess whether the non-automatic import license systems DJAI and the CI had impact on the Argentinian import and whether this had been positive or negative. The panel data study has been conducted over 159 countries between the period 2009-2018. This bring us to the research question formulated in the introduction:

- What was the effect of the non-automatic import licenses DJAI and CI on the Argentinian import?

The DJAI requirement was a non-automatic import licensing procedure prior to importing any type of goods into Argentina from any country in the world (Ropolo, 2013). The CI on the other had were product-specific non-automatic import licenses and were processed separately from the DJAI. The CIs were mainly applied to manufacturing goods that were deemed import sensitive by the Argentinian government. Intuitively, one would expect that both the non-automatic import licenses would have only negative effects on the import. This expectation is met when looking at the DJAI requirement.

By analyzing the year dummies, this study finds that in the case of the linear regression, the DJAI had on average a negative effect of 2.3% on the Argentinian import. However, when interacting the DJAI with certain dummy variables the results change. Now we find out that the DJAI had bigger negative effects for the countries that either spoke the same language as Argentina or shared a border with Argentina. This result furthermore showed that the DJAI had bigger negative effects on the region that traded the most with Argentina, namely South America. In order to find out whether distance had any effect on the differing effects of the DJAI, an interaction variable between DJAI and distance had been created. The result of this interaction variable showed that DJAI had a lower positive impact for the countries that were nearest by Argentina than for countries that were far away. This result showed that distance might be a reason for obtaining a bigger negative effect of the DJAI for countries that either spoke the same language or shared a border with Argentina. Thus, this showed that the DJAI policy, which was meant to be negative to trade, had more negative effects on the neighboring countries than it had on the rest of the world. In the case of the PPML regressions, this study finds that the DJAI has had significant negative effects of 6.86% on the Argentinian import. The overall effects of the interaction variables that were significant in the case of the PPML method were bigger than was the case for the linear regressions. The CI on the other hand only showed significant results for the linear regressions, and not for the PPML regressions. In the case of the linear regression, we find that in the years the product specific CI was in effect, this had on average a negative impact of 3.24% on import. As stated before, due to the chance of bias of the linear regressions, the PPML results are preferred over the linear regression results.

Naturally, more extensive research is needed in order to draw further general conclusions. One example of a future study could be to incorporate more years. This way you could for example investigate the effects the different protectionist measures of the past 50

years have had on the trade of Argentina. What could also be interesting is to find out what the effects of the DJAI and CI had been per region. As is the case with every research, the results are influenced by the chosen statistical methods and the characteristics of the data. Thus, by choosing another estimation method might showcase different results. Nevertheless, the chosen gravity model is commonly used when examining trade effect and therefore fits this study.

9 Literature

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10 Appendix

Table-A1: Variables used in this study

Variable Name	Description	Source
X_{jht}	This is the bilateral trade (import) in goods of Argentina from country j at time t (in current US$) at 6-digit HS level (HS2007)	UN COMTRADE Database
GDP_{jt}	Gross domestic product of country j at time t (in current US$)	World Economic Outlook Database (IMF)
CI_{ht}	This is a dummy variable for the product-specific non-automatic import license, equaling one is the non-automatic import license was put in place for that given year, and zero otherwise	Trade Monitoring Database (WTO), Global Trade Alert
$Tariff_{jht}$	Tariffs at 6-digit HS level (HS2007)	Tariff Download Facility (WTO), World integrated Trade Solutions (WITS)
$Contiguity_{ij}$	Dummy variable whether trading partner	CEPII Database
$Common\ language_{ij}$	Dummy variable whether trading partner has the same language as Argentina (Spanish)	CEPII Database
$Distance_{ij}$	Variable for distance between trading partner and Argentina	CEPII Database
RTA_{ij}	Dummy variable whether trading partner is in a Regional Trade Agreement (RTA) with Argentina	CEPII Database
$Landlocked_j$	Dummy variable whether trading partner is landlocked	CEPII Database
δ	Time fixed effects, which also capture the Declaración Jurada Anticipada de Importación (DJAI).	WTO
u	Error term	
ln	Natural logarithm	
i	i stands for Argentina	
j	j stands for the partner country	
t	t stands for time	
h	h stands for the product	

Table-A2: Percentages of export to Argentina

	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
North America	**15.53%**	**13.15%**	**14.14%**	**16.45%**	**14.32%**	**17.91%**	**15.90%**	**13.89%**	**12.89%**	**12.84%**
Northern America	14.88%	12.18%	12.27%	13.56%	11.73%	15.03%	14.25%	13.35%	12.63%	12.58%
Caribbean	0.65%	0.97%	1.87%	2.89%	2.59%	2.88%	1.65%	0.54%	0.26%	0.25%
Central America	**3.28%**	**3.46%**	**3.78%**	**3.48%**	**3.05%**	**2.66%**	**3.18%**	**3.31%**	**3.22%**	**2.96%**
South America	**38.62%**	**38.53%**	**37.33%**	**32.80%**	**34.16%**	**30.02%**	**28.34%**	**30.99%**	**33.92%**	**32.97%**
Europe	**19.12%**	**20.16%**	**18.91%**	**21.40%**	**21.32%**	**20.90%**	**20.00%**	**20.16%**	**19.07%**	**19.47%**
Northern Europe	2.94%	2.51%	2.52%	2.65%	2.17%	2.55%	2.91%	2.62%	2.58%	2.63%
Western Europe	10.39%	11.37%	9.85%	11.65%	11.27%	10.74%	10.51%	11.00%	9.47%	9.49%
Eastern Europe	1.06%	1.72%	2.15%	2.71%	3.33%	3.07%	2.26%	2.02%	1.99%	2.35%
Southern Europe	4.73%	4.56%	4.39%	4.39%	4.54%	4.55%	4.33%	4.51%	5.04%	5.00%
Asia	**22.27%**	**23.43%**	**24.26%**	**24.68%**	**25.87%**	**26.72%**	**30.06%**	**29.85%**	**28.83%**	**29.72%**
Western Asia	0.51%	0.85%	1.21%	1.55%	2.29%	2.02%	1.23%	1.73%	1.53%	2.21%
Central Asia	0.06%	0.03%	0.01%	0.00%	0.01%	0.03%	0.02%	0.01%	0.01%	0.00%
Eastern Asia	17.41%	18.29%	19.11%	18.92%	19.29%	20.33%	24.01%	22.43%	21.63%	21.48%
South-Eastern Asia	3.10%	3.05%	2.86%	3.11%	3.11%	3.14%	3.45%	4.25%	4.29%	4.46%
Southern Asia	1.17%	1.22%	1.07%	1.09%	1.17%	1.21%	1.36%	1.43%	1.38%	1.56%
Africa	**0.63%**	**0.63%**	**0.95%**	**0.73%**	**0.98%**	**1.51%**	**2.03%**	**1.46%**	**1.61%**	**1.45%**
Northern Africa	0.33%	0.34%	0.33%	0.26%	0.26%	0.19%	0.08%	0.31%	0.30%	0.61%
Western Africa	0.01%	0.01%	0.31%	0.09%	0.36%	0.93%	1.51%	0.74%	0.77%	0.46%
Middle Africa	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.12%	0.05%	0.24%	0.04%
Eastern Africa	0.02%	0.01%	0.02%	0.02%	0.02%	0.02%	0.02%	0.03%	0.01%	0.00%
Southern Africa	0.28%	0.26%	0.30%	0.36%	0.34%	0.36%	0.30%	0.33%	0.30%	0.34%
Oceania	**0.54%**	**0.63%**	**0.62%**	**0.46%**	**0.30%**	**0.28%**	**0.49%**	**0.33%**	**0.45%**	**0.59%**

Notes:

- **Source: UN COMTRADE Database**
- **Due to rounding differences. the cumulative values of the continents might differ from the values of the separate regions when added together**

Table-A3: A more specific look on the percentages of export of South American countries to Argentina

South America	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**
Brazil	83.96%	86.86%	86.43%	81.34%	76.89%	74.29%	78.07%	79.97%	80.19%	73.54%
Paraguay	4.97%	2.11%	2.01%	2.07%	2.13%	2.58%	2.52%	4.19%	4.88%	10.27%
Uruguay	2.47%	2.84%	2.36%	2.38%	2.08%	2.40%	2.50%	2.78%	2.20%	2.22%
Bolivia	1.51%	1.70%	2.45%	5.97%	11.41%	13.18%	8.79%	5.12%	5.60%	6.81%
Chili	4.72%	4.28%	4.26%	4.63%	3.89%	4.27%	4.30%	4.02%	3.84%	3.35%
Colombia	0.77%	0.73%	0.94%	1.63%	1.75%	1.21%	1.39%	1.18%	1.05%	1.37%
Ecuador	0.98%	0.79%	0.82%	1.09%	1.10%	1.35%	1.63%	1.62%	1.45%	1.51%
Peru	0.48%	0.59%	0.64%	0.74%	0.53%	0.67%	0.77%	0.73%	0.71%	0.89%
Suriname	0.02%	0.00%	0.00%	0.03%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Venezuela	0.11%	0.10%	0.09%	0.11%	0.21%	0.05%	0.04%	0.40%	0.07%	0.04%
Guyana	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Total	**100.00%**	**100.00%**	**100.00%**	**100.00%**	**100.00%**	**100.00%**	**100.00%**	**100.00%**	**100.00%**	**100.00%**

Notes:

- **Source: UN COMTRADE Database**

Table-A4: Linear regressions with many fixed effects (including DJAI interactions)						
	(1)	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**
Ln GDP	0.4405***	0.4681***	0.4420***	0.4608***	0.4506***	0.4405***
	(18.20)	(19.05)	(18.28)	(18.82)	(18.48)	(18.19)
Tariff	-0.0020*	-0.0020*	-0.0020*	-0.0020*	-0.0020*	-0.0020*
	(-1.93)	(-1.85)	(-1.94)	(-1.90)	(-1.92)	(-1.93)
CI	-0.0324***	-0.0313***	-0.0322***	-0.0314***	-0.0325***	-0.0324***
	(-3.83)	(-3.70)	(-3.82)	(-3.71)	(-3.85)	(-3.84)
2009	0	0	0	0	0	0
	(.)	(.)	(.)	(.)	(.)	(.)
2010	0.2763***	0.2751***	0.2763***	0.2751***	0.2763***	0.2763***
	(22.95)	(22.80)	(22.94)	(22.84)	(22.89)	(22.95)
2011	0.4888***	0.4829***	0.4874***	0.4844***	0.4859***	0.4888***
	(35.98)	(35.62)	(35.95)	(35.72)	(35.81)	(35.98)
2012	0.4205***	0.4333***	0.4262***	-0.0582	0.4305***	0.4205***
	(32.05)	(32.75)	(32.08)	(-1.10)	(32.11)	(31.89)
2013	0.4319***	0.4434***	0.4376***	-0.0515	0.442***	0.4319***
	(31.81)	(32.47)	(31.86)	(-0.96)	(31.93)	(31.65)
2014	0.3458***	0.3566***	0.3512***	-0.1086**	0.3553***	0.3472***
	(25.64)	(26.24)	(25.78)	(-2.08)	(25.86)	(25.53)
2015	0.4219***	0.4362***	0.4276***	-0.0570	0.4333***	0.4233***
	(32.19)	(32.92)	(32.27)	(-1.07)	(32.28)	(32.01)
2016	0.3813***	0.3771***	0.3813***	0.3785***	0.3799***	0.3813***
	(28.25)	(27.97)	(28.24)	(28.07)	(28.13)	(28.26)
2017	0.5558***	0.5496***	0.5558***	0.5512***	0.5527***	0.5558***
	(36.75)	(36.35)	(36.73)	(36.47)	(36.58)	(36.75)
2018	0.5235***	0.5159***	0.5235***	0.5189***	0.5204***	0.5235***
	(33.74)	(33.29)	(33.72)	(33.44)	(33.55)	(33.75)
DJAI*Contiguity		-0.1272***				
		(-9.25)				
DJAI*Common language			-0.0338**			
			(-2.52)			
DJAI*Distance				0.0455***		
				(7.65)		
DJAI*RTA					-0.0315***	
					(-3.15)	
DJAI*Landlocked						-0.0060
						(-0.37)
Constant	1663.0339***	1452.8929***	1646.4765***	1509.204***	1586.6338***	1664.6988***
	(53.98)	(52.64)	(53.91)	(53.04)	(53.46)	(53.99)
N	449202	449202	449202	449202	449202	449202

Notes:

- t statistics in parentheses: * p<0.1. ** p<0.05. *** p<0.01
- In order to find the absolute value of the increase of imports. the formula of the anti-log. e^{a} - e^{0}. is used. where the superscript a stand for the coefficient

Table-A5: Linear regressions with many fixed effects (including CI interactions)					
	(7)	**(8)**	**(9)**	**(10)**	**(11)**
Ln GDP	0.4405***	0.4405***	0.4405***	0.4391***	0.4405***
	(18.22)	(18.20)	(18.18)	(18.16)	(18.22)
Tariff	-0.0020*	-0.0020*	-0.0020*	-0.0020*	-0.0020*
	(-1.92)	(-1.93)	(-1.93)	(-1.91)	(-1.93)
CI	-0.0344***	-0.0328***	-0.0419***	-0.0404***	-0.0371***
	(-3.94)	(-3.73)	(-0.44)	(-4.29)	(-4.26)
2009	0	0	0	0	0
	(.)	(.)	(.)	(.)	(.)
2010	0.2763***	0.2763***	0.2763***	0.2763***	0.2763
	(22.94)	(22.95)	(22.95)	(22.96)	(22.95)
2011	0.4874***	0.4888***	0.4888***	0.4888***	0.4874***
	(35.96)	(35.97)	(35.97)	(35.99)	(35.97)
2012	0.4205***	0.4205***	0.4205***	0.4205***	0.4205***
	(32.04)	(32.05)	(32.05)	(32.07)	(32.04)
2013	0.4305***	0.4319***	0.4319***	0.4319***	0.4305***
	(31.79)	(31.81)	(31.80)	(31.83)	(31.80)
2014	0.3458***	0.3458***	0.3458***	0.3472***	0.3458***
	(25.62)	(25.64)	(25.64)	(25.66)	(25.64)
2015	0.4219***	0.4219***	0.4219***	0.4219***	0.4219***
	(32.18)	(32.19)	(32.19)	(32.21)	(32.19)
2016	0.3813***	0.3813***	0.3813***	0.3813***	0.3813***
	(28.24)	(28.25)	(28.25)	(28.27)	(28.24)
2017	0.5558***	0.5558***	0.5558***	0.5558***	0.5558***
	(36.74)	(36.75)	(36.74)	(36.77)	(36.74)
2018	0.5235***	0.5235***	0.5235***	0.5235***	0.5235***
	(33.72)	(33.74)	(33.74)	(33.78)	(33.74)
CI*Contiguity	0.0270				
	(1.02)				
CI*Common language		0.0039			
		(0.16)			
CI*Distance			0.0011		
			(0.10)		
CI*RTA				0.0293*	
				(1.71)	
CI*Landlocked					0.0531**
					(1.97)
Constant	1656.3911***	1663.0339***	1664.6988***	1673.0481***	1658.0493***
	(53.91)	(53.97)	(53.91)	(54.03)	(53.96)
N	449202	449202	449202	449202	449202

Notes:

- t statistics in parentheses: * p<0.1. ** p<0.05. *** p<0.01
- In order to find the absolute value of the increase of imports, the formula of the anti-log, e^{a} - e^{0}, is used, where the superscript a stand for the coefficient

Table-A6: Linear regressions with many fixed effects (including DJAI and CI interactions)		
	(12)	**(13)**
ln GDP	0.4667***	0.4376***
	(18.96)	(18.08)
Tariff	-0.0019*	-0.0020*
	(-1.85)	(-1.90)
CI	-0.0312***	-0.3397**
	(-3.69)	(-1.99)
2009	0	0
	(.)	(.)
2010	0.2751***	0.2763***
	(22.81)	(22.96)
2011	0.4829***	0.4888***
	(35.64)	(36.00)
2012	0.5936***	0.4205***
	(3.92)	(32.08)
2013	0.6048***	0.4319***
	(3.98)	(31.83)
2014	0.5083***	0.3472***
	(3.46)	(25.67)
2015	0.5968***	0.4233***
	(3.93)	(32.21)
2016	0.3771***	0.3813***
	(27.98)	(28.27)
2017	0.5496***	0.5558***
	(36.37)	(36.77)
2018	0.5174***	0.5250***
	(33.33)	(33.78)
DJAI*Contiguity	-0.1614***	
	(-5.20)	
DJAI*Distance	-0.0114	
	(-0.92)	
DJAI*RTA	0.0181	
	(1.45)	
DJAI*Landlocked	-0.0065	
	(-0.40)	
CI*Contiguity		0.0979
		(1.58)
CI*Distance		0.0398*
		(1.76)
CI*RTA		0.0318
		(1.56)
CI*Landlocked		0.0628**
		(2.30)
Constant	1471.92***	1681.44***
	(52.75)	(53.96)
N	449202	449202

Notes:

- t statistics in parentheses: * p<0.1. ** p<0.05. *** p<0.01

Table-A7: PPML (including DJAI interactions)						
	(14)	(15)	(16)	(17)	(18)	(19)
Ln GDP	0.6766***	0.7202***	0.6766***	0.7113***	0.7116***	0.6786***
	(10.76)	(11.06)	(10.77)	(11.04)	(11.14)	(11.00)
Tariff	-0.0012	-0.0004	-0.0012	-0.0007	-0.0011	-0.0012
	(-0.52)	(-0.19)	(-0.51)	(-0.31)	(-0.48)	(-0.54)
CI	-0.0175	-0.0129	-0.0178	-0.0108	-0.0124	-0.0204
	(-0.69)	(-0.52)	(-0.71)	(-0.43)	(-0.50)	(-0.82)
2009	0	0	0	0	0	0
	(.)	(.)	(.)	(.)	(.)	(.)
2010	0.2858***	0.2769***	0.2858***	0.2790***	0.2788***	0.2854***
	(5.84)	(5.61)	(5.84)	(5.66)	(5.67)	(5.87)
2011	0.4451***	0.4290***	0.4452***	0.4323***	0.4322***	0.4450***
	(9.61)	(9.15)	(9.62)	(9.25)	(9.29)	(9.70)
2012	0.4030***	0.4633***	0.4021***	-0.3434**	0.4610***	0.3958***
	(8.51)	(9.70)	(8.36)	(-2.27)	(9.46)	(8.29)
2013	0.4676***	0.5266***	0.4667***	-0.2790*	0.5252***	0.4594***
	(9.03)	(10.18)	(9.12)	(-1.77)	(9.92)	(9.14)
2014	0.3234***	0.3803***	0.3224***	-0.4250***	0.3797***	0.3152***
	(6.08)	(7.23)	(6.09)	(-2.69)	(7.09)	(6.04)
2015	0.3131***	0.370***	0.3120***	-0.4354***	0.3705***	0.3048***
	(7.06)	(8.25)	(6.91)	(-2.89)	(8.00)	(6.82)
2016	0.2461***	0.2358***	0.2462***	0.2381***	0.2369***	0.2470***
	(5.26)	(5.10)	(5.26)	(5.13)	(5.08)	(5.31)
2017	0.3712***	0.3564***	0.3713***	0.3595***	0.3584***	0.3720***
	(7.06)	(6.95)	(7.06)	(6.95)	(6.89)	(7.11)
2018	0.3210***	0.3083***	0.3210***	0.3122***	0.310***	0.3207***
	(5.95)	(5.82)	(5.96)	(5.87)	(5.79)	(5.95)
DJAI*Contiguity		-0.2194***				
		(-5.43)				
DJAI*Common language			0.0088			
			(0.12)			
DJAI*Distance				0.0844***		
				(5.31)		
DJAI*RTA					-0.1495***	
					(-4.19)	
DJAI*Landlocked						0.1404
						(0.95)
Constant	11.63***	11.30***	11.63***	11.37***	11.37***	11.62***
	(24.71)	(23.18)	(24.73)	(23.55)	(23.77)	(25.16)
N	889814	889814	889814	889814	889814	889814

Notes:

- t statistics in parentheses: * p<0.1. ** p<0.05. *** p<0.01

Table-A8: PPML (including CI interactions)					
	(20)	**(21)**	**(22)**	**(23)**	**(24)**
Ln GDP	0.6775***	0.6795***	0.6760***	0.6767***	0.6764***
	(10.80)	(10.81)	(10.76)	(10.75)	(10.76)
Tariff	-0.0012	-0.0011	-0.0012	-0.0011	-0.0012
	(-0.52)	(-0.48)	(-0.52)	(-0.50)	(-0.52)
CI	0.00327	-0.0277	-0.182	-0.0339	-0.0159
	(0.12)	(-1.08)	(-1.22)	(-1.22)	(-0.62)
2009	0	0	0	0	0
	(.)	(.)	(.)	(.)	(.)
2010	0.2856***	0.2854***	0.2859***	0.2859***	0.2858***
	(5.83)	(5.82)	(5.84)	(5.83)	(5.84)
2011	0.4469***	0.4436***	0.4466***	0.4439***	0.4451***
	(9.67)	(9.58)	(9.66)	(9.57)	(9.61)
2012	0.4046***	0.4015***	0.4044***	0.4018***	0.4030***
	(8.58)	(8.49)	(8.57)	(8.49)	(8.51)
2013	0.4664***	0.4665***	0.4673***	0.4680***	0.4676***
	(9.00)	(9.01)	(9.02)	(9.03)	(9.03)
2014	0.3224***	0.3222***	0.3232***	0.3238***	0.3235***
	(6.04)	(6.05)	(6.07)	(6.08)	(6.08)
2015	0.3125***	0.3121***	0.3131***	0.3132***	0.3131***
	(7.04)	(7.03)	(7.05)	(7.06)	(7.06)
2016	0.2432***	0.2456***	0.2443***	0.2475***	0.2462***
	(5.21)	(5.25)	(5.22)	(5.27)	(5.26)
2017	0.3677***	0.3708***	0.3693***	0.3730***	0.3714***
	(7.02)	(7.06)	(7.04)	(7.09)	(7.06)
2018	0.3192***	0.3201***	0.3205***	0.3218***	0.3211***
	(5.93)	(5.94)	(5.95)	(5.96)	(5.96)
CI*Contiguity	-0.0622				
	(-1.61				
CI*Common language		0.1270**			
		(2.03)			
CI*Distance			0.0188		
			(1.14)		
CI*RTA				0.0363	
				(0.96)	
CI*Landlocked					-0.0851
					(-0.87)
Constant	11.62***	11.61***	11.63***	11.63***	11.63***
	(24.77)	(24.68)	(24.74)	(24.68)	(24.71)
N	889814	889814	889814	889814	889814

Notes:

- t statistics in parentheses: * p<0.1. ** p<0.05. *** p<0.01

Table-A9: PPML (including DJAI and CI interactions)		
	(25)	**(26)**
Ln GDP	0.7258***	0.6826***
	(11.65)	(10.90)
Tariff	-0.0003	-0.0009
	(-0.15)	(-0.40)
CI	-0.0196	0.4621
	(-0.81)	(1.11)
2009	0	0
	(.)	(.)
2010	0.2755***	0.2850***
	(5.65)	(5.81)
2011	0.4279***	0.4437***
	(9.29)	(9.61)
2012	1.0609**	0.4015***
	(2.30)	(8.52)
2013	1.1220**	0.4646***
	(2.47)	(8.96)
2014	0.9754**	0.3202***
	(2.13)	(6.00)
2015	0.9652**	0.3107***
	(2.12)	(7.00)
2016	0.2365***	0.2435***
	(5.20)	(5.21)
2017	0.3567***	0.3678***
	(7.07)	(7.04)
2018	0.3062***	0.3177***
	(5.81)	(5.90)
DJAI*Contiguity	-0.3750***	
	(-2.85)	
DJAI*Distance	-0.0644	
	(-1.34)	
DJAI*RTA	0.0082	
	(0.15)	
DJAI*Landlocked	0.2226	
	(1.47)	
CI*Contiguity		-0.3318***
		(-2.85)
CI*Distance		-0.0519
		(-1.18)
CI*RTA		0.1940***
		(3.43)
CI*Landlocked		-0.0707
		(-0.72)
Constant	11.26***	11.58***
	(24.10)	(24.71)
N	889814	889814

Notes:

- t statistics in parentheses: * p<0.1. ** p<0.05. *** p<0.01

Table-A10: List of all the countries used in this panel study

1	AFG	Afghanistan	**41**	CZE	Czech Republic
2	ALB	Albania	**42**	DEU	Germany
3	ALG	Algeria	**43**	DJI	Djibouti
4	ANG	Angola	**44**	DMA	Dominica
5	ARE	United Arab Emirates	**45**	DNK	Denmark
6	ARM	Armenia	**46**	DOM	Dominican Republic
7	ATG	Antigua and Barbuda	**47**	ECU	Ecuador
8	AUS	Australia	**48**	EGY	Egypt
9	AUT	Austria	**49**	ERI	Eritrea
10	AZE	Azerbaijan	**50**	ESP	Spain
11	BDI	Burundi	**51**	EST	Estonia
12	BEL	Belgium	**52**	ETH	Ethiopia
13	BEN	Benin	**53**	FIN	Finland
14	BFA	Burkina Faso	**54**	FJI	Fiji
15	BGD	Bangladesh	**55**	FRA	France
16	BGR	Bulgaria	**56**	GAB	Gabon
17	BHR	Bahrein	**57**	GBR	United Kingdom
18	BHS	Bahamas	**58**	GEO	Georgia
19	BIH	Bosnia and Herzegovina	**59**	GHA	Ghana
20	BLR	Belarus	**60**	GIN	Guinea
21	BLZ	Belize	**61**	GMB	Gambia
22	BOL	Bolivia	**62**	GNQ	Equatorial Guinea
23	BRA	Brazil	**63**	GRC	Greece
24	BRB	Barbados	**64**	GTM	Guatemala
25	BRN	Brunei Darussalam	**65**	GUY	Guyana
26	BTN	Bhutan	**66**	HND	Honduras
27	BWA	Botswana	**67**	HRV	Croatia
28	CAF	Central African Republic	**68**	HTI	Haiti
29	CAN	Canada	**69**	HUN	Hungary
30	CHE	Switzerland	**70**	IDN	Indonesia
31	CHL	Chile	**71**	IND	India
32	CHN	China	**72**	IRL	Ireland
33	CIV	Cote d'Ivoire	**73**	IRN	Iran
34	CMR	Cameroon	**74**	IRQ	Iraq
35	COG	Congo	**75**	ISL	Iceland
36	COL	Colombia	**76**	ISR	Israel
37	COM	Comoros	**77**	ITA	Italy
38	CPV	Cape Verde	**78**	JAM	Jamaica
39	CRI	Costa Rica	**79**	JOR	Jordan
40	CYP	Cyprus	**80**	JPN	Japan

Table-A11: List of all the countries used in this panel study (Cont'd)

81	KAZ	Kazakhstan	**121**	PER	Peru
82	KEN	Kenia	**122**	PHL	Philippines
83	KGZ	Kyrgyzstan	**123**	PNG	Papua New Guinea
84	KHM	Cambodia	**124**	POL	Poland
85	KOR	Republic of Korea	**125**	PRT	Portugal
86	KWT	Kuwait	**126**	PRY	Paraguay
87	LAO	Laos	**127**	QAT	Qatar
88	LBN	Lebanon	**128**	ROU	Romania
89	LBR	Liberia	**129**	RUS	Russian Federation
90	LBY	Libya	**130**	SAU	Saudi Arabia
91	LKA	Sri Lanka	**131**	SDN	Sudan
92	LSO	Lesotho	**132**	SEN	Senegal
93	LTU	Lithuania	**133**	SGP	Singapore
94	LUX	Luxembourg	**134**	SLE	Sierra Leone
95	LVA	Latvia	**135**	SLV	El Salvador
96	MAR	Morocco	**136**	SUR	Suriname
97	MDA	Republic of Moldova	**137**	SVK	Slovakia
98	MDG	Madagascar	**138**	SVN	Slovenia
99	MEX	Mexico	**139**	SWE	Sweden
100	MKD	The Former Yugoslav Republic of Macedonia	**140**	SWZ	Swaziland
101	MLI	Mali	**141**	TCD	Chad
102	MLT	Malta	**142**	TGO	Togo
103	MMR	Myanmar	**143**	THA	Thailand
104	MNG	Mongolia	**144**	TKM	Turkmenistan
105	MOZ	Mozambique	**145**	TTO	Trinidad and Tobago
106	MRT	Mauritania	**146**	TUN	Tunisia
107	MUS	Mauritius	**147**	TUR	Turkey
108	MWI	Malawi	**148**	TZA	United Republic of Tanzania
109	MYS	Malaysia	**149**	UGA	Uganda
110	NAM	Namibia	**150**	UKR	Ukraine
111	NER	Niger	**151**	URY	Uruguay
112	NGA	Nigeria	**152**	USA	United States
113	NIC	Nicaragua	**153**	UZB	Uzbekistan
114	NLD	Netherlands	**154**	VEN	Venezuela
115	NOR	Norway	**155**	VNM	Viet Nam
116	NPL	Nepal	**156**	YEM	Yemen
117	NZL	New Zealand	**157**	ZAF	South Africa
118	OMN	Oman	**158**	ZMB	Zambia
119	PAK	Pakistan	**159**	ZWE	Zimbabwe
120	PAN	Panama			