TRABAJO DE GRADUACIÓN

LICENCIATURA EN ECONOMÍA

Exchange Controls and International Trade: Evidence on Argentina Imports

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I. INTRODUCTION AND MOTIVATION

This Thesis will study the effects of capital and foreign exchange controls on international trade, focusing on the Argentine case between 2006 and 2016. Specifically, it will try to evaluate if the tightening capital and exchange controls that began to arise in 2011 led to lower trade volumes with the rest of the world. If that was the case, these exchange and capital controls would have acted as another type of trade barrier.

Over the past few decades, there has been significant production of economic literature on capital controls and when could these be appropriate. Another connection that has been widely studied is that between overvalued exchange rates and trade protection. However, the literature on the effects of capital and foreign exchange (FX) controls on trade flows has not been as substantial. Tamirisa (1999), however, is one of the two exceptions that this study is aware of—with a sample of 40 countries, it is analyzed if capital and exchange controls had some effect on exports during 1996. The author finds that capital controls significantly reduce exports in developing countries, while foreign exchange controls do not have a sizable impact. Eight years later, and with much more data available, Wei and Zhang (2007) expanded that study to include 142 countries and a ten-year period and found mixed results—the controls on capital transactions showed no significant effect on import flows, the ones on trade payments showed a negative and highly significant effect, and the coefficient of the restrictions on foreign exchange transactions was negative as expected, but not always significant. Thus, according to Wei and Zhang (2007), the restrictions on trade payments would appear to be the only ones having a significant negative effect on international trade.

Particularly, turning to Argentina's case, the costs that these controls pose on trade flows are yet to be explored in further detail. The opportunity of investigating this question becomes even more relevant when considering the country's historic and more recent developments. On the one hand, Argentina's exposure to trade has been especially low when

compared to other emerging market economies—between 2010 and 2017, the country's imports and exports accounted for an average of only 30% of GDP (Grundke and Arnold, 2019). On the other hand, the history suggests that Argentina had some type of exchange control in place in 24 out of the 57 years comprised in the 1963–2019 period (Cronista, 2019). Therefore, this high presence of exchange controls and the low exposure to trade make Argentina the perfect case study to explore these connections. Specifically turning to the 2004–2016 period, it was during late 2011 and early 2012 when the Argentine government tightened both capital and foreign exchange controls. Figure 1 shows how, by 2010, Argentina's declining financial account balance had already turned negative, exhibiting the rising capital outflows that the country was experiencing. As a consequence, this started driving down the value of the Argentine peso and this, in turn, threatened to stoke an already high inflation. At the same time, the growth in the country's foreign exchange reserves had stalled (Figure 2), adding further concerns within the government that the macroeconomic environment was deteriorating. Therefore, in November 2011—and as the economy's woes intensified—the Argentine government imposed a measure by which approval from the AFIP[1] was now required for every foreign exchange transaction that took place within the country, essentially impeding the purchase of dollars. Later, in February 2012, the controls tightened even more as companies in need of paying imports, servicing foreign currency denominated debt, or simply sending money abroad were required to get an authorization as well, in their case coming from the central bank. By August that same year, a 20% tax on credit card payments in foreign currency and even more restrictions on the purchase of US dollars had also been imposed. The underlying motive behind all these restrictions was, then, to impede a depreciation of the currency, a rise in capital outflows, and further drain in international reserves.

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[1] AFIP, acronym for Administración Nacional de Ingresos Públicos, is the government entity that administers taxation in Argentina

In 2012, these developments in the foreign exchange market coincided with a significant decline in Argentina's total imports (Figure 3). This goes in line with what one would expect to see, as the new taxes and restrictions on the conversion of one currency to another increase costs for importers, which almost automatically leads them to import less. Once again, thereby, the question of whether strengthening controls on capital and exchange transactions led to a decline in Argentina's total imports comes out as a relevant one to study.

With this in mind, this paper will build on Wei and Zhang's study (2007), which, as mentioned earlier, investigated the negative effects of exchange controls on trade. More specifically, following the authors' methodology, three restriction indices will be created based on the IMF's Annual Report on Exchange Arrangements and Exchange Restrictions (AREAER) database[2], which tracks member countries' exchange controls with up to 192 indicators. Those indicators are then divided into three broad categories—controls on trade payments (CTP), controls on capital transactions (CCT), and controls on foreign exchange transactions and other items (CFXTO)—and an index is constructed for each one of them. Afterwards, and also following Wei and Zhang (2007), this paper estimates an augmented gravity model, which has Argentina's imports as the dependent variable and the three restrictions indices, tariff rates, GDP, distance between the country and its trade partners, common language, and others as the key explanatory ones.

The results find no strong links between the restriction indices and the import flows in Argentina. Even though all three indices have the expected sign and are statistically significant to the 10% level when they are introduced into the model one by one, they are not statistically significant in the main equation of interest, where they are all included in the estimation. Further research on this topic will be needed to understand the reasons why we observe these results.

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[2] https://www.elibrary-areaer.imf.org/Pages/Home.aspx

Figure 1. Argentina's net financial account (quarterly)

Source: FRED, OECD
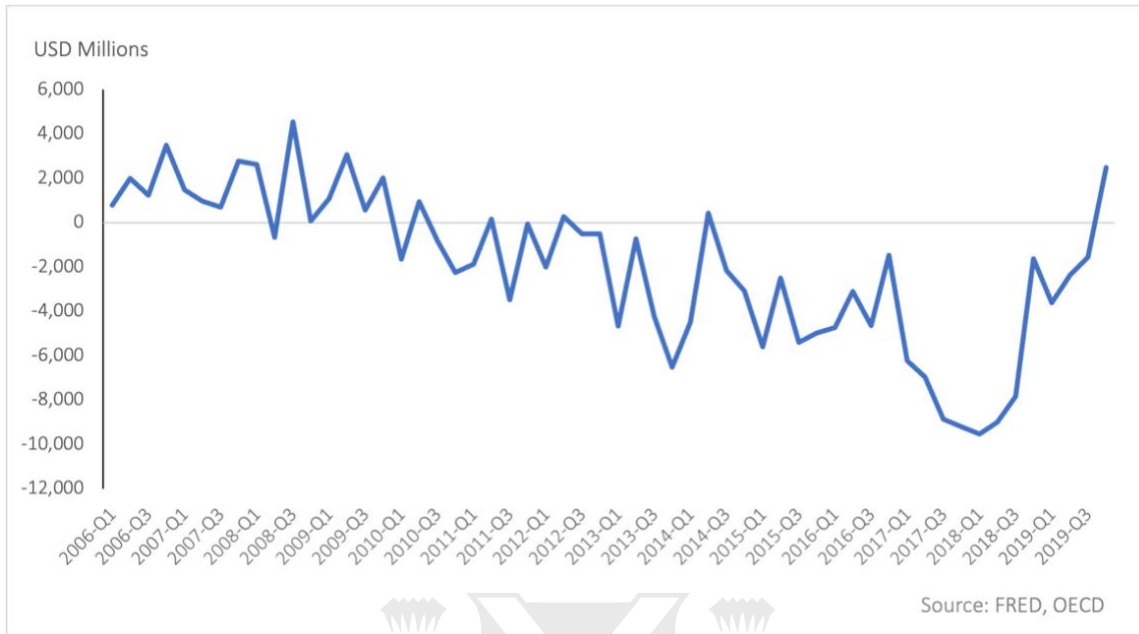
Figure 2. Argentina's foreign exchange reserves (monthly)

Source: IMF (IRFCL Database)
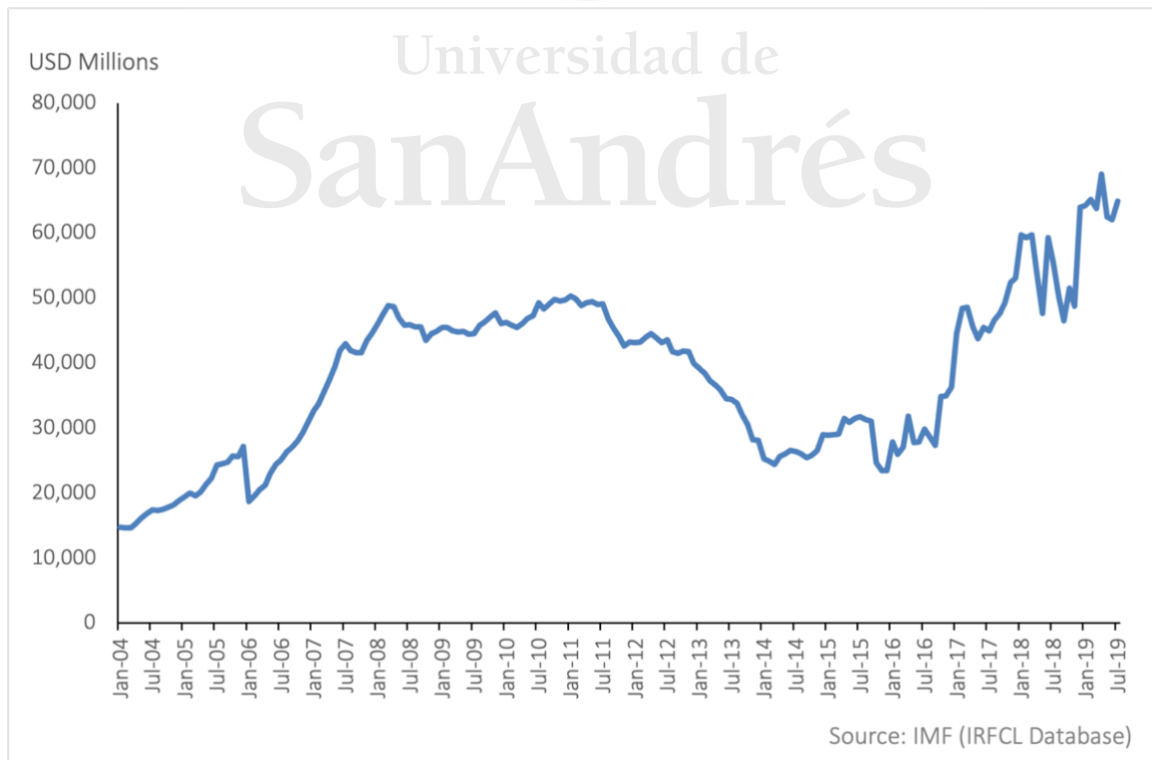
Figure 3. Argentina's total imports (yearly)

Source: WITS, UN Comtrade
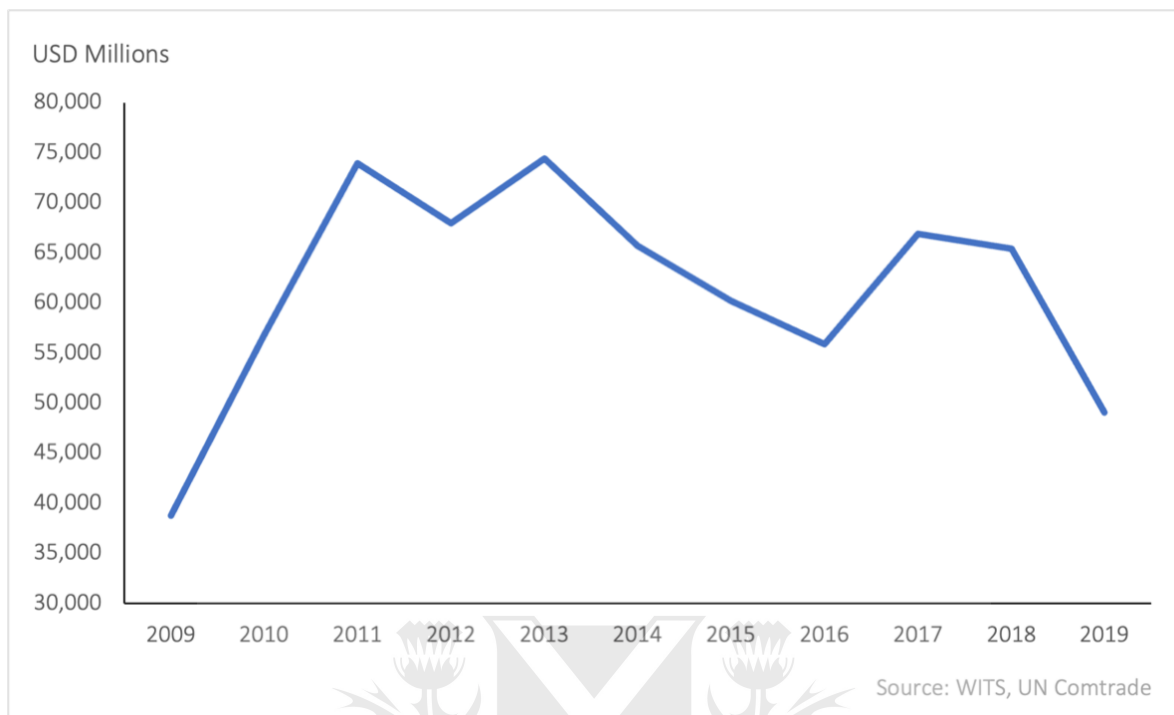
II. LITERATURE REVIEW

The literature on capital controls has been consistently large over the past decades. As Fernández *et al.* (2016) explain, during the 90s there was all but a consensus around the idea that capital controls were not a sound policy, and therefore countries should move away from them. However, as these authors also mention, in recent decades there has been a shift towards greater acceptance of capital controls. In other words, the new general agreement appears to be that, under certain conditions, capital controls could be an appropriate measure for emerging market economies. Precisely, Ostry *et al.* (2011) analyze which those "certain conditions" could be. When a surge in capital inflows is materialized in a very sudden way, some prudential concerns and macroeconomic factors have to be taken into account while deciding how to respond to that scenario. What the authors argue, on the one hand, is that when there is a risk of excessive borrowing directly from abroad or the prudential regulation does not work, capital controls could be useful as a last resource measure. On the other hand, in terms of

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macroeconomic concerns, Ostry *et al.* (2011) indicate that a whole set of conditions should be in place for the imposition of capital controls to be justified. First of all, the exchange rate should not be undervalued when the capital inflow materializes. Next, reserves accumulation should not be desirable (or if they are, the sterilization would have to have limits). Finally, there should be inflationary concerns and no scope for fiscal tightening within the country.

In short, then, it would be advisable to have capital controls as part of the policymakers' toolkit, as these can, *only when temporary*, be successful in preventing a massive appreciation of the currency or high foreign currency exposure—however, and most importantly, Ostry *et al.* (2011) conclude that all other choices should be exhausted first, as these restrictions also pose several damaging costs to the economy (less financing for SMEs, added systemic pressures, among others).

Holanda (2000) takes an interesting approach and analyzes the channels through which, during the 1980s, exchange controls led to a rapid rise on illegal trade in Brazil. In his study, the author explains how, very often, exchange controls lead to a problem of distortion in resource allocation. When governments restrict the conversion of one currency to another (foreign exchange controls) and/or the movement of wealth across borders (capital controls), it is very common to see a boom in parallel/black markets—as the exchange rate in these markets will be more devalued than the official rate, this will create incentives for exporters to keep their businesses off the books so as to access the black market.

A more devalued black-market rate brought by the capital and exchange controls translates into an official rate that will be overvalued. In this sense, another area in which the literature seems to have reached a consensus is the one that examines those connections between an overvalued currency and trade barriers. Shatz and Tarr (2002), for instance, assert that an overvalued currency can reduce trade through several channels: Firstly, the country will lose competitiveness against its major partners, which will affect exporters' ability to sell their

products to the rest of the world (domestic price is now relatively higher). On the importers side, the authors explain how the lower availability of foreign currency, along with the increased competition pressure coming from abroad, will cause imports to go down. Therefore, considering this double-negative effect on both importers and exporters, Shatz and Tarr (2002) conclude that countries who deliberately maintain their exchange rates overvalued would be basically adopting another form of non-tariff barrier to trade. In this sense, an argument could be made that, given the fact that exchange controls often lead to an unsustainable and too strong (official) exchange rate, these restrictions could be affecting trade in a more indirect way. That is, the logic would be exchange controls leading to an overvaluation of the official rate, and this, in turn, leading to lower trade flows.

Tamirisa's (1999), however, is one of the few papers that embarks in studying the possible *direct* relationship between capital and foreign exchange controls on international trade. For a 40-country sample in 1996, the author creates three separate indices that capture the extent of capital and exchange controls in each country. The data used to construct these indices, just as in Wei and Zhang (2007) and, thereby, this paper, comes from the IMF's AREAER. The main equation to be estimated derives from the gravity model of bilateral trade and thus includes variables such as the exports from country k to country j, their populations, per capita incomes, and geographical distance between them, among others. Most importantly, the author focuses on the *trade distortion* terms—the three control indices and the import duty imposed by country j to country k. The dependent variable is defined as the natural log of *exports* and it is estimated for just one year due to lack of data (the AREAER database was created in 1996). That is, instead of using panel data (as this study will do), the author relied on cross-sectional data to do the empirical analysis, which means there were no country-time fixed effects. As to the paper's results, Tamirisa (1999) finds that "*exchange and capital controls are a notable barrier to trade in developing and transitioning economies but not in*

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industrial economies" (pp. 79, 80). Conversely, no significant effects were found in terms of controls on current payments and transfers.

Finally, and most importantly, the existing paper that served as a motivation for analyzing Argentina's case, and the one on which this study will build upon, is Wei and Zhang's (2007). These authors took a similar approach than Tamirisa (1999) in terms of the construction of the control indices and the general hypothesis. However, given the much greater data availability, Wei and Zhang (2007) innovated by not only adding the time-series dimension to the cross-section data, but also by including a measure for non-tariff barriers (NTBs), which nowadays is considered very important for trade flows. That is, instead of doing the analysis for 40 countries in just one year, the authors estimate the exchange controls' negative effect on trade by looking into 142 countries over ten years. As Tamirisa (1999), Wei and Zhang (2007) use the IMF's AREAER data to construct three separate indicators for controls on FX transactions and other items (CFXTO), controls on trade-related payments (CTP), and controls on capital transactions (CCT). After that, these indices are included into the benchmark model as explanatory variables, together with tariff rates, an NTB index, importer, exporter, and year fixed effects, and standard-gravity-model variables such as log GDP, great circle distance, and dummies for common language, colonial links, and shared borders. For their benchmark results, Wei and Zhang (2007) find that the coefficient on CCT is consistently insignificant (it even turns positive), while the one on CFXTO is statistically significant when the indices are introduced one by one but insignificant when introduced all together (though always presents the expected negative sign), and the one on CTP remains significant (and with the expected negative sign) all across. What is more, the authors calculate a tariff-equivalent measure of the restriction indices' effect on trade and find that *"an increase in [the CTP index] by one standard deviation would have the same negative effect on trade as rising tariff rate by [...] 14.3 percentage points"* (Wei and Zhang, 2007, p. 849).

All in all, then, although it is not that large relative to other topics', the literature on the effect of exchange and capital controls on international trade still provides some useful insights and certainly motivates this particular study, which will try to apply the mentioned framework in the specific case of Argentina.

III. ECONOMETRIC MODEL

The main equation to be estimated, as Wei and Zhang's (2007), is derived from the gravity model. This theory argues that trade flows are determined by the countries' size, proximity, shared border, cultural aspects, among other common factors. The econometric model looks as follows:

$$\ln(imports)_{it} = \beta_1\,CCT_t + \beta_2\,CFXTO_t + \beta_3\,CTP_t + \beta_4\,Tariff_{it} + \beta_5\ln(GDP_t) + \beta_6\ln(GDP_{it}) +$$

$$\beta_7 Dist_i + \beta_8 Contig_i + \beta_9 ComLang_i + \beta_{10} ComRelig_i + \beta_{11} ComLeg_i + \beta_{12} Sibling_i + \beta_{13} RTA_{it}$$

$$+\beta_{14} WTO_{it} + \epsilon_{it} \qquad\qquad \textbf{(7)}$$

where the dependent variable is the natural log of Argentina's imports from foreign country i in year t, and the first three explanatory variables are (1) the control on capital transactions' index in period t, (2) the index for controls on foreign exchange and other transactions, and (3) the one for controls on trade payments index—all of them in period t and common to all trading partners, which is why they do not depend on any country i (they are measures of Argentina's policies towards the rest of the world). Given the discussion introduced in the previous sections, these first three variables would be expected to have negative coefficients—this paper's hypothesis is that more restrictive controls (that is, the indices rising in value) will lead to a lower total number of imports. What is more, $Tariff_{it}$ is a simple average of the effectively rate applied by Argentina to country i, in period t. As conventional knowledge on international trade theory suggests, this coefficient is expected to be negative, as higher tariff rates undoubtedly

lead to fewer imports. What is more, this equation includes the variables in the gravity model that have consistently been found significant over previous studies (Wei and Zhang, 2007). Firstly, $\ln(GDP_t)$ represents Argentina's GDP, while $\ln(GDP_{it})$ is the GDP for each trade partner i in year t. These two, per the gravity model literature, are expected to be positive—when the size of the countries expand, increased trade flows are anticipated as a result. Additionally, another key variable of interest is $Dist_i$, which represents the population-weighted distance between Argentina's and country i's most populated cities. The distances between cities do not change over time, reason why this variable does not have the t subscript. As the gravity theory suggests, this sign is almost always going to be negative—the farther the distance between two countries, the lower the trade flows between them will be on average (mainly due to transportation costs). A similar analysis applies to $Contig_i$, a dummy variable that equals 1 if country i is contiguous to Argentina and 0 otherwise. $ComLang_i$, $ComLeg_i$, and $Sibling_i$ are all dichotomous variables as well, indicating if Argentina and country i share common official or primary language, if the pair shares common legal origins after 1991, and if they ever had the same colonizer, respectively. In all cases, the dummies equal to 1 if Argentina and country i share that particular common aspect – positive signs would be expected on these, as they mean that, if they share those aspects, the countries will be likely to have greater trade flows. $ComRelig_i$, for its part, represents a religious proximity index (positive sign expected). The last two dummy variables are RTA_{it} and WTO_{it}, which indicate if Argentina and country i share a regional trade agreement in year t, and if trade partner i is a member of the World Trade Organization in year t (both equaling 1 when they are members).

Therefore, what this study does is, as in Wei and Zhang (2007), start with the gravity model—including some additional variables than the authors do not consider in their paper, such as $ComRelig_i$, $ComLeg_i$ and RTA_{it}—to then add four additional variables of interest, these being the three restriction indices and the tariff rate simple average. Contrary to the authors'

study, however, this econometric model does not include a measure for non-tariff barriers (NTBs) due to lack of data.

IV. DATA

This paper uses three main different data sources, which are then merged into one single database. The IMF's AREAER *"tracks the exchange rate and trade regimes of all members of the International Monetary Fund"*[3] and is used to construct the exchange indices; the TRAINS database, part of WITS from the World Bank, delivers the data for import volumes and tariffs[4]; and the CEPII Gravity database[5] provides all the necessary information to estimate the gravity model of international trade (i.e., geographical distances, cultural indicators, among others). Overall, then, this sample consists of panel data—it tracks Argentina and the 206 countries from which it imported some positive amount across the 2006–2016 period.

To construct the restriction indices, the available data from the IMF's AREAER database is first divided into three main categories: controls on trade payments, controls on capital transactions, and controls on foreign exchange and other transactions. The first broad category, controls on trade payments (CTP), includes 27 subcategories that indicate, for example and among many other things, whether there are financing or documentation requirement for import payments, or if there are export taxes in place. The controls on capital transactions (CCT) category includes 83 subcategories, while the controls on foreign exchange and other transactions (CFXTO) includes 69. The full list for these subcategories can be found in the Appendix. Each one of the 179 subcategories is a dichotomous variable—either there is or there is not an active control in place in such subcategory. This study, then, will manually

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create a dummy variable for each one of the 179 indicators, taking the value of 1 if the specific control is in place, and 0 if it is not. After that, the three restriction indices will be calculated as the share of controls in place within that broad category (CTP, CCT, or CFXTO). That is, the indices will take values *between* 0 and 1 (or, equivalently, 0% and 100%), and the closer the index is to 1, the stricter the controls will be in that category. For instance, per Figure 4 the CTP index equaled 0.22 in 2007, and that means that the share of controls in place within such category was 22%. Table 1 shows the summary statistics for these indices. It can be seen that controls on capital transactions were the most common and frequent ones during this period— the average share of controls in place within that category was almost 60%, compared to 32% and 28% in the CFXTO and CTP categories, respectively.

Having said this, Figure 4 plots the evolution of the restriction indices across time. Firstly, this figure shows that controls on all three categories tightened during the early 2000s after the 2001 financial crisis. From 2004 through 2010, none of the indices experienced much variation. Starting in 2011, as discussed in the introduction, the Argentine government tightened capital and foreign exchange controls amid a worsening scenario in the foreign exchange market and the downward pressures the peso was facing. This can be seen, precisely, in Figure 4, where the CFXTO and CTP indices show a significant rise in 2011, while the CCT did so in 2012. Years later President Macri would be sworn in, and he would drastically liberalize all but every type of control that was in place in 2016. After the sudden stop in capital inflows that the country suffered in 2018, however, these controls were once again put in place. Figure 4 portrays the dramatic drop in 2017 and the immediate bounce back in 2019.

Table 1. Summary statistics for restriction indices

	Mean	Median	Std. Dev.	Min	Max
Capital Transactions	0.58	0.65	0.18	0.23	0.81
FX Transactions	0.32	0.30	0.14	0.04	0.54
Trade Payments	0.28	0.30	0.06	0.19	0.37

Figure 4. Evolution of restriction indices in Argentina

Source: IMF AREAER
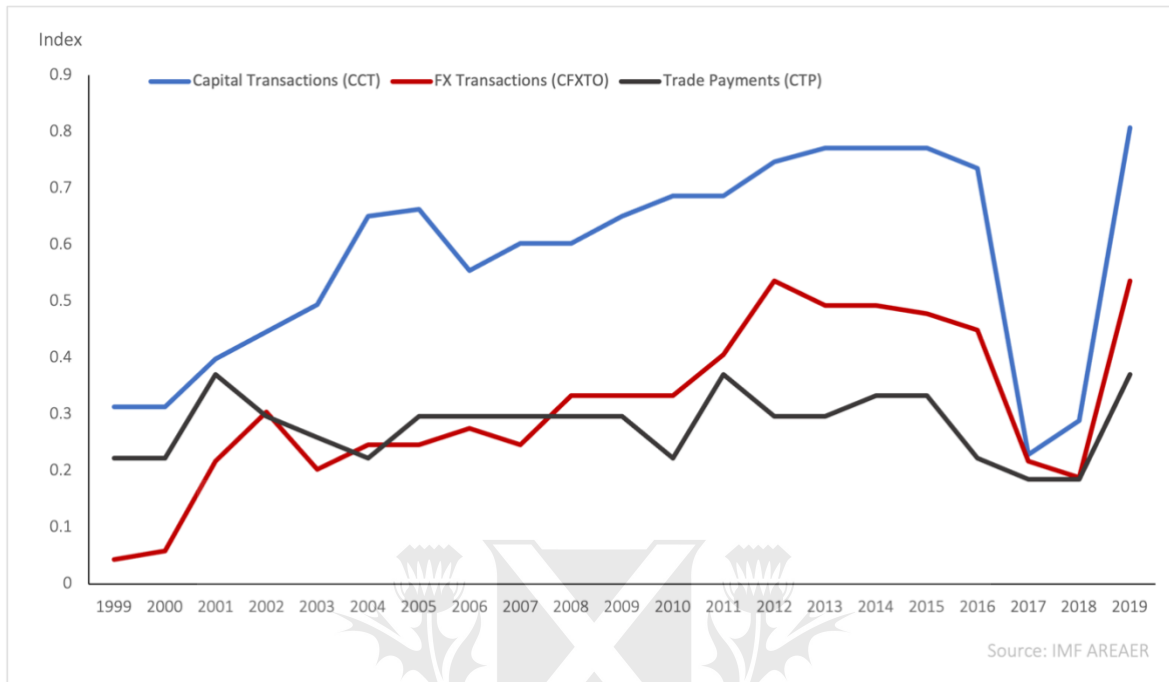
Figure 5. Argentina's main trading partners (for imports)

Source: WITS, UN Comtrade
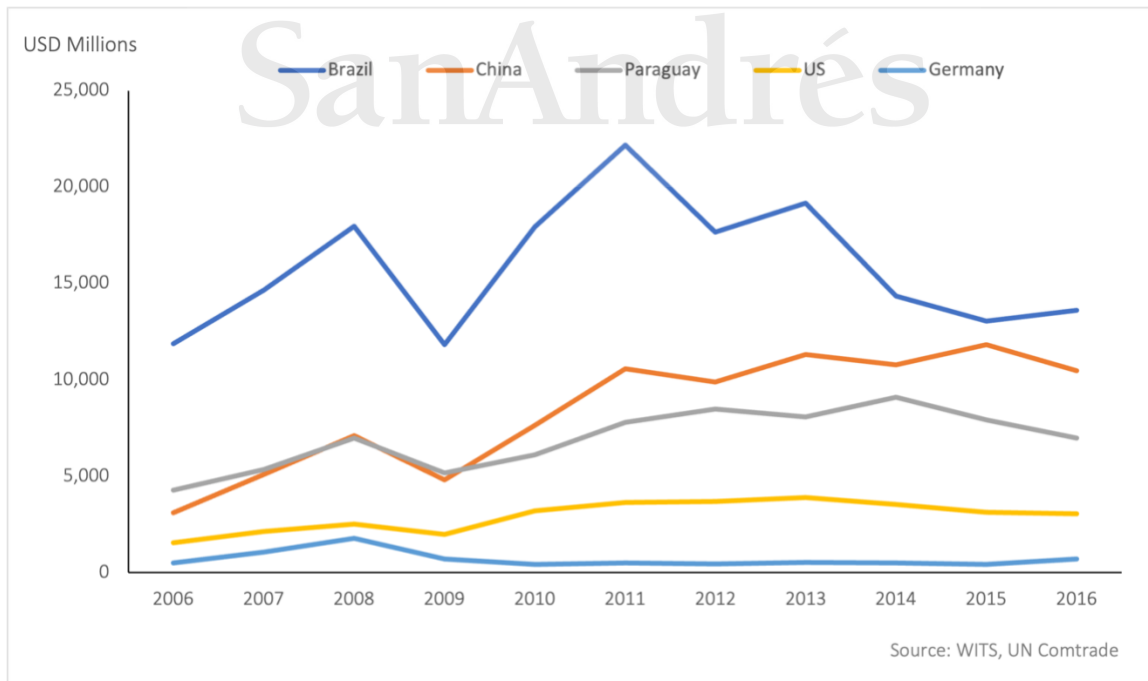
Figure 6. Average tariff rate with all trading partners

Source: WITS, TRAIN database
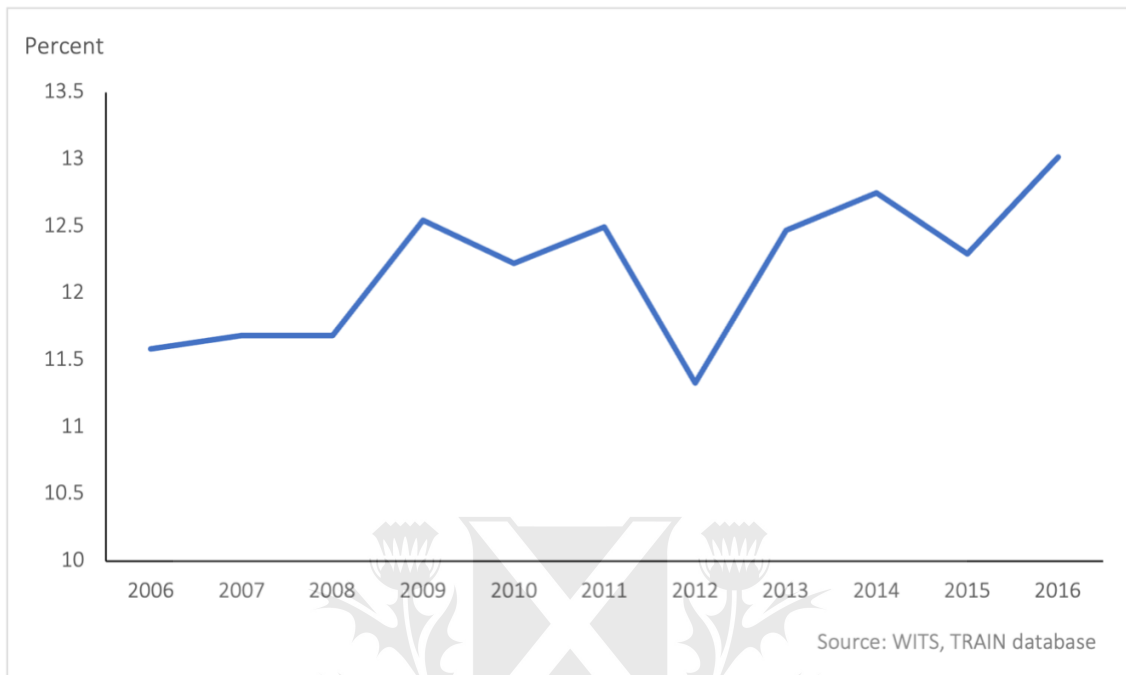
As regards the sample description, Figures 5 shows Argentina's five main trading partner countries in terms of imports. It can be observed that throughout this whole period, Argentina imported the most from Brazil. However, imports from Brazil peaked in 2011 and consistently decreased thereafter, narrowing the gap with the four other biggest exporters (to Argentina). On the contrary, China's exports to Argentina had a steady ascent for most of the given period, going from roughly US$ 3 billion in 2006 to more than US$ 10 billion in 2016.

What is more, Figure 6 portrays the evolution of the average tariff rate for all trading partners. The graph shows that, on average, Argentina increased tariffs by almost one percentage point after the 2008 global financial crisis. From 2011 to 2012, tariffs decreased by an average of, again, one percentage point, to then rise back to 13% by the end of 2016.

V. REGRESSION RESULTS

This paper estimates four models, and Table 2 presents the results for them. The estimation includes country fixed effects and year dummies to address the possible bias resulting from our variable selection and possible measurement errors. The first three models include each just one of the three indices: (1) includes the CCT index, (2) the CFXTO, and (3) just the CTP one. It can be observed that, when the indices are introduced one by one, all three have the expected sign, and all three are statistically significant to the 10% level. Therefore, it would appear that the stricter and wider the controls are, the less imports Argentina is going to have as trade costs increase.

When the indices are introduced all together, however, the results show no significant effect of the restriction indices on Argentina's import flows. That is, it would appear that even if the country tightens foreign exchange, capital, and/or trade payment controls, the import flows will mostly depend on other variables. The coefficients on CCT and CTP, however, still take the expected sign. On the other hand, the tariff variable ("simple average") is, not surprisingly, highly significant and has the expected sign in all four models. Finally, the *distw* and *RTA* coefficients—both significant and not taking the expected signs—imply that there could be some biases not being addressed. Further and more precise analytical work is required in this sense.

Table 2. Regression Results

	Dependent variable:			
	ln_imports			
	(1)	(2)	(3)	(4)
ln_CCT	-21.041*			-2.147
	(11.701)			(14.798)
ln_CFXTO		-27.793*		2.333
		(15.456)		(7.246)
ln_CTP			-1.032*	-1.014
			(0.574)	(0.696)
Simple.Average	-0.060***	-0.060***	-0.060***	-0.060***
	(0.015)	(0.015)	(0.015)	(0.015)
ln_gdp_o	1.554***	1.554***	1.554***	1.554***
	(0.059)	(0.059)	(0.059)	(0.059)
ln_gdp_arg	8.160*	18.742*	-0.445*	-1.178
	(4.746)	(10.627)	(0.266)	(1.813)
contig	4.889***	4.889***	4.889***	4.889***
	(0.910)	(0.910)	(0.910)	(0.910)
distw	0.0002***	0.0002***	0.0002***	0.0002***
	(0.00004)	(0.00004)	(0.00004)	(0.00004)
comlang_off	-1.652**	-1.652**	-1.652**	-1.652**
	(0.800)	(0.800)	(0.800)	(0.800)
comrelig	2.728***	2.728***	2.728***	2.728***
	(0.449)	(0.449)	(0.449)	(0.449)
comleg_posttrans	-1.237***	-1.237***	-1.237***	-1.237***
	(0.252)	(0.252)	(0.252)	(0.252)
sibling_ever	2.720***	2.720***	2.720***	2.720***
	(0.815)	(0.815)	(0.815)	(0.815)
rta	-0.315	-0.315	-0.315	-0.315
	(0.477)	(0.477)	(0.477)	(0.477)
factor(Year)2007	-0.350*	-7.530*	-0.206	0.394
	(0.206)	(4.058)	(0.198)	(1.846)
factor(Year)2008	-2.069*	-3.048*	-0.135	-0.088
	(1.064)	(1.603)	(0.188)	(0.663)
factor(Year)2009	-0.085	-1.942**	-0.375*	-0.214
	(0.266)	(0.867)	(0.192)	(0.671)
factor(Year)2010	-0.430*	-5.550*	-0.426*	0.004
	(0.231)	(2.987)	(0.230)	(1.365)
factor(Year)2011	-1.424	-3.053	0.715***	0.813
	(1.036)	(1.933)	(0.260)	(0.629)
factor(Year)2012	-0.871*	2.648*	-0.057	-0.367
	(0.454)	(1.562)	(0.205)	(1.186)
factor(Year)2013	-0.205	0.179	0.037	
	(0.219)	(0.236)	(0.206)	
factor(Year)2014	1.052*	2.995*	0.147	
	(0.638)	(1.700)	(0.217)	
Observations	1,355	1,355	1,355	1,355
R^2	0.535	0.535	0.535	0.535
Adjusted R^2	0.466	0.466	0.466	0.466
F Statistic (df = 19; 1181)	71.387***	71.387***	71.387***	71.387***

Note: *p<0.1; **p<0.05; ***p<0.01

VI. CONCLUSIONS

Although the results in the fourth and most relevant model are not the expected ones—none of the indices are significant and the coefficients on CFXTO and other gravity model variables do not have the expected sign—the first three models present some interesting insights that could be useful when doing further study on this topic. When the indices are introduced in the equation of interest one by one, there would appear to be a significant and negative relationship between these restriction indices and Argentina's import flows. However, as seen in model (4), when the indices are introduced all together the results are not the expected ones. Among many other reasons, this could be due to the lack of a non-tariff barrier index (NTBs) in the main equation. Moreover, standard errors are not clustered in these regressions—given the issues noted by Wei and Zhang in footnote 2 (p. 847, 2007), it was decided to not cluster standard errors in this case. Therefore, this could be affecting the significance of the variables as well.

All in all, then, even though the restriction indices are not statistically significant when included in one regression, there seems to be some evidence that controls on trade payments and on capital and foreign exchange transactions have some negative effect on the Argentina's trade flows. However, as mentioned before, further and more precise analytical work is required to reach to more conclusive and stronger evidence.

APPENDIX I. INDICES SUBCATEGORIES

Controls on trade payments

1. Imports and import payments:
    1.1. Foreign exchange budget
    1.2. Financing requirements for imports
        1.2.1. Minimum financing requirements
        1.2.2. Advance payment requirements
        1.2.3. Advance import deposits
    1.3. Documentation requirements for release of foreign exchange for imports
        1.3.1. Domiciliation requirement
        1.3.2. Preshipment inspection
        1.3.3. Letters of credit
        1.3.4. Import licenses used as exchange licenses
        1.3.5. Other
    1.4. State import monopoly
2. Exports and export proceeds:
    2.1. Repatriation requirement
        2.1.1. Surrender requirement
    2.2. Financing requirements
    2.3. Documentation requirements
        2.3.1. Letters of credit
        2.3.2. Guarantees
        2.3.3. Domiciliation
        2.3.4. Preshipment inspection
        2.3.5. Other
    2.4. Export licenses
        2.4.1. Without quotas
        2.4.2. With quotas
    2.5. Export taxes
        2.5.1. Collected through the exchange system
        2.5.2. Other export taxes

Controls on capital transactions

1. Controls on capital and money market instruments (Each category has four indicators: (1) Purchase locally by nonresidents; (2) Sale or issue locally by nonresidents; (3) Purchase abroad by residents; (4) Sale or issue abroad by residents)
    1.1. On capital market securities
        1.1.1. Shares or other securities of a participating nature
        1.1.2. Bonds or other debt securities
    1.2. On money market instruments
   1.3. On collective investment securities

2. Controls on derivatives and other instruments (Including four sub-indicators: (1) Purchase locally by nonresidents; (2) Sale or issue locally by nonresidents; (3) Purchase abroad by residents; (4) Sale or issue abroad by residents)
3. Controls on credit operations (Each has two sub-indicators: (1) By residents to nonresidents; (2) To residents from nonresidents)
   3.1. Commercial credits
   3.2. Financial credits
   3.3. Guarantees, sureties, and financial backup facilities
4. Controls on direct investment
   4.1. Outward direct investment
   4.2. Inward direct investment
5. Controls on liquidation of direct investment
6. Controls on real estate transactions (Separate indicators for: a. Purchase abroad by residents; b. Purchase locally by nonresidents; c. Sale locally by nonresidents)
7. Controls on personal capital transactions
   7.1. Loans
       7.1.1. By residents to nonresidents
       7.1.2. To residents from nonresidents
   7.2. Gifts, endowments, inheritances, and legacies
       7.2.1. By residents to nonresidents
       7.2.2. To residents from nonresidents
   7.3. Settlements of debts abroad by immigrants
   7.4. Transfer of assets
       7.4.1. Transfer abroad by emigrants
       7.4.2. Transfer into the country by immigrants
   7.5. Transfer of gambling and prize earnings
8. Provisions specific to commercial banks and other credit institutions
   8.1. Borrowing abroad
   8.2. Maintenance of accounts abroad
   8.3. Lending to nonresidents (financial or commercial credits)
   8.4. Lending locally in foreign exchange
   8.5. Purchase of locally issued securities denominated in foreign exchange
   8.6. Differential treatment of deposit accounts in foreign exchange
       8.6.1. Reserve requirements
       8.6.2. Liquid asset requirements
       8.6.3. Interest rate controls
       8.6.4. Credit controls
   8.7. Differential treatment of deposit accounts held by nonresidents
       8.7.1. Reserve requirements
       8.7.2. Liquid asset requirements
       8.7.3. Interest rate controls
       8.7.4. Credit controls
   8.8. Investment regulations
       8.8.1. Abroad by banks

       8.8.2.   In banks by nonresidents

   8.9. Open foreign exchange position limits

       8.9.1.   On resident assets and liabilities

       8.9.2.   On nonresident assets and liabilities

9. Provisions specific to institutional investors

   9.1. Limits (max.) on securities issued by nonresidents

   9.2. Limits (max.) on investment portfolio held abroad

   9.3. Limits (min.) on investment portfolio held locally

   9.4. Currency-matching regulations on assets/liabilities composition

10. Other controls imposed by securities laws

Controls on FX transactions and other items

1. Exchange tax

2. Exchange subsidy

3. Forward exchange market

   3.1. Official cover of forward operations

4. Prescription of currency requirements

   4.1. Controls on the use of domestic currency

       4.1.1.   For current transactions and payments

       4.1.2.   For capital transactions

           4.1.2.1.   Transactions in capital and money market instruments

           4.1.2.2.   Transactions in derivatives and other instruments

           4.1.2.3.   Credit operations

   4.2. Use of foreign exchange among residents

5. Administration of control

6. Payments arrears

   6.1. Official

   6.2. Private

7. Controls on trade in gold (coins and/or bullions)

   7.1. On domestic ownership and/or trade

   7.2. On external trade

8. Controls on exports and imports of banknotes

   8.1. On exports

       8.1.1.   Domestic currency

       8.1.2.   Foreign currency

   8.2. On imports

       8.2.1.   Domestic currency

       8.2.2.   Foreign currency

9. Controls on the following transfers (Each below has three sub-categories: (1) Prior approval; (2) Quantitative limits; (3) Indicative limits/bona fide test)

   9.1. Trade-related payments

   9.2. Investment-related payments

   9.3. Payments for travel

9.4. Personal payments

9.5. Foreign workers' wages

9.6. Credit card use abroad

9.7. Other payments

10. Proceeds from invisible transactions and current transfers

10.1. Repatriation requirements

Surrender requirements

10.2. Restrictions on use of funds

11. Resident accounts

11.1. Foreign exchange accounts permitted

11.1.1. Held domestically (approval required)

11.1.2. Held abroad (approval required)

11.2. Accounts in domestic currency held abroad

11.3. Accounts in domestic currency convertible into foreign currency

12. Nonresident accounts

12.1. Foreign exchange accounts permitted (approval required)

12.2. Domestic currency accounts

Convertible into foreign currency (approval required)

12.3. Blocked accounts
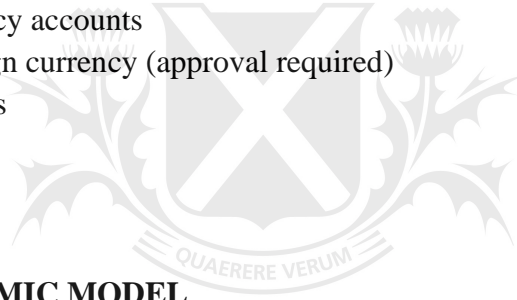
APPENDIX II. ECONOMIC MODEL

A brief discussion of the monopolistic competition model can help shed some light on the economics behind the gravity model, which is the econometric approach used to estimate the main hypothesis.

To begin with, with the rise of globalization and international trade, people have become accustomed to the fact of consuming lots of different goods from lots of different countries. Assuming that all varieties from country i cost the same and, therefore, consumers buy the same amount for each variety from that country, the utility maximization for consumers in country j will look as follows:

$$U^j = \sum_{i=1}^{C} N^i \, (c^{ij})^{(\sigma-1)/\sigma} \tag{1}$$

Where c^{ij} represents country j's consumption of each variety from country i, and N^i refers to the total number of varieties across all the countries that country j trades with. Moreover, it is also assumed that country j cannot spend more than they produce, meaning that the value of its output will equal that of its expenditures, thus yielding the following budget constraint:

$$Y^j = \sum_{i=1}^{C} N^i p^{ij} c^{ij} \qquad (2)$$

Solving for c^{ij}, the optimum consumption level for country j will be:

$$c^{ij} = \left(\frac{p^{ij}}{p^j}\right)^{-\sigma} \left(\frac{Y^j}{p^j}\right) \qquad (3)$$

Where the first term in the right-hand side can be interpreted as the relative price of the differentiated product, and the second one corresponds to country j's real income. What is more, if the optimum c^{ij} is substituted on the export's equation derived from (2), the value of exports from i to j can now be expressed as:

$$X^{ij} = N^i Y^j \left(\frac{p^{ij}}{p^j}\right)^{1-\sigma} \qquad (4)$$

Meaning that the exports between i and j are given by the product between the number of varieties, the GDP of country j and the relative price of the product. The total number of varieties, however, is not known. To solve this issue, technology is assumed to be the same across all firms in country i, and this allows to re-express equation (4) as:

$$X^{ij} = \frac{Y^i Y^j}{p^i \bar{y}} \left(\frac{p^{ij}}{p^j}\right)^{1-\sigma} \qquad (5)$$

Finally, taking logs and then the log difference, equation (5) can be written as:

$$\Delta \ln X^{ij} = \ln(Y^i Y^j) + (1-\sigma)\, \Delta \ln \tau^{ij} - \sigma \Delta \ln p^i + (\sigma - 1)\, \Delta \ln P^j \qquad (6)$$

Where this tries to explain the volume of trade between countries i and j by including variables such as the GDP of both of them, the tariff rates, the price of variety from i in j, and a price index for country j – something that resembles quite significantly to the gravity model. Therefore, this derivation has shown how the economic intuitions for the gravity model can be traced back to the microeconomic model of monopolistic competition.

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