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Destination and Source Countries: Do they have a Role on Product Quality?

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Abstract

In this work we explore the link between export and import products quality and the level of income of destination and source countries. As proxy to quality we use the firm average unit value prices for both exports and imports.

Some previous works (Bastos et al. 2014, Kugler and Verhoogen, 2012; Verhoogen, 2008) argue that high quality products are exported to high income destination countries, and that the same applies to imports from high income countries: they exhibit higher quality than imports from low and middle income countries. Moreover, it is also argued that firms that exports to high income countries (HI) upgrade their quality by using imports from HI countries.

We test these hypotheses using a rich database for Uruguay over the period 1997-2008. This dataset combines firm level data and detailed customs data of exports and imports by destination or origin country. To analyse causal associations we use instrumental variable techniques, and utilize real exchange rate fluctuation to construct the instruments. Our preliminary results show positive effects on import quality of exporting to and importing from high income countries. On the other side, the results on the quality of exported products are not conclusive.

Keywords: exports, imports, product quality, destinations, source countries
JEL classification: F1, L1, O1

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1. Introduction

Several studies show that exporting firms are more productive and pay higher wages than non-exporting firms such as the works by Bernard and Jensen (1995, 1999). These works are followed by studies for various countries and different researchers.[1] Moreover, it has been found that firms that export to more distant countries are also more productive and pay higher wages. These stylised facts gave rise to the development of theoretical models named new-new trade models.

Among them, Eaton et al. (2008, 2011) show that firms' heterogeneity translate into significant differences in export participation and the number of markets with whom the firm trade. In particular some researchers argue that in order to describe and explain trade flows and its impacts is important to consider the quality of the goods sold and bought by the firm. In this regard international trade would be characterized by decreasing horizontal specialization and increasing in the quality of the goods (Schott, 2004; Hummels and Klenow, 2005; Khandelwal, 2010; Fontagné et al., 2008).

Hummels and Skiba (2004), Verhoogen (2008), Baldwin and Harrigan (2011), and Johnson (2012), show that there is a positive relationship between quality of the goods and the transport cost to the destination market. In particular Baldwin and Harrigan (2011) find that unit prices of exports tend to increase with distance to the destination. These authors argue that the association between firm efficiency and quality of the goods can explain the higher export prices to more distant countries. Moreover this association between efficiency and quality would also explain the relationship between wages and human capital and distance.

Thus, recently, the quality of goods traded has become an important field of study.[2] The quality of products is a key feature in the analysis of productive specialization of the countries (Schott, 2008), the direction of trade between countries (Hallak, 2006), and even of how countries grow (Hummels and Klenow, 2005). Several researchers (Hallak and Schott, 2011; Khandelwal, 2010; Khandelwal et al., 2013) approximate the quality of the goods based on the unit values adjusting by the demand and controlling for the extensive margin from the supply side. Moreover, Feenstra and Romalis (2014) propose to introduce more controls from the supply side in order to identify quality.

[1] See Schank et al. (2007) for a review for several countries.

[2] Dinopoulos y Unel (2012) elaborate a model that show that the higher the trade openness and the greater competition , firms that produce low quality goods exit the market and those that produce high quality goods enter the export market.

In this work we analyse the impact of the destination of exports and the origin of imports on exported and imported products using a rich dataset that matches survey data from the industrial surveys and customs data. Some researchers have found that using exchange rate movements as source of variation in export destination find that exporting to richer countries leads firms to charge higher export prices as well as higher prices for imported inputs. This suggests that an increase in the average income of destination markets leads to increases in the quality of the goods produced and to buy inputs of higher quality.

For the Uruguayan case this type of studies are almost inexistent, thus this work contributes to the national literature, as well as for the international state of the art providing evidence for a small developing country.

2. Literature review

The "new-new" theories of trade pioneered by Melitz (2003) seminal paper introduces firm level productivity differences in order to explain international trade. Melitz includes heterogeneity in productivity by enabling firms to produce a symmetric variety at different marginal costs. Nevertheless, he also considers that productivity could also be thought of as a demand-shifting quality variable, by firms producing a higher quality variety that is more appreciated by consumers at the same cost.

Schott (2004) by using product-level manufacturing US imports supports specialization within products, but at the same time argues that the new-new trade theories are inconsistent with the data as he observes a positive relationship between prices and productivity measured by source country's capital and labor endowment. He recommends further investigation in the area and suggests that the positive relation with prices could be driven by competition in quality and not only in prices. Hummels and Klenow (2005) perform a country-level analysis and find that richer countries export goods at higher unit prices and argue that this is consistent with models of quality differentiation. Finally, Hallak (2006) proposes a sector-level demand side model which corroborates the significance of quality in explaining the direction of trade.

These findings confirm that one important limitation of the Melitz's model is that competition should be based on quality-adjusted prices. For that reason, the Melitz's model of heterogeneous firms has been extended by several studies to include a quality dimension to trade. It is therefore, as expressed by Baldwin and Harrigan (2011) more of a "conceptual amendment" than a separate model.

Researchers have added quality in their theoretical models by including taste for quality for consumers in the demand side, and by firms producing varieties that differ in quality that are costlier to produce in the supply side. Some papers also moved away from the single heterogeneity attribute in the Melitz's model by allowing firms to be heterogeneous not only in productivity but also in the ability to produce high quality varieties, which depend on a capability draw.

With this idea in mind, Baldwin and Harrigan (2011) propose an extension of the Melitz model in which they consider a taste for quality in asymmetric countries. They tie the exogenously determined unit labor coefficient that determines marginal costs to the quality of a good. In doing so firms are now allowed to compete in prices as well as in quality.

Another extension is provided by Khandelwal (2010) where he considers that companies produce varieties with vertical and horizontal differentiation. In this work the vertical differentiation is associated to quality and it is driven by consumers' utility. Khandelwal (2010) assumes that quality is monotonically increasing with technology which varies in asymmetric countries and therefore rests on a Ricardian competitive advantage component.

Verhoogen (2008) follows a similar approach where firms have a single fixed heterogeneous attribute that interprets as "entrepreneurial ability" or "technical know-how". In this model firms endogenously determine the skill level used in the production which in turn determines quality based on an asymmetric country framework. Fan et al. (2015) also build a model of endogenous quality choice in which firms differentiate themselves by their level of productivity but require more physical inputs to produce a higher quality variety. Similarly, Antoniades (2015) proposes an endogenous quality choice in the Melitz and Ottaviano (2008) model in which firms are exogenously given a productivity parameter by which they determine their marginal cost. Finally, Feenstra and Romalis (2014) propose a supply- and demand-driven model of endogenous quality choice were quality depends on a productivity draw.

Another approach to consider quality is by allowing firms to vary by other factors besides productivity, that is, by multiple attributes. Hallak and Sivadasan (2009) differentiate between process and product productivity in an extension to Melitz model with iceberg costs decreasing in quality. They base this modification on the critique that in single attribute models both export status and firms' size are monotonically defined by productivity. This, they argue, would be the reason behind the empirical finding that exporters have a premium on the value of their unit prices. This double differentiation led the authors to argue that conditional on size, which depends on the capability of the firm, exporting firms show a higher quality in their products.

In addition, Kugler and Verhoogen (2012) as well as Bastos et al. (2016) endogenize the choice of quality of output, as well as of inputs, by the existence of both productivity and quality parameters. Nevertheless, both parameters, productivity and quality, are determined by a "capability" draw of the firm when enters the market. Therefore their model collapses into a single attribute model rendering them isomorphic to the previous models.

A similar approach is followed by Johnson (2012) which differentiates between unit production costs and product quality steaming from the firm specific capability and Gervais (2013) which distinguishes between product quality and technical efficiency. Brambilla et al. (2012) also differentiate by the efficiency in the use of skilled and unskilled labor, but in this case they allow firms to tailor the quality of their varieties to each country of destination. What is particular in these papers is that two firms could have an identical "capability" but different productivity and quality dimensions.

The literature on quality and trade has been partially restricted by the lack of actual measures of quality available to researchers, and a few papers were actually able to measure it directly. One of these papers is Crozet et al. (2012) were champagne producers are assigned a quality rating based on experts' assessment. Nevertheless, most papers in the literature must resort to proxies such as export unit values in order to measure quality. Under this category several papers directly consider export unit values as their variable of interest (Baldwin and Harrigan, 2011; Bastos and Silva, 2010; Görg et al., 2010; Harrigan et al., 2015; Kugler and Verhoogen, 2012; Manova and Zhang, 2012; Martin, 2012; Schott, 2004).

Although Feenstra and Romalis (2014) and Hummels and Klenow (2005) find that much of the variation in unit values in exports are explained by quality, there is a general consensus that unit export values are an imprecise measure of quality as other factors such as the market characteristics or supply may also play a role in affecting prices. In particular, Khandelwal (2010) argues that prices are less appropriate as measures of quality in markets with a lower scope for quality. In addition, Johnson (2012) finds that some sectors have a negative price-threshold correlation which indicates that the most capable firms charge lower unit prices. Gervais (2013) confirms this concept as he finds that while prices are increasing in quality they are also decreasing in productivity. Therefore goods of the same quality could be charged different prices due to the variation in the productivity of firms or pricing-to-market.

Nevertheless, the papers that consider unit values as a proxy for quality take into account this caveat and include different estimations for capturing quality. For example, Bastos and Silva (2010) estimate the same model of unit prices on quantities to sustain the quality hypothesis.

Kugler and Verhoogen (2012) interact their explanatory variable with measures of scope for quality differentiation. Another set of authors relativize their findings and suggest such as Harrigan et al. (2015) and Manova and Zhang (2012) that their findings are supportive of models where firms compete on quality rather than simply unit cost, or Görg et al. (2010) that consider that their results could be driven by firms capturing part of the markups on transport costs in their FOB prices instead of quality.

Another thread of literature intends to separate quality from prices by calculating quality-adjusted unit values. This is done by adjusting unit prices by the relative demand of goods. For example, Khandelwal (2010; 2013) at product-level and Hallak and Schott (2011) at country-level, propose a measure in which a higher quality is assigned to a good which, conditional on price, is exported in a larger amount. This methodology is followed by other authors as well (Bas and Strauss-Kahn, 2015; Fan et al., 2015). Feenstra and Romalis (2014) follow a similar approach but also include a supply side explanation to the calculation of quality-adjusted prices by accounting for firm quality choice. Gervais (2013) estimates quality from the firm unobserved effects and the price elasticity.

In addition to these measures some authors propose the use of multilateral price index (Hallak, 2006), technology spending (Bas, 2012), utilization of skills in the labor force (Brambilla et al., 2012; Saravia and Voigtländer, 2012; Verhoogen, 2008), ISO 9000 certification (Hallak and Sivadasan, 2009; Verhoogen, 2008) or the correlation between export prices and export threshold (Johnson, 2012).

A considerable strand of literature in addition to trying to reconcile the data with theory also attempts to explain the drivers of export quality. This comprehends several aspects, although these can be classified into those focused on supply-driven and demand-driven quality enhancements of products.

On the supply side, export prices and other proxy measures of quality are correlated with firms' characteristics such as productivity (Bastos and Silva, 2010; Görg et al., 2010; Harrigan et al., 2015), the type of imported inputs (Bas and Strauss-Kahn, 2015; Manova and Zhang, 2012), the variety of inputs (Demir, 2011; Saravia and Voigtländer, 2012), or the capital- and skill-intensity of the exporter (Harrigan et al., 2015; Khandelwal et al., 2013). In terms of the source country variables it is argued that the level of income (Hummels and Klenow, 2005; Khandelwal, 2010) or the relative endowments of physical and human capital (Schott, 2004) are correlated with measures of quality. Antoniades (2015) in his theoretical paper also argues that competition raises the scope for quality differentiation. While the most productive firms

raise quality in response to competition, the least productive ones respond in the opposite way or exit the market.

In addition, several papers find a positive relationship between export prices and trade costs. Although in the literature there are several measures to account for trade costs, such as common border or if the country is landlocked, most papers proxy trade costs by distance to the destination market (Baldwin and Harrigan, 2011; Bastos and Silva, 2010; Görg et al., 2010; Hallak and Sivadasan, 2009; Hummels and Klenow, 2005; Manova and Zhang, 2012; Martin, 2012; Verhoogen, 2008). Their results nevertheless contradict some of the previous pricing-to-market models with heterogeneous firms' such as the Melitz and Melitz-Ottaviano. In fact, under the Melitz-Ottaviano model of endogenous mark ups it is predicted a negative relationship between unit values and distance, as firms absorb part of the increasing trade costs. Under the Melitz model productive firms are able to charge lower price, which gives them the upper hand to sell their products abroad as they have the possibility to pay the fixed exporting costs. As discussed before, to reconcile this empirical finding with theory, a new literature has include in the model a taste for quality and higher cost to produce higher quality goods.

Baldwin and Harrigan (2011) allow for a taste for quality in the demand side to include a quality-driven competition in addition to price competition. This allows them to find a positive relationship between unit values and distance conditional on exporting that contradicts the Melitz model. They also support the theory that distance drives unit values in two ways, by a selection effect and a direct effect. The selection effect is driven by their finding that, consistently with Melitz, distance is negatively related to the probability of exporting. The direct effect on the other hand is based on the evidence they provide that conditional on exporting, unit values also increase with distance.

Bastos and Silva (2010) for Portugal using product-country and firm-product-country data find that within-product, within-firm and within-firm-product export prices increase with distance, although the point estimates decrease as the observation level becomes more granular. They consider that this finding supports the idea that as transport costs increase to the destination market so does the quality of the product exported. They also find that this positive relationship with distance is magnified by firms' productivity on within-product, but not on within-firm-product export prices. Görg et al. (2010) also finds that unit values increase with distance and that this effect is stronger for differentiated goods as defined by (Rauch, 1999).

On the other hand, those studies related to quality-driven demand have found that export unit values are positively correlated with the level of income (Bas and Strauss-Kahn, 2015; Bastos and Silva, 2010; Bastos et al., 2014; Brambilla et al., 2012; Görg et al., 2010; Hallak, 2006b; Hallak and Schott, 2011b; Hallak and Sivadasan, 2009; Hummels and Klenow, 2005b; Manova and Zhang, 2012; Martin, 2012; Schott, 2004) but are negatively related to remoteness and difficulty to enter a market (Baldwin and Harrigan, 2011; Harrigan et al., 2015; Johnson, 2012; Manova and Zhang, 2012). The literature is mixed regarding size of the destination market size (Görg et al., 2010; Manova and Zhang, 2012). Moreover, Brambilla et al., 2012 argue that exporting per se do not change the skills composition and wages at the firm level, but that exporting to higher income countries do indeed have an effect.

The widespread evidence of a positive relationship between export unit values and the income level at the destination has caused that the majority of theoretical models in trade with heterogeneous firms to consider non-homothetic preferences of individuals. Higher income countries demand higher quality goods that low income countries.

This has also led to an important strand of literature that support the quality-to-market hypothesis by which firms discriminate prices across markets. For example, Manova and Zhang (2012) propose that firms could be varying the level of quality of their products to different destinations by using inputs of different quality, and Görg et al. (2010) support the hypothesis that firms charge different prices even for the same product in different markets.

Several studies have also found a positive relationship between imports and firms' productivity (Bernard et al., 2009; Muûls and Pisu, 2009; Andersson et al., 2008; Tucci, 2005). But the better performance of importing firms not only could be due to a transfer of knowledge and spillover effects, but also to the quality of imports. In fact, several recent studies have also started to analyze the role of imports as intermediate goods on export prices and quality.

As discussed above, Kugler and Verhoogen (2012) extend the Melitz model by endogenizing input and export quality choice. Using data for Colombia they find a positive correlation between import and output prices across firms, and those firms with a higher capability use higher quality imports to produce higher quality outputs. Manova and Zhang (2012) also find a positive correlation between input and export prices at the firm-product-level, where the more successful exporting firms use higher quality inputs to produce higher quality goods. Demir (2011) develops a theoretical framework in which the variety of intermediates imported by firms in developing countries from developed countries induce them to upgrade the quality of their output.

In addition, Saravia and Voigtländer (2012) find that this positive correlation also holds for firms that import relatively more inputs, but as for the rest of the papers the quality of the imports matter. In particular, they find that although imports could have a substitution effect reducing the share of white-collar workers, firms that import higher quality products employ a relatively more qualified labor force.

Using data of a period of unilateral trade liberalization in Argentina, Bas (2012) argues that firms in industries that experienced a greater decrease in import tariffs show a higher probability of exporting. Moreover, she also finds that a bigger tariff cut is also related to a technology upgrade of firms. This goes in line with Demir (2011) that argue that input trade liberalization is more likely to increase the probability of exporting in industries where intermediate quality is an important determinant of product quality.

Fan et al. (2015) also finds that tariff reduction lead firms in China following the accession to the WTO to increase the quality of the exported goods, especially in industries with a higher scope for quality. According to the authors this liberalization could also have induced firms to redirect their products to markets that have a higher appreciation for quality. Bas and Strauss-Kahn (2015) also find that trade liberalization in China lead firms to increase both the number and the price of their imported inputs, which in turn allowed them to increase their export prices. This impact was larger for firms importing and exporting to the most developed countries.

Bastos et al. (2016) also analyze the relationship between firms' output and import prices and quality. In particular, using data from Portugal they find that an exogenous shock in the demand that caused firms to increase the average destination income of their exports induced them to charge higher export prices, and to pay a higher cost for their imports. Their finding suggests that an increase in the demand for quality lead firms to import higher quality goods.

There is nevertheless still a causality issue that remains to be answered in most studies. The positive correlation observed between higher export unit values and destination country characteristics, and in particular the level of income, in cross-section analysis could be due to underlying factors that drive both variables and not on a causal effect.

In order to address this causality puzzle, some papers have attempted to use data that rely on a quasi-natural experimental structure, or the use of other estimation methods, such as instrumental variables. As discussed above, recently Bas and Strauss-Kahn (2015) used the accession of China to the WTO to estimate the causal effect of input tariffs cuts on quality upgrading in a difference-in-difference framework. Their identification is based on the

exogenous input tariff reduction observed in China in 2001 and by taking advantage of the dual trade regime where while some firms pay the regular tariffs, others “processing” firms were exempted from paying these taxes. This allows them to treat exempted firms as control group. They argue that there is a causal effect of import liberalization on export price, but that this effect is specific to firms that trade with developed countries, which they find supports the theory that firms take advantage of the tariff cut to import higher quality inputs to export higher quality products.

On the other hand, a group of studies use an instrumental variable approach to analyze the causal link between country destination income and the quality of exports. Verhoogen (2008) suggested a quality upgrading mechanism induced by an exchange rate shock by using a difference-in-difference estimation taking the devaluation of the Mexican peso as instrument. He argues that the exchange rate shock can be considered as an exogenous shock that shifts demand from the domestic market to higher quality exports.

In addition, Brambilla et al. (2012) have used the devaluation of Brazil as instrument of an exogenous change in exports destination of Argentinean firms. Again, their hypothesis is that due to the devaluation of the Brazilian currency, Argentinean firms exporting to Brazil had to explore new markets, in particular those with a higher income and therefore higher demand for quality. They use different instruments to account for shares of exports to high income destination which are based on the interaction of the pre-devaluation share of exports that Argentinean firms send to Brazil, and a post-devaluation variable. Finally, Bastos et al. (2014) use the average real exchange rate of Portuguese firms as an instrument for firms’ average destination income.

3. Data and stylized facts

We use two sources of data to perform our analysis, administrative customs information and a national survey firm-level data.

The administrative customs data is collected by the National Customs Service (DNA, *Dirección Nacional de Aduanas*). This data is available from 1997 to 2008 at the firm-level. The level of detail of the database is quite extensive as producs are coded at the 10 digit MERCOSUR Common Nomenclature (NCM, *Nomenclatura Común del MERCOSUR*). The NCM shares the same structure as the Harmonized System in their first six digits so our analysis is comparable to other studies in the literature. For each product, the database provides information on the CIF and FOB values traded in current US dollars, the country of origin or destination, as well as the measurement unit in which the product was traded, which allows us to calculate unit values.

The second source of information used are the Economic Census of 1997 (CE 1997, *Censo Económico 1997*) and the Annual Economic Activity Survey (EAAE; *Encuesta Anual de Actividad Económica*) from 1998 to 2008, both carried out by the National Institute of Statistics (INE, *Instituto Nacional de Estadística*). While the CE 1997 covers all firms, the EAAE is a stratified sampling with probabilistic samples representative of economic sectors of the International Standard Industry Classification (ISIC). The exception is for the stratum of largest firms in terms of income or employment in which a census performed. The survey covers firms that perform an economic activity related to industry, commerce or services in Uruguayan territory, except for those establishments in Special Economic Zones (SEZ). The survey does not include agriculture and livestock, extractive industries, construction, financial services controlled by the Central Bank, among others. For 2006 only firms of compulsory inclusion were surveyed.

From the CE 1997 and the EAAE we extract the total annual sales of each firm both to the domestic and the foreign markets. This allows us to calculate the level of internationalization of firms, measured by the share of exports over total sales. We match this information with the administrative customs data by using the tax identification number (*Registro Único Tributario*, RUC).

In addition to these sources, other country-level databases were consulted. From the World Bank's World Development Indicators (WDI) we collected information on each of Uruguay's trade partners' GDP in constant US dollars from 2005 and total population. In addition, we use annuallized data on the exchange rate and inflation rates from the IMF's International Financial Statistics (IFS) to calculate the real exchange rates. Other sources consulted when the

WDI or the IFS did not have such information. For example, for Taiwan we used information from the Taiwanese Statistic Office. We also used the GeoDist and Gravity databases form CEPII which report the distance between Uruguay and each trading partner, or if the partner is a landlocked country, among others.

In order to make the measurement units comparable, whenever it is possible to do a conversion we transformed the statistics to the International System of Units. For example, if a product was traded in squared feet we multiplicated the value traded by 0.092903 to express it in squared meters. Whenever there is more than one measurement unit for each 10-digit product that cannot be transformed into a common measure we keep the most frequent one and eliminated from the sample those that differed.

We also eliminated all observations that do not report the source or destination country, as well as those destinated to or originated from Uruguay. We also dropped all traded products to Uruguayan Special Economic Zones as we are not able to track down to which countries these products were later on re-exported of from where they were originated.

Nevertheless, we do not expect this data cut to be significantly biasing our results for two reasons. Firstly, the estimation only considers those companies that exported in 1997, when the prevalence of exports to SEZ represented 0.5 percent of the total value exported. Secondly because most of exports to SEZ are agricultural products without significant transformation, mainly soy and wheat. As we only consider products produced by manufacturing firms most of these observations are not considered in our estimation sample.

We also performed a validation of RUC and NCM code numbers, and whenever these do not correspond to a tractable product or firm they were eliminated from the sample.

Table 1 reports the summary statistics of the whole sample and the estimation sample on the average value of trade per firm in constant USD of 2005, the fraction of trade with high income countries, the average number of countries to which each firm trades and product categories traded at the 10-digit NCM, and the share of exports over total sales among other indicators.[3]

We confirm as several studies have made before, that exporters are bigger in terms of revenue, employment, and gross value added, and more productive measured by revenue and gross value added over total employment, i.e. labour productivity. Despite this, we do not have a substantial difference in total factor productivity.

[3] The whole sample comprises all administrative custums data, the the Census data for 1997 and the EAAE from 1998 to 2008 regardless if the companies were match or not. The Estimation sample only report those firms that are included in the Census and EAAE.

In addition, firms in the estimation sample tend to export and import more, export to or import from more countries and trade a larger quantity of product categories. Nevertheless, firms in our estimation sample have a fewer percentage of their trade destinated to or originated from higher income countries. This is due to a higher diversification of their import and export markets, as suggested by the number of trade destinations. In both samples we observe that firms are more prone to import from higher income countries than to export to these countries. This is also observed in Bastos et al. (2016), although for Portugal the incidence of trade with higher income countries is significantly higher.

Table1. Summary statistics, international transactions, firm level

	Whole sample		Estimation sample	
	Exporters	Importers	Exporters	Importers
Total exports	2.18		6.85	
	(0.08)		(0.27)	
Total imports		0.45		2.03
		(0.02)		(0.08)
Exports to high income countries	0.28		0.23	
	(0.00)		(0.00)	
Imports from high income countries		0.42		0.38
		(0.00)		(0.00)
Number of trade destinations	2.53	3.00	4.98	6.43
	(0.03)	(0.01)	(0.10)	(0.07)
Number of traded categories	3.39	16.44	6.02	32.23
	(0.04)	(0.10)	(0.11)	(0.55)
Firm openness			1.03	0.30
			(0.04)	(0.01)
Share of exports over total sales			0.38	0.25
			(0.01)	(0.00)
Revenue			26.58	11.16
			(1.00)	(0.68)
Total employment			141.11	113.99
			(3.12)	(2.20)
Gross value added			3.39	2.55
			(0.16)	(0.10)
Revenue over total employment			177.67	146.72
			(5.54)	(3.93)
Gross value added over total employment			23.64	20.54
			(0.81)	(0.54)
Total factor productivity			6.98	6.90
			(0.02)	(0.01)
N (firms)	17,022	84,212	4,231	6,299

Note: Table reports averages across firms, weighting firms equally. Values of total exports and imports, Revenue and Gross value added in millions of 2005 US dollars, Revenue and Gross value added over total employment are in thousands of 2005 US dollars. Firm opennes calculated as the total exports and imports over total factor productivity. Total factor productivity calculated by the method proposed by Ackerberg at al. (2006). Standard errors of means in parentheses.Values of Revenue, Total employment, Gross value added and Total factor productivity for the whole sample are the same as those for the Estimation sample.

Source: own elaboration based on data from the DNA and the INE.

In table 2 we report the distributions on the type of firms by trading status for all years of the sample. Domestic firms are those that do not report international trade, while two-way traders are those firms that simultaneously import and export. Calculations are based on a

yearly basis, so a firm that only had international trade in one year for the other years is classified as domestic.

The reason for the significant increase in the number of domestic firms in the whole sample in relation to the estimation sample is twofold. Firstly, we lose an important number of observations due to unmatched RUT codes in the CE 1997 and EAAE surveys, and more importantly because EAAE surveys only considers manufacturing firms. In our estimation sample in 1997 around 79 percent of firms were importers and 48 percent were exporters and only 19 percent do not report international trade activities. This points towards a considerable internationalization of Uruguayan firms, possibly due to the reduced size of the domestic market. The figures are also in line with other studies analysing the distribution of firms by trading status in small countries (Peluffo (2015), Castellani et al. (2008), Andersson et al. (2007), Muuls and Pisu (2007)).

The jump in the fraction of two-way traders and the corresponding fall in the percentage of domestic firms in 2006 is due to a change in the sampling of the EAAE for that year. As stated above, in this year the survey was only carried out to the largest firms which in other years are mandatory included due to its size in terms of revenue or employment.

Table2. Summary statistics, type of trade performed by firm and year

	Whole sample				Estimation sample			
	Domestic	Only Exporters	Only Importers	Twoway traders	Domestic	Only Exporters	Only Importers	Twoway traders
1997	2.53	4.81	79.67	12.99	18.89	2.06	33.41	45.64
1998	1.41	3.50	84.82	10.26	13.69	1.79	33.78	50.74
1999	1.57	3.77	82.39	12.27	14.37	2.14	30.89	52.60
2000	1.46	4.12	82.28	12.15	14.12	2.27	29.55	54.06
2001	1.87	3.77	82.21	12.14	18.13	3.07	30.88	47.93
2002	2.55	5.05	79.49	12.91	21.63	3.51	30.48	44.38
2003	2.55	7.00	75.62	14.82	18.90	3.95	30.32	46.83
2004	2.16	6.53	77.11	14.19	18.51	3.01	30.99	47.49
2005	2.24	5.92	77.93	13.91	19.64	3.60	29.60	47.16
2006	1.00	5.89	79.91	13.19	10.19	2.08	25.46	62.27
2007	1.74	5.62	80.18	12.46	15.72	2.17	30.43	51.67
2008	1.45	5.45	81.11	11.98	15.16	1.48	28.65	54.71
Total	1.86	5.09	80.35	12.71	16.93	2.64	30.61	49.81

Source: own elaboration based on data from the DNA and the INE.

As it is observed in Table 3, almost two thirds of exported values correspond to firms classified under “food and beverages” and “tanning and dressing of leather” sectors, acording to the International Standard Industrial Classification (ISIC). This shows that exports from uruguayan firms are highly concentrated in a few industries characterized by low R&D intensity and

commoditized goods with low scope for vertical differentiation.[4] For example, among food and beverages the most common exported products during the considered period were fresh, chilled or frozed boneless bovine cuts and semi-milled or wholly milled rice.

It is relevant to highlight that high income countries represent a significant share of exports in sectors with a shorter "quality ladders". In particular, 86 percent of exported values of "wood, cork and straw products" and more than 50 percent of exports of "tanning and dressing of leather" and "basic materials" are destined to high income countries.

On the other hand, exports to MERCOSUR countries represent a significant proportion of exports in sectors with a higher scope for quality differentiation. For example, 92 percent of the exported value of "motor vehicles" and 76 percent of "chemicals and chemical products" are destined to Mercosur countries.

In terms of imports, there is a more heterogeneous behavior. While imports form high income countries represent 55 percent of the "Machinery and equiptment n.e.c." sector and 67 percent of "Medical, precision and optical instruments", the Mercosur represent 58 percent of imports from the "Electrical machinery" industries.

In Figure 1 and 2 we analyze the behavior of exports and imports following Rauch's (1999) product classification. Rauch classifies products into three categories: homogeneous goods or goods traded on organized exchanges, reference priced goods and differentiated products that are neither traded on organized exchanges nor have reference prices. Based on this classification we proxy differentiated products as exports and imports with a large scope for quality differentiation, and homogeneous goods as those with small scope for quality differentiation.

In Figure 1 we observe that the same pattern emerges when we look at exports by Rauch's (1999) product classification. The main markets of differentiated goods throughout most of the period analyzed are destined to MERCOSUR countries. Only during the 2002 economic crisis and aftermaths, high income countries represented a more important destination market of differentiated products. During this studies period is also relevant the steady and continuous increase of the importance of differentiated products exports to other Latin American countries and to the rest of the world.

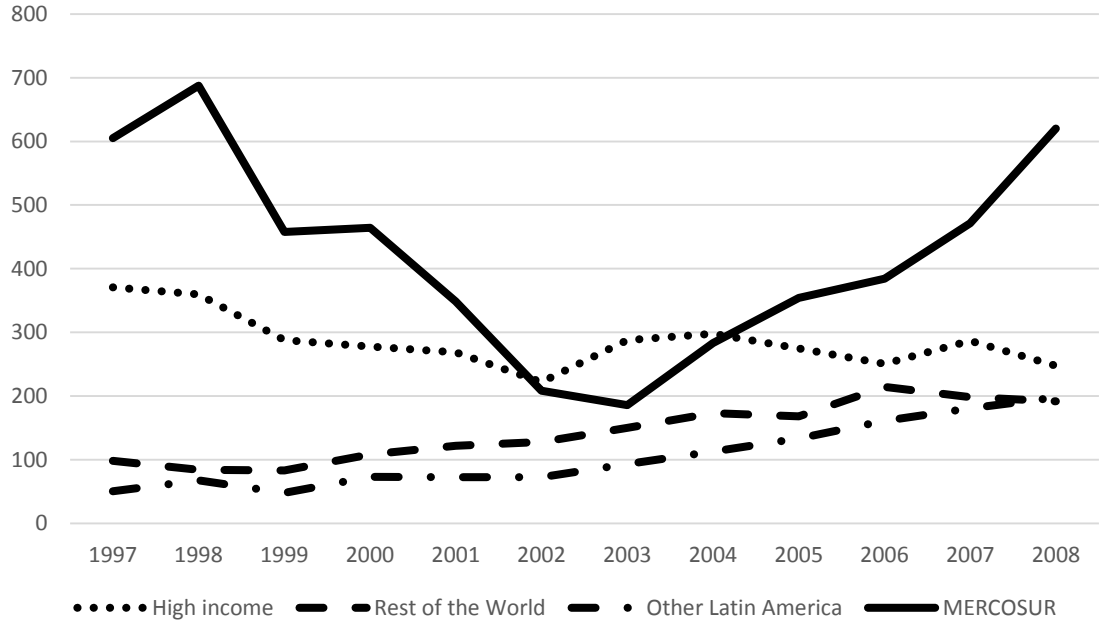
[4] Reports of Short Run Analysis Area, Instituto de Economía, Universidad de la República.

Table 3: Total exports and imports by destination and distribution.

	Exported values			Imported values		
ISIC code and description	to the Mercosur	to high income countries	Distribution	from the Mercosur	from high income countries	Distribution
15- Food and beverages	0.262	0.440	0.548	0.725	0.232	0.164
16- Tobacco products	0.921	0.035	0.015	0.489	0.357	0.031
17- Textiles	0.168	0.430	0.087	0.313	0.405	0.045
18- Wearing apparel	0.487	0.263	0.026	0.292	0.527	0.024
19- Tanning and dressing of leather	0.059	0.571	0.103	0.633	0.333	0.073
20- Wood, cork and straw products	0.027	0.862	0.021	0.284	0.588	0.006
21- Paper and paper products	0.855	0.012	0.019	0.607	0.271	0.039
22- Publishing, printing, media	0.807	0.045	0.005	0.289	0.575	0.020
23- Coke and refined petroleum products	.	.	.	.	.	.
24- Chemicals and chemical products	0.756	0.050	0.063	0.277	0.363	0.257
25- Rubber and plastics products	0.805	0.014	0.019	0.407	0.456	0.086
26- Other non-metallic mineral products	0.634	0.181	0.007	0.506	0.417	0.018
27- Basic metals	0.402	0.543	0.016	0.732	0.218	0.031
28- Metal products	0.828	0.009	0.009	0.684	0.244	0.034
29- Machinery and equipment n.e.c.	0.823	0.014	0.004	0.258	0.549	0.019
30- Office, accounting and computing	.	.	0.000	0.010	0.329	0.006
31- Electrical machinery	0.692	0.037	0.004	0.575	0.303	0.019
32- Radio, TV and communication equipment	0.789	0.048	0.000	0.374	0.561	0.003
33- Medical, precision and optical instruments	0.481	0.392	0.003	0.130	0.670	0.006
34- Motor vehicles	0.922	0.056	0.041	0.501	0.493	0.078
35- Other transport equipment	0.541	0.268	0.003	0.097	0.194	0.020
36- Furniture, other	0.932	0.004	0.007	0.460	0.435	0.023
37- Recycling	0.238	0.377	0.000	0.223	0.639	0.000

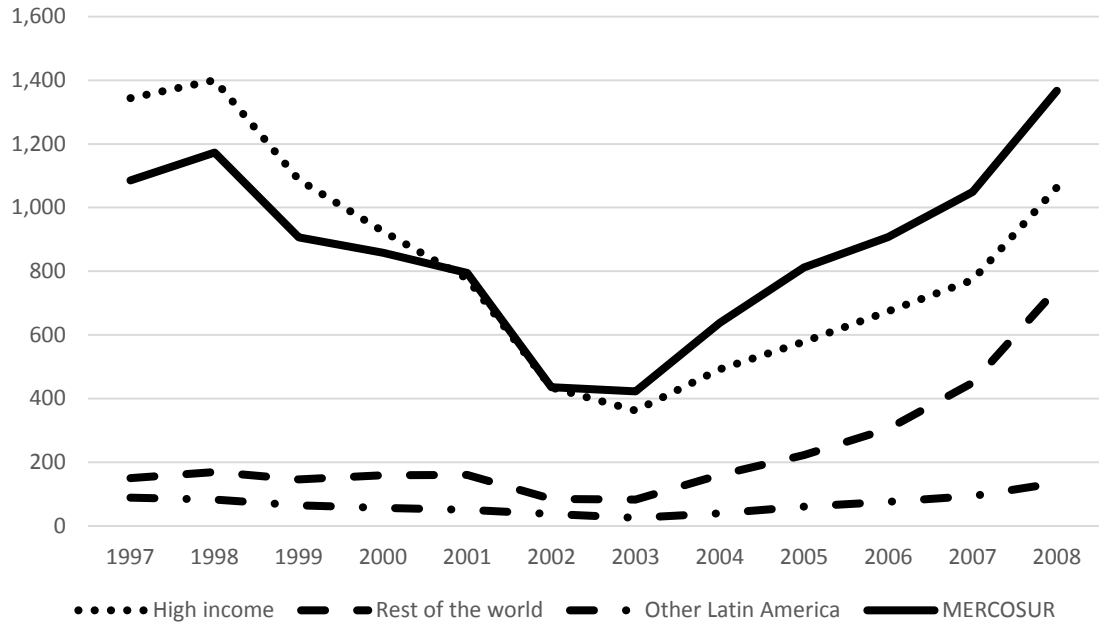
Source: own elaboration based on data from the DNA and the INE. Coke and refined petroleum products not included.
Note: Estimation sample. Percentages of exports to Mercosur of High income countries reported for industries in which there were at least 10 observations. Exported products at NC

Figure 1: Differentiated products export by destination, in millions of 2005 US dollars.



At stated above, high income and Mercosur countries are an important import market of differentiated products. Interestingly Uruguayan firms adjusted their purchases of differentiated products in both regions in a similar way during the regional economic crisis.

Figure 2: Differentiated products import by destination, in millions of 2005 US dollars.



4. Methodology

Our baseline estimation is to analyse the associations between trade with high income countries and export and import prices through conventional robust Ordinary Least Squares, being the equation as follows:

$$ln\,\overline{v}_{it} = \log(inc_{it})\,\beta + A_i + B_t + X_{it}\alpha + \varepsilon_{it} \quad (1)$$

Where *i* and *t* indexes firms and year respectively; $\overline{v}_{it}$ stands for a firm level average output or input price, inc_{it} is the average GDP per capita of firms *i*'s export or import trade partner in year t, A_i is a firm fixed effect; B_t is a year effect; $X_{it}\alpha$ are other time-varying firm characteristics, including export share or import share on sales, log average destination distance, and log of total factor productivity; and ε_{it} is a conditional mean zero error term.

As our measure of our dependent variable we follow Bastos et al. (2016) and construct a firm-level average export and import prices:

$$log(v_{it}) = \theta_{it} + \delta_{pt} + \varepsilon_{ipt}$$

where v_{it} is the unit value of product *p* imported (exported) by firm *i* in year *t*. The unit value is calculated as the ratio of the total exports (imports) of product p at the NCM-8 digit, divided by the quantity exported (imported) by each firm. θ_{it} is the firm-year fixed effects, δ_{pt} the product-year fixed effects and ε_{ipt} is the error term.

We take θ_{it} as our measure of firm-level average prices as it is cleaned of product effects. Nevertheless, this measure is still an imperfect to measure quality for the reasons commented above.

As Bastos et al. (2016) point out, there may be unobserved differences that biases the OLS estimates as we explain below.[5] Although the level of income at destination has been showed to be highly correlated with unit values of exports we cannot include the destinations GDP per capita directly into our estimations due to concerns on endogeneity in the upgrading of quality. There may also be unobserved differences among firms that affect both the composition of export destination, or import source countries and input and output prices. In addition, we are concerned about reverse causality issues. The increase in the export unit values of firms to higher income regions could be caused by these firms increasing the price of unit values, which could only be paid by consumers in high income markets. In addition, there could be omitted variables biasing our estimates. For example, an increase in costs – pass

[5] These authors suggests a theoretical model in which firms pass increases in input costs into increases in output prices.

through imports, labor costs, etc. Finally, equation (1) is also silent about the importance of markup pricing, since firms could upgrade quality to all destinations but only be able to increase prices to high-income destinations

Therefore, to avoid these issues we use an instrumental variable generalised method of moments (IV-GMM) model trying various instruments, defined as we explain below. Furthermore, we use the GMM-Continuously Updated GMM Estimation (CUE) due that this technique allows for weak instruments as well as the presence of heteroscedasticity in our sample.[6] A priori the direction of the bias is difficult to identify since it would depend on how demand responds to the increase in output prices. If price elasticities are higher in richer countries, then a positive shock to input prices and hence output prices would generate a decline in average destination income and a negative correlation between log (inc_{it}) and the error term biases the estimates downward. Nevertheless, it could also be the case that price elasticities for Uruguayan firms are lower in richer countries so the bias goes upward. Thus it is not clear the direction of the bias of the OLS estimates.

Our aim is to analyze the effect on the quality of exported products when they are targeted to high income countries, as well as the quality of inputs when they are sourced from high income countries and how these interact. In particular, we also look at the quality of exported goods when the firm uses a higher share of imported inputs from high income countries.

In the instrumental variable approach, we follow previous works and construct different instruments for a firms' average destination and origin market using movements in the exchange rate.[7] The endogenous variables are export and import shares and the income level of destination and source countries.

The ratios of exports over sales and imports over purchases of intermediate goods are instrumented by the real average exchange rate faced by a given firm in international markets:

$$I_{it}^{exp} = \sum_{c} erate_{ct} * \psi_{i,97}^{c} \quad (2.1)$$

$$I_{it}^{imp} = \sum_{c} erate_{ct} * \varphi_{i,97}^{c} \quad (2.2)$$

[6] LIML allows only for weak instruments but not for heteroscedasticity.

[7] Several authors have used similar instruments based on real exchange rates (Revenga, 1992; Bertrand 2004 at the sectoral level, and Park et al. 2010; Verhoogen, 2010; Brambilla et al., 2014; Hummels et al., 2014; and Bastos et al., 2016 at the firm level.

where $\psi_{i,97}^{c}$ is the share of exports of firm *i* to country *c* on total sales in 1997 and $\varphi_{i,97}^{c}$ is the share of imports of firm *i* from country *c* over intermediate goods. The real exchange rate ($erate_t^c$) is calculated as:

$$erate_{ct} = e_{ct}\frac{CPI_t^{uy}}{CPI_t^{c}} \quad (3)$$

where e_{ct} is the nominal exchange rate of country c in time t using Uruguayan peso as the fixed currency. CPI_t^{uy} is the consumer price index of Uruguay at time t, and CPI_t^{c} is the consumer price index of country c. In the case of sales within the domestic market the RER is defined as 100. For the calculation 2005 was used as the reference year.

The rationale for these instruments is the following: given the shares of exports to country *c* in the pre-devaluation period (1997), a higher exchange rate would induce firm *i* to export more to this market –i.e. is more competitive in this market- increasing so the share of exports over total sales to this market. Thus, we expect that our instrument is positively correlated with the export share of the firm. The reverse holds true for the share of imports over total intermediate goods purchases.

The income level of the destination or source country is instrumented by the share of exports or imports in 1997 to Mercosur countries.

In this way, we make use of the devaluation of the currency of Uruguay's main trading partners, in particular Argentina and Brazil, to analyze whether an exogenous change in the destination markets of Uruguay cause an upgrade of the quality of their exports.

Our instrument for the share of exports or imports to high income countries is defined as the interaction of a post-devaluation variable with the pre-devaluation share of firm's exports or imports that were traded with Mercosur´s partners before the devaluation. Thus, since the shares of exports to and imports from the Mercosur in 1997 precede the devaluation, they measure exogenous exposure to the devaluation. In short, our instrument is defined as:

$$I_{HI}^{exp} = Post_t * \psi_{i,97}^{MERC} \quad (4.1)$$

$$I_{HI}^{imp} = Post_t * \varphi_{i,97}^{MERC} \quad (4.2)$$

where $\psi_{i,97}^{MERC}$ is the share of exports to or imports from the Mercosur in 1997, and Post are time dummies. $\varphi_{i,97}^{MERC}$ is analogous for imports. We try two specifications for Post. The first one is year dummies (ϕ_t), so that the Instrumental variables are:

$$I_{HI}^{exp} = \phi_t * \psi_{i,97}^{MERC} \quad (5.1)$$

$$I_{HI}^{imp} = \phi_t * \varphi_{i,97}^{MERC} \quad (5.2)$$

In this way the impact of the devaluation may vary over time as firms adjust to the exchange rate shock. The second specification is the interaction of traded goods to the Mercosur with the regional real exchange rate ($erate_t^{Merc}$):

$$I_{HI}^{exp} = erate_{1997}^{MERC} * \psi_{i,97}^{MERC} * \phi_t \quad (6.1)$$

$$I_{HI}^{imp} = erate_{1997}^{MERC} * \varphi_{i,97}^{MERC} * \phi_t \quad (6.2)$$

The regional real exchange rate is built similar to the real exchange rate, that is, the weighted average of exports to Argentina, Brazil and Paraguay with their respective bilateral exchange rate with Uruguay.

The rationale behind this instrument is similar to export or import propensity except that we allow for different adjustment depending on the firm's exposure to the MERCOSUR. By allowing for the RER to interact with the share of exports to MERCOSUR countries in 1997, if a firm was mostly only exposed to the Argentinean market its need to diversify to higher income countries would be less significant after the devaluation of Brazil in 1998, than the one of Argentina in 2001.

The theoretical rationale for these instruments is that following the devaluation, those firms that were most exposed to Mercosur's partners markets adjusted by moving away from these markets and into high income countries. In other words, a positive correlation is to be expected between the scope to diversify exports and exports to high income countries. The reverse situation should be observed for the share of imports.

The instruments have to be correlated with the endogenous variables –i.e. be relevant- but uncorrelated with the error term, i.e. they have to be exogenous –orthogonality condition-. In this regard, a priori, the instruments defined satisfy these conditions. On one side the devaluation of our major trading partners (Brazil in 1999 and Argentina in 2001) generated exogenous variation in export intensity and in export destinations. These changes are exogenous to the pre-devaluation shares of exports to Mercosur's partners. On the other hand the instrument for export shares is based on exogenous changes in the exchange rates of all trading partners and on each firm exposure to those changes given their pre-devaluation export shares.

Why to use the 1999 Brazilian devaluation?

But due to the aftermaths of the East Asian 1997 and Russian 1998 crisis, Brazil growing unbalances forced the Central Bank of Brazil to defend the crawling peg making Brazil's international reserves to collapse. The exchange rate regime finally became unsustainable and the government let the currency to float freely in early 1999.

Although the devaluation was a possibility, it was largely unexpected and the dimension caught by surprise the Uruguayan economy. The real depreciated 70 percent in January 1999. During the same time the Uruguayan peso devaluated by less than 1 percent.

In addition to the devaluation in Brazil being exogenous to Uruguay, we also argue that the dimension of the devaluation and the impact it had on the Brazilian economy was difficult to predict by exporting firms. One of the reasons for sustaining this is that inflation was the most important priority for the Brazilian government at the time, and the Real was the anchorage used to maintain prices. So letting the Real to devaluate in such a significant way was not considered as a feasible scenario. In addition, the Plan Real was an important political capital for the President Fernando Enrique Cardoso to which he tied his credibility to the maintenance of the currency when he was reelected in October of 1998.

Moreover, even if firms would have had predicted a devaluation of the size of the Brazilian currency, they would have found it difficult to change the direction of their exports in such a short period of time. That is, we claim that the cost of shifting their export destinations was larger than the expected loss due to the possible devaluation in Brazil. The reasons that decreased the capacity of Uruguayan firms to shift the destination of their products before 1997 was the high dependence of Brazil and Argentina, as well as the low levels of competitiveness of the region with the rest of the world measured by the real exchange rate.

Uruguay being a small economy has a high dependence to its neighboring countries. This strong dependence is not only historical and cultural, but also stems from trade and economic treaties between these countries which finalized with signing of the Asunción Treaty in 1991 that created the MERCOSUR, a customs union between Argentina, Brazil, Paraguay and Uruguay.

In addition, since the early 1990's both Brazil (since 1994) and Uruguay (since 1991) had a crawling peg to the US dollar, and Argentina a one-to-one exchange rate to the U.S. dollar (since 1991). These exchange rate regimes were financed by important current account deficits and consequently Uruguay, as well as its most important markets, started to show important

inflation in US dollars. In addition to the loss of competitiveness with the rest of the world, the MERCOSUR is considered to be a case study of trade diversion (Krugman and Obstfeld).

By 1998, more than half of Uruguayan exports were destined to the MERCOSUR, and Brazil alone represented one-third of total exports (table 3). After 1998 we see the first significant drop in Uruguayan exports in constant 2005 US dollars since 1991. This drop is almost completely explained by the decrease in exports to the MERCOSUR, and especially to Brazil.

The importance of the MERCOSUR continues decreasing with the devaluation of the Argentinean peso and the financial and economic crisis of the neighboring country. In 2002 total Uruguayan exports reached a bottom and represented a drop of 37 percent since 1998 in 2005 US dollars. Even by 2002 the drop of exports to MERCOSUR represented more than 80 percent of the total fall in exports.

In 2002, after the devaluation of the Argentinean peso it was inevitable for Uruguay to leave the crawling peg to the US dollar. As expected this cause a reversion in the trend of decreasing exports due to the regained competitive in terms of the real exchange rate depreciation.

Nevertheless, the surge in Uruguayan exports after the devaluation meant a shift of the destination distribution. From 2002 to 2005 export surged by 1,400 million constant 2005 US dollars, while export to the MERCOSUR only increased by 135 million. Most of the increase in exports was destined to the North America Free Trade Area, particularly to the US and Mexico. The participation of the NAFTA went from 6 percent in 1998 to 26 percent in 2005, surpassing the importance of the MERCOSUR.

Table 3. Exports by destination market, percentage of total

	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
MERCOSUR	0.487	0.532	0.447	0.441	0.407	0.319	0.303	0.258	0.228	0.236	0.267	0.268
Argentina	0.130	0.170	0.160	0.175	0.149	0.057	0.069	0.075	0.075	0.076	0.085	0.085
Brazil	0.336	0.337	0.252	0.230	0.218	0.230	0.212	0.163	0.136	0.145	0.165	0.165
Paraguay	0.022	0.026	0.035	0.036	0.041	0.032	0.022	0.020	0.016	0.015	0.017	0.018
Other Latin-America	0.070	0.084	0.087	0.096	0.102	0.097	0.103	0.102	0.118	0.130	0.131	0.132
Mexico	0.012	0.009	0.020	0.038	0.038	0.038	0.041	0.040	0.041	0.034	0.047	0.029
High income	0.349	0.324	0.365	0.355	0.361	0.396	0.435	0.484	0.484	0.389	0.379	0.316
United States	0.057	0.050	0.063	0.081	0.082	0.075	0.107	0.198	0.224	0.130	0.109	0.036
Europe	0.204	0.186	0.205	0.172	0.195	0.245	0.235	0.204	0.188	0.191	0.205	0.212
Asia	0.072	0.072	0.069	0.068	0.048	0.054	0.044	0.036	0.036	0.043	0.036	0.037
Rest of the World	0.094	0.060	0.102	0.109	0.129	0.189	0.160	0.156	0.171	0.246	0.223	0.284
Total	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000

Source: own elaboration based on data from the DNA.

Table 4. Imports by destination market, percentage of total

	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
MERCOSUR	0.439	0.446	0.450	0.462	0.439	0.484	0.515	0.520	0.523	0.416	0.409	0.425
Argentina	0.217	0.226	0.235	0.251	0.227	0.257	0.277	0.256	0.252	0.201	0.184	0.198
Brazil	0.215	0.215	0.211	0.206	0.206	0.219	0.231	0.257	0.264	0.209	0.220	0.219
Paraguay	0.006	0.004	0.005	0.005	0.006	0.008	0.006	0.007	0.006	0.006	0.006	0.007
Other Latin-America	0.053	0.044	0.050	0.060	0.106	0.045	0.045	0.044	0.044	0.173	0.120	0.060
Mexico	0.014	0.012	0.013	0.012	0.012	0.014	0.012	0.012	0.016	0.014	0.015	0.017
High income	0.417	0.442	0.421	0.388	0.350	0.381	0.346	0.311	0.292	0.241	0.279	0.289
United States	0.118	0.125	0.122	0.106	0.089	0.097	0.094	0.090	0.084	0.076	0.114	0.083
Europe	0.207	0.223	0.214	0.209	0.193	0.213	0.179	0.157	0.139	0.113	0.110	0.111
Asia	0.078	0.084	0.065	0.059	0.056	0.052	0.059	0.051	0.058	0.044	0.046	0.047
Rest of the World	0.091	0.068	0.078	0.090	0.105	0.090	0.095	0.124	0.141	0.171	0.191	0.226
Total	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000

Source: own elaboration based on data from the DNA.

5. Descriptive Analysis

Following Bastos el al. (2016) we present a descriptive analysis that suggest that firms charge higher export prices to destination with a higher income. In table 5 we regress by ordinary least squares firm-product log export prices on three measures of market of destination income level, standard controls and a set of fixed effects. We find that higher prices are charged to high income countries (columns 1 and 2), to countries with higher GDP per capita (columns 3 and 4) and to countries richer than Uruguay (columns 5 and 6).

In addition, consistent with Görg et al. (2010) but at odds with Manova and Zhang (2012) we find that once we control for firm-product effects export prices tend to be negatively correlated with the size of the destination market. Following (Melitz and Ottaviano, 2008) theoretical framework, this negative relationship could be explained by a stiffer competition in bigger markets that drives prices down. In table 5b we perform a similar analysis to import prices. From this estimation it is clear that Uruguayan firms pay a higher price to import from higher income countries.

Table 5a. Destination characteristics and export prices in cross section

	dep. var.: firm-product log export price					
	(1)	(2)	(3)	(4)	(5)	(6)
High income	0.174***	0.135***				
	(0.032)	(0.026)				
Log GDP/cap.			0.075***	0.053***		
			(0.012)	(0.007)		
Richer than Uruguay					0.100**	0.052**
					(0.027)	(0.022)
Log GDP	0.011**	-0.054**	0.000	-0.016**	0.015**	-0.005
	(0.005)	(0.020)	(0.007)	(0.007)	(0.007)	(0.006)
MERCOSUR	-0.054*	0.223*	-0.008	0.011	0.021	0.014
	(0.030)	(0.116)	(0.031)	(0.028)	(0.041)	(0.037)
Log distance	-0.003	0.003	0.024**	0.018	0.048***	0.028*
	(0.008)	(0.029)	(0.010)	(0.011)	(0.015)	(0.015)
Product effects	Y	N	Y	N	Y	N
Firm-product effects	N	Y	N	Y	N	Y
Year effects	Y	Y	Y	Y	Y	Y
R2	0.781	0.896	0.781	0.896	0.781	0.896
N	107,808	75,107	107,807	75,106	107,807	75,106

Notes: Sample is all firm-product-destination-year observations for firms in estimation sample. Petroleum exports excluded. Robust standard errors, clustered by destination, in parentheses. *10% level, **5% level, ***1% level.
Source: own elaboration based on data from the DNA and INE

We now turn to the effects of real exchange rates movements on Uruguayan firms. As it can be observed in Figure 3 the real exchange rate (RER) of Uruguay during the period analyzed showed an important volatility. For trading partners outside the MERCOSUR we see a spike in the RER after the devaluation of the Uruguayan peso in 2002, and a fast return to pre-devaluation values. On the other hand, the evolution of the RER with MERCOSUR partners

followed a different dynamic. For Brazil, and especially with Argentina we see an important deterioration of the RER after the devaluation of each of trading partner's currency. We expect the swings of relative price levels of MERCOSUR partners, and also of Uruguay versus the rest of the world, to have significant consequences on the selection of exporting markets by Uruguayan firms.

Table 5b. Source characteristics and import prices in cross section

	dep. var.: firm-product log import price					
	(1)	(2)	(3)	(4)	(5)	(6)
High income	1.353***	0.241**				
	(0.232)	(0.104)				
Log GDP/cap.			0.518***	0.157***		
			(0.061)	(0.024)		
Richer than Uruguay					1.130***	0.305***
					(0.361)	(0.101)
Log GDP	-0.046	-0.023	-0.047	-0.023	0.005	-0.010
	(0.080)	(0.022)	(0.062)	(0.019)	(0.097)	(0.024)
MERCOSUR	0.133	-0.182	0.226	-0.130	0.786	-0.009
	(0.357)	(0.120)	(0.252)	(0.088)	(0.686)	(0.212)
Log distance	-0.186*	-0.077**	-0.024	-0.027	0.221	0.035
	(0.104)	(0.034)	(0.088)	(0.029)	(0.199)	(0.061)
Product effects	Y	N	Y	N	Y	N
Firm-product effects	N	Y	N	Y	N	Y
Year effects	Y	Y	Y	Y	Y	Y
R2	0.621	0.873	0.626	0.874	0.612	0.873
N	1,755,472	623,019	1,755,467	623,015	1,755,467	623,015

Notes: Sample is all firm-product-destination-year observations for firms in estimation sample. Petroleum exports excluded. Robust standard errors, clustered by destination, in parentheses. *10% level, **5% level, ***1% level.
Source: own elaboration based on data from the DNA and INE

In table 6– panel A we analyze the relationship between each firms' destination country market share by year and product, and the real exchange rate. As in Bastos and Silva (2010) we find that an increase in the RER is correlated with an increase in the share of a firm's exports of each product to that destination for all specifications. Once we control for firm-product-destination effects the point estimates remain relatively stable, even after including an indicator for any exports to the destination in 1997 (column 3) or with the firm's initial share of sales in the destination (column 4).

Figure 3: Real exchange rates with selected trading partners and blocks

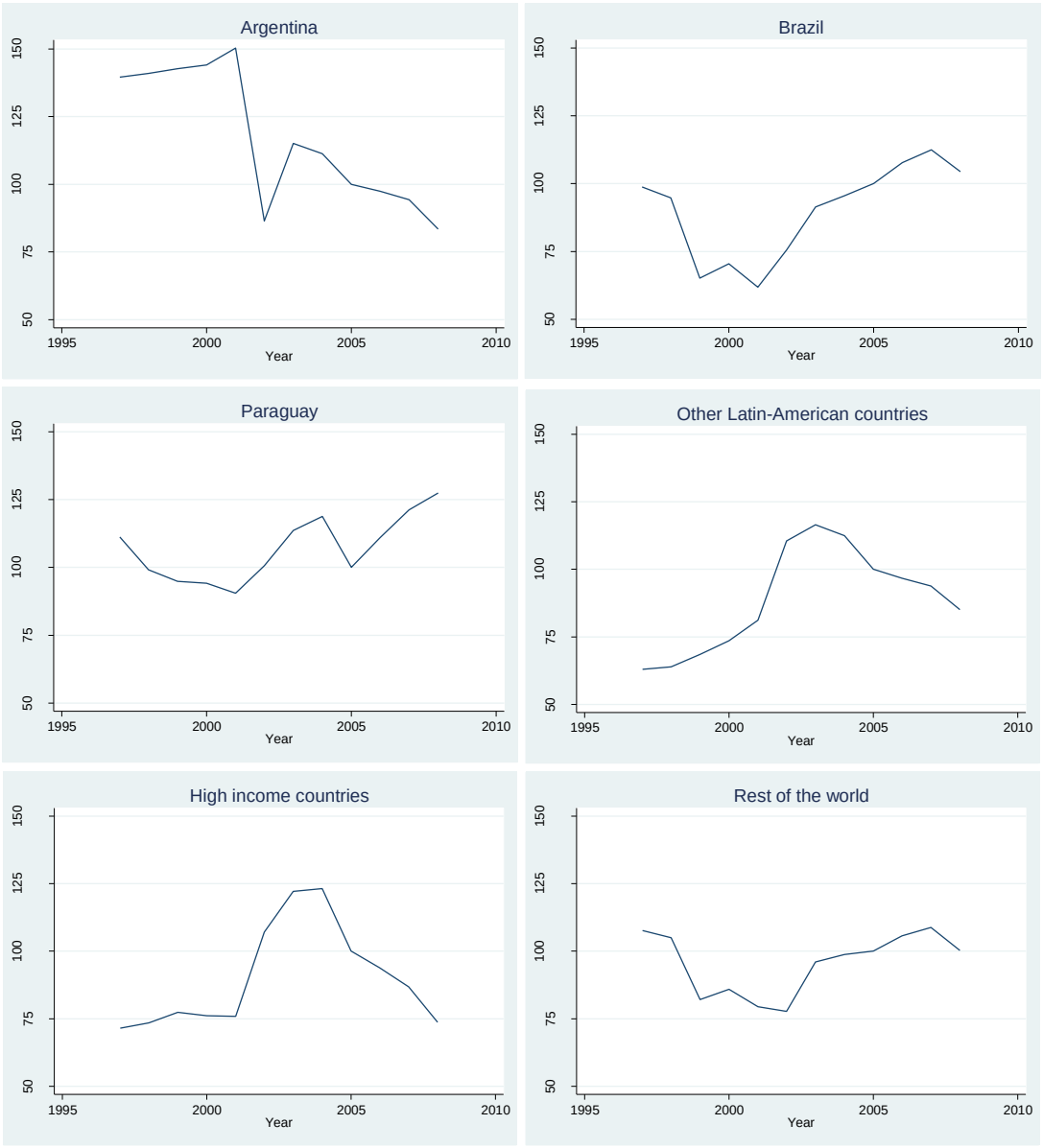


Table 6a. Sales Response to Relative Price Level Movements

Panel A				
	(1)	(2)	(3)	(4)
log(rel. price level)	-0.000	0.028***	0.027***	0.023***
	(0.004)	(0.004)	(0.005)	(0.004)
log(rel. price level)*1(any exports in 1997)			0.003	
			(0.006)	
log(rel. price level)*(exports share in 1997)				0.047***
				(0.003)
firm effects	Y			
Destination effects	Y			
Firm-product-destination effects	N	Y	Y	Y
Year effects	Y	Y	Y	Y
R2	0.840	0.840	0.840	0.842
N	114,204	82,351	82,351	82,351
Panel B				
	(1)	(2)	(3)	(4)
log(rel. price level)	-0.004	0.022*	0.021*	0.005
	(0.011)	(0.013)	(0.013)	(0.013)
log(rel. price level)*1(any exports in 1997)			0.002	
			(0.002)	
log(rel. price level)*(exports share in 1997)				0.047***
				(0.004)
firm effects	Y			
Destination effects	Y			
Firm-destination effects	N	Y	Y	Y
Year effects	Y	Y	Y	Y
R2	0.680	0.859	0.859	0.861
N	26,419	20,190	20,190	20,190

Notes: Dependent variable in Panel A is the share of exports at the product-firm-destination-year level. The dependent variable in Panel B is its equivalent at the firm-destination-year level. Variables 1(any exports in 1997) and export share in 1997 defined at firm-destination-product level in Panel A and firm-destination level in Panel B. Robust standard errors, clustered at firm-year level, in parentheses. *10% level, **5% level, ***1% level

Source: own elaboration based on data from the DNA and the INE.

Nevertheless, in contrast to (Bastos et al., 2016) we only find a significant and positive relationship for the interaction of relative price levels and the percentage of exports to each country-product share by year. This is anticipated as we expect that impact of the RER would be more important for firms that had a higher exposure to each market. The results for firm-destination-year level (Panel B) also support the hypothesis that a higher exposition to a destination magnifies the correlation with relative prices.

Table 6b. Sales Response to Relative Price Level Movements

Panel A				
	(1)	(2)	(3)	(4)
log(rel. price level)	0.002***	-0.002***	0.000	-0.003***
	(0.001)	(0.001)	(0.001)	(0.001)
log(rel. price level)*1(any imports in 1997)			-0.005***	
			(0.001)	
log(rel. price level)*(imports share in 1997)				0.050***
				(0.001)
firm effects	Y			
Destination effects	Y			
Firm-product-destination effects	N	Y	Y	Y
Year effects	Y	Y	Y	Y
R2	0.214	0.711	0.711	0.713
N	1,761,612	1,189,708	1,189,708	1,189,708
Panel B				
	(1)	(2)	(3)	(4)
log(rel. price level)	-0.019***	-0.035***	-0.036***	-0.045***
	(0.006)	(0.008)	(0.008)	(0.008)
log(rel. price level)*1(any exports in 1997)			0.006***	
			(0.001)	
log(rel. price level)*(imports share in 1997)				0.054***
				(0.003)
firm effects	Y			
Destination effects	Y			
Firm-destination effects	N	Y	Y	Y
Year effects	Y	Y	Y	Y
R2	0.684	0.851	0.851	0.853
N	86,719	60,221	60,221	60,221

Notes: Dependent variable in Panel A is the share of imports at the product-firm-source-year level. The dependent variable in Panel B is its equivalent at the firm-source-year level. Variables 1(any imports in 1997) and imports share in 1997 defined at firm-source-product level in Panel A and firm-source level in Panel B. Robust standard errors, clustered at firm-year level, in parentheses. *10% level, **5% level, ***1% level

Source: own elaboration based on data from the DNA and the INE.

As expected, the same estimation for import prices as seen in table 6b delivers a very different result. In this case we see a negative correlation between the share of imports and the real exchange rate. Nevertheless, previous exposure to import markets tends to soften the fall of imports. This highlights that import relationships tend to be costly to build and last over time, regardless of the movements in the real exchange rate.

6. Results

a. Export and import prices by level of income of destination markets

According to OLS estimates from table 7, there is a positive relationship between exports to high income markets and the firm-level average export prices. In the case of the average income at the destination markets this relationship is not significant, so exporting per se is not correlated with prices. Nevertheless, due to the points raised above we have reasons to believe that the OLS estimates could be biased.

Table 7. Destination income and firm average export prices, OLS

	(1)	(2)	(3)
Percentage of exports to high income countries	0.487** (2.54)		
Log average GDP per capita of destination countries		-0.056 (-1.25)	0.004 (0.14)
Exports over sales	-0.310 (-0.97)	-0.295 (-0.91)	-0.273 (-0.86)
Log average distance to destination countries	0.028 (0.74)	0.086 (1.52)	
Log of total factor productivity of firm	-0.022 (-0.46)	-0.026 (-0.55)	-0.023 (-0.49)
N	2448	2448	2448

Notes: OLS regressions. Dependent variable in second stage: firm's average export prices
t statistics in parentheses
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 8 reports the estimation under the GMM continuously updated estimator (CUE). The reason for using CUE is that it is robust to the presence of week instruments (Hahn et al., 2004) as "their finite-sample performance may be superior" than GMM.[8] Furthermore, it is robust to heteroscedasticity.

The estimates for the IV-GMM estimation proves that the instruments are jointly valid (Hansen J statistic) and that instruments are relevant (Kleibergen-Paap rk LM statistic). Despite this, according to the Stock-Yogo estimates, Kleibergen-Paap rk Wald F statistic value indicates that instruments are weakly correlated to the endogenous regressors. We follow Baum et al. (2007) suggestion in using the rk Wald statistic instead of the Cragg-Donald statistic in the presence of heteroskedasticity, autocorrelation and clustering.

[8] Estimates on GMM and CUE without lags in the appendix.

Table 8 presents the estimates of the CUE using as instruments the log average real exchange rate of the firm weighted by the shares of exports of the firm in 1997 and the average real exchange rate weighted by the share of exports to MERCOSUR countries interacted with time dummies.[9] In addition to the set of instruments for export intensity and exports to high income countries we also consider the second lag of the endogenous variables.

In contrast to the OLS estimations, the IV-CUE estimates tell a different story. Now we observe that it is exporting that matter, not the market of destination of exports. In this case neither of our measures of income of destination countries are significant. In addition, we see that productivity is negatively correlated with the average prices. This confirms previous findings by Johnson (2012) and Gervais (2013) that the prices are decreasing in productivity pointing out to price competition in international markets.

Table 8. Destination income and firm average export prices, IV-CUE with lags

	(1)	(2)	(3)
Percentage of exports to high income countries	-0.857 (-0.86)		
Log average GDP per capita of destination countries		0.267 (1.03)	-0.053 (-0.42)
Exports over sales	7.865*** (4.00)	4.488*** (2.95)	2.941** (2.24)
Log average distance to destination countries	0.010 (0.17)	-0.286 (-1.20)	
Log of total factor productivity of firm	-0.207** (-2.51)	-0.108* (-1.73)	-0.081 (-1.39)
Log average GDP per capita of destination countries		0.267 (1.03)	-0.053 (-0.42)
N	1279	1174	1174
Hansen J statistic	15.697	13.450	14.404
p-value	0.545	0.706	0.638
Kleibergen-Paap rk LM stat.	32.942	28.734	33.244
p-value	0.0170	0.0517	0.0156
Kleibergen-Paap rk Wald F stat.	3.294	2.131	2.196
Stock-Yogo (10% max. LIML)	3.57	3.57	3.57

Notes: IV-CUE regressions. Dependent variable in second stage: firm's average export prices. All regressions include firm and year fixed effects. Excluded instruments are the log average yearly RER of each firm using destination country shares of 1997, and the log average RER of each firm to MERCOSUR using the shares of exports in 1997 interacted with time dummies, and also the second lag of the endogenous variables. The standard errors are clustered by firm level.
t statistics in parentheses
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

As discussed by Bastos et al. (2016) these results could be affected by pricing to market. For that reason, we estimate the effect of the export destination income and export intensity on

[9] Estimates using the second the alternative set of instruments in the appendix.

the average import prices of the firm. The OLS estimates in table 9 show a positive correlation between the percentage of exports to high income countries and the average export price, but a not significant relationship to the average income of destination countries. Nevertheless, these relationships are inverted once we instrument our explanatory variables.

Table 9. Destination income and firm average import prices, OLS

	(1)	(2)	(3)
Percentage of exports to high income countries	0.196*		
	(2.19)		
Log average GDP per capita of destination countries		-0.012	-0.006
		(-0.66)	(-0.72)
Exports over sales	0.157	0.169	0.171
	(1.23)	(1.30)	(1.30)
Log average distance to destination countries	-0.007	0.008	
	(-0.63)	(0.40)	
Log of total factor productivity of firm	0.066**	0.065**	0.066**
	(2.77)	(2.75)	(2.76)
N	2604	2604	2604

Notes: OLS regressions. Dependent variable in second stage: firm's average import prices
t statistics in parentheses
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

In table 10 we observe that the percentage of exports to high income countries have a negative impact on the average import prices. The results are nevertheless not clear cut for the average GDP per capita of the destination countries, as in our specification controlling by average distance the coefficient is not significant. We argue that this lack of significance is driven by the average distance to destination countries, as for countries distant to high income markets, as is the case of Uruguay, there is a positive correlation between average distance and income to destination countries. For that reason, we try a specification without log average distance to destination countries in the third column of our estimation.

The negative effect of exports to high income countries on import prices could be due to the productive structure of Uruguayan firms exporting to developed regions. Uruguayan exports to high income countries are mainly from sectors with low R&D intensity and commoditized goods with low scope for vertical differentiation, i.e. food products, wood, leather and wool. [10] On the other hand exports to MERCOSUR countries, especially Argentina, are concentrated in transport equipment, plastic products, paper, and chemicals and textiles.

[10] Reports of Short Run Analysis Area [Area de Coyuntura], Instituto de Economía, Universidad de la República.

Table 10. Destination income and firm average import prices, IV-CUE with lags

	(1)	(2)	(3)
Percentage of exports to high income countries	-1.068**		
	(-2.49)		
Log average GDP per capita of destination countries		0.089	-0.458***
		(0.75)	(-4.26)
Exports over sales	0.324	2.173**	0.564
	(0.52)	(2.46)	(0.64)
Log average distance to destination countries	0.028	-0.079	
	(1.50)	(-0.75)	
Log of total factor productivity of firm	0.018	0.006	0.029
	(0.58)	(0.16)	(0.67)
N	1325	1189	1189
Hansen J statistic	20.857	20.246	15.748
p-value	0.233	0.262	0.542
Kleibergen-Paap rk LM stat.	24.178	28.148	33.033
p-value	0.1493	0.0598	0.0167
Kleibergen-Paap rk Wald F stat.	3.299	2.054	2.312
Stock-Yogo (10% max. LIML)	3.57	3.57	3.57

Notes: IV-CUE regressions. Dependent variable in second stage: firm's average import prices. All regressions include firm and year fixed effects and the second lag of the endogenous variables. Excluded instruments are the log average yearly RER of each firm using destination country shares of 1997, and the log average RER of each firm to MERCOSUR using the shares of exports in 1997 interacted with time dummies. The standard errors are clustered by firm level.
t statistics in parentheses
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

b. Export and import prices by source markets income

This section studies the effect of the income level of source countries to the average export and import prices. From the OLS estimations in table 11 we observe that there is a positive correlation between the import propensity of firms as well as the percentage of imports form high income countries with the average import price.

Table 11. Source income and firm average import prices, OLS

	(1)	(2)	(3)
Percentage of imports from high income countries	0.474***		
	(4.74)		
Log average GDP per capita of source countries		0.190***	0.193***
		(4.43)	(5.69)
Imports over purchases of intermediate goods	0.240***	0.241***	0.242***
	(3.17)	(3.17)	(3.18)
Log average distance from source countries	0.009	0.004	
	(0.27)	(0.10)	
Log of total factor productivity of firm	0.025	0.025	0.025
	(1.35)	(1.37)	(1.35)
N	4698	4698	4698

Notes: OLS regressions. Dependent variable in second stage: firm's average import prices
t statistics in parentheses
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Nevertheless, our IV-CUE estimates in Table 12 indicate that only the income level of the origin of imports matter. The estimates use as instruments the log average real exchange rate to all countries and to MERCOSUR countries using the shares of imports in 1997, and the second lag of the endogenous variables. In this case we observe that only the imports from high income countries are correlated with import prices.

Table 12. Source income and firm average import prices, IV-CUE with lags

	(1)	(2)	(3)
Percentage of imports from high income countries	0.987**		
	(2.24)		
Log average GDP per capita of source countries		0.772***	0.507***
		(2.80)	(2.97)
Imports over purchases of intermediate goods	0.060	0.072	0.038
	(0.20)	(0.23)	(0.12)
Log average distance from source countries	-0.122	-0.356**	
	(-1.49)	(-2.39)	
Log of total factor productivity of firm	0.003	0.003	-0.000
	(0.15)	(0.13)	(-0.02)
N	2756	2743	2743
Hansen J statistic	23.873	21.101	21.691
p-value	0.201	0.331	0.300
Kleibergen-Paap rk LM stat.	54.776	37.410	38.156
p-value	0.0000	0.0104	0.0085
Kleibergen-Paap rk Wald F stat.	3.728	2.000	2.527
Stock-Yogo (10% max. LIML)	3.59	3.59	3.59

Notes: IV-CUE regressions. Dependent variable in second stage: firm's average import prices. All regressions include firm and year fixed effects and the second lag of the endogenous variables. Excluded instruments are the log average yearly RER of each firm using source country shares of 1997, and the log average RER of each firm from MERCOSUR using the shares of imports in 1997 interacted with time dummies. The standard errors are clustered by firm level.
t statistics in parentheses
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

We follow an analogous approach as in tables 11 and 12 and estimate the effect of the source countries of imports on the export prices. In table 13 we report the values of OLS estimations, which point towards a negative and significant relationship between import propensity and export prices. One possible explanation for this relationship could be the gains in efficiency by using imported inputs, which may drive export prices down.

Table 13. Source income and firm average export prices, OLS

	(1)	(2)	(3)
Percentage of imports from high income countries	0.058 (0.24)		
Log average GDP per capita of source countries		0.032 (0.32)	-0.056 (-0.85)
Imports over purchases of intermediate goods	-0.333* (-1.71)	-0.332* (-1.70)	-0.349* (-1.78)
Log average distance from source countries	-0.092 (-1.43)	-0.101 (-1.25)	
Log of total factor productivity of firm	-0.050 (-0.90)	-0.051 (-0.90)	-0.049 (-0.89)
N	2518	2518	2518

Notes: OLS regressions. Dependent variable in second stage: firm's average export prices
t statistics in parentheses
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

The significance of this correlation is not present in the IV-CUE estimation in table 14, as only imports originated from higher income countries have a positive impact on the firms' average export prices. This goes in line with table 12, as those firms that import from higher income countries show a higher average export and import prices.

Table 14. Source income and firm average export prices, IV-CUE with lags

	(1)	(2)	(3)
Percentage of imports from high income countries	2.254** (2.43)		
Log average GDP per capita of source countries		2.208*** (4.02)	1.453*** (3.51)
Imports over purchases of intermediate goods	-0.931 (-1.43)	-0.563 (-0.70)	-1.259 (-1.59)
Log average distance from source countries	-0.423*** (-2.65)	-1.380*** (-4.08)	
Log of total factor productivity of firm	-0.087 (-1.47)	-0.140* (-1.84)	-0.133* (-1.77)
N	1591	1579	1579
Hansen J statistic	27.167	23.497	23.831
p-value	0.101	0.216	0.203
Kleibergen-Paap rk LM stat.	38.525	35.766	30.613
p-value	0.0076	0.0164	0.0605
Kleibergen-Paap rk Wald F stat.	2.620	2.182	2.146
Stock-Yogo (10% max. LIML)	3.59	3.59	3.59

Notes: IV-CUE regressions. Dependent variable in second stage: firm's average export prices. All regressions include firm and year fixed effects and the second lag of the endogenous variables. Excluded instruments are the log average yearly RER of each firm using source country shares of 1997, and the log average RER of each firm from MERCOSUR using the shares of imports in 1997 interacted with time dummies. The standard errors are clustered by firm level.
t statistics in parentheses
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

7. Conclusion

In this paper we analyze the impact of the markets of destination of exports and origin of imports on the quality of exports and imports, using as proxy to quality the unit values of traded goods controlled by product. We follow other previous studies and examine this relationship using an instrumental variable approach that exploit the changes in the real exchange rates of Uruguay with its Mercosur trade partners as an exogenous change in the structure of exported and imported products.

Our endogenous variables are the export and import intensity of firms and two measures for the impact of the source or destination country of trade. One being the percentage of exports or imports to high income countries, and the second one on the average income that each firm export to or imports from. Our preferred set of instruments are the average real exchange rate that each firm faces with the rest of the world based on exports of imports in 1997, and the same measure but restricted to MERCOSUR countries. While the first instrument is used to estimate the causal effect of export or import propensity of the firms, the second is used for the participation of high income countries in exports and imports.

The measure that we use to capture quality is imperfect as prices also depend on other characteristics of the product and the behavior of the firms or consumers that we are not able to control for. For that reason we follow Bastos et al. (2016) and explore the effect of exogenous changes in exports and imports experienced by Uruguayan firms on the average import and export prices. We test these hypotheses using a rich database for Uruguay over the period 1997-2008. This dataset combines firm level data and detailed customs data of exports and imports by destination or origin country.

Our preliminary results show a positive effect of both exporting to and importing from high income countries to the quality of imported goods. This suggests that an increase in the average income of destination markets leads to increases in the quality of the goods imported. On the other hand, the results on the quality of exported goods are not conclusive. While there is a positive relationship between export intensity and export prices, this relationship is not observed for import prices. Finally, we find a negative relationship between the importance of high income countries for firms' exports on import prices.

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9. Appendix

Table A1. Source-country characteristics and import prices in cross section, 1997

	dep. var.: firm-product log import price					
	(1)	(2)	(3)	(4)	(5)	(6)
High income	0.786**	0.610****				
	(0.317)	(0.099)				
Log GDP/cap.			0.457**	0.246****		
			(0.175)	(0.045)		
Richer than Uruguay					0.239***	0.269****
					(0.071)	(0.046)
Log GDP	-0.023	-0.025	-0.035	-0.020	0.003	0.010
	(0.097)	(0.030)	(0.076)	(0.022)	(0.102)	(0.035)
MERCOSUR	-0.035	0.258**	0.595	0.401**	-0.601*	-0.083
	(0.404)	(0.115)	(0.560)	(0.152)	(0.314)	(0.079)
Landlocked	0.439**	0.178	0.222	0.096	0.495**	0.205
	(0.210)	(0.142)	(0.241)	(0.155)	(0.209)	(0.147)
Log distance	-0.175**	-0.127****	-0.162**	-0.076***	0.014	0.017
	(0.080)	(0.030)	(0.071)	(0.023)	(0.052)	(0.021)
Product effects	Y	N	Y	N	Y	N
Firm-product effects	N	Y	N	Y	N	Y
Adj. R2	0.677	0.802	0.680	0.802	0.676	0.801
N	24,657	9,607	24,657	9,607	24,657	9,607

Notes: Sample is all firm-product-destination observations for firms in estimation sample. Petroleum exports excluded. Robust standard errors, clustered by destination, in parentheses. *10% level, **5% level, ***1% level, **** 0.1% level.

Source: own elaboration based on data from the DNA and the INE.

Table A2. Destination income and firm average export prices, IV-GMM and IV-CUE using alternative set of instruments

	(1)	(2)	(3)	(4)	(5)	(6)
Percentage of imports from high income countries	-0.078 (-0.06)			0.235 (0.16)		
Log average GDP per capita of destination countries		-0.458 (-0.95)	-0.258 (-1.04)		-0.973* (-1.80)	-0.368 (-1.41)
Exports over sales	-2.553 (-0.98)	-2.643 (-1.06)	-2.230 (-0.88)	-3.660 (-1.40)	-3.354 (-1.22)	-2.742 (-1.04)
Log average distance to destination countries	0.062 (1.34)	0.471 (1.08)		0.061 (1.24)	0.932* (1.91)	
Log of total factor productivity of firm	0.041 (0.44)	0.028 (0.30)	0.027 (0.30)	0.074 (0.78)	0.028 (0.26)	0.039 (0.42)
N	2084	2084	2084	2084	2084	2084
Hansen J statistic	7.047	6.088	5.504	7.012	5.463	5.312
p-value	0.632	0.731	0.788	0.636	0.792	0.806
Kleibergen-Paap rk LM stat.	14.491	16.118	14.547	14.491	16.118	14.547
p-value	0.1518	0.0963	0.1495	0.1518	0.0963	0.1495
Kleibergen-Paap rk Wald F stat.	1.420	1.548	1.427	1.420	1.548	1.427
Stock-Yogo (10% max.)	10.69	10.69	10.69	3.60	3.60	3.60

Notes: Columns 1-3 report IV-GMM estimates and 4-6 IV-CUE estimates. Dependent variable in second stage: firm's average export prices. All regressions include firm and year fixed effects. Excluded instruments are the log average yearly RER of each firm using destination country shares of 1997, and the shares of each firm's exports to MERCOSUR in 1997 interacted with time dummies. Columns 1-3 report Stock-Yogo critical values for the maximal IV relative bias, while columns 4-6 for the maximal LIML size. The standard errors are clustered by firm level.
t statistics in parentheses.
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table A3. Destination income and firm average export prices, IV-GMM and IV-CUE using main set of instruments

	(1)	(2)	(3)	(4)	(5)	(6)
Percentage of imports from high income countries	-0.628 (-0.84)			-1.862* (-1.66)		
Log average GDP per capita of destination countries		-0.657** (-2.10)	-0.406** (-2.28)		-3.081*** (-2.96)	-0.854** (-2.49)
Exports over sales	-1.722 (-1.09)	-2.895* (-1.69)	-2.190 (-1.35)	-9.304*** (-3.66)	-22.947*** (-3.82)	-13.119*** (-4.09)
Log average distance to destination countries	0.036 (0.91)	0.620** (2.15)		0.102* (1.68)	2.900*** (3.07)	
Log of total factor productivity of firm	-0.038 (-0.57)	-0.010 (-0.13)	-0.002 (-0.02)	0.151 (1.38)	0.395* (1.66)	0.292** (2.03)
N	1962	1962	1962	1962	1962	1962
Hansen J statistic	28.640	21.382	22.719	21.242	12.087	15.318
p-value	0.053	0.261	0.202	0.267	0.843	0.640
Kleibergen-Paap rk LM stat.	19.961	14.558	19.855	19.961	14.558	19.855
p-value	0.3969	0.7502	0.4033	0.3969	0.7502	0.4033
Kleibergen-Paap rk Wald F stat.	1.697	1.055	1.630	1.697	1.055	1.630
Stock-Yogo (10% max.)	11.03	11.03	11.03	3.58	3.58	3.58

Notes: Notes: Columns 1-3 report IV-GMM estimates and 4-6 IV-CUE estimates. Dependent variable in second stage: firm's average export prices. All regressions include firm and year fixed effects. Excluded instruments are the log average yearly RER of each firm using destination country shares of 1997, and the log average RER of each firm to MERCOSUR using the shares of exports in 1997 interacted with time dummies. Columns 1-3 report Stock-Yogo critical values for the maximal IV relative bias, while columns 4-6 for the maximal LIML size. The standard errors are clustered by firm level.
t statistics in parentheses
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table A4. Destination income and firm average export prices, IV-CUE with lags using alternative set of instruments

	(1)	(2)	(3)
Percentage of imports from high income countries	-3.384 (-1.61)		
Log average GDP per capita of destination countries		-0.043 (-0.10)	0.007 (0.04)
Exports over sales	0.697 (0.43)	-0.465 (-0.32)	-0.697 (-0.45)
Log average distance to destination countries	0.110 (1.48)	0.002 (0.00)	
Log of total factor productivity of firm	-0.073 (-0.89)	0.002 (0.03)	0.006 (0.09)
Log average GDP per capita of destination countries		-0.043 (-0.10)	0.007 (0.04)
N	1373	1229	1229
Hansen J statistic	2.945	6.773	6.717
p-value	0.938	0.561	0.567
Kleibergen-Paap rk LM stat.	8.881	15.994	12.185
p-value	0.4484	0.0670	0.2031
Kleibergen-Paap rk Wald F stat.	1.196	1.850	1.511
Stock-Yogo (10% max. LIML)	3.64	3.64	3.64

Notes: IV-CUE regressions. Dependent variable in second stage: firm's average export prices. All regressions include firm and year fixed effects and the second lag of the endogenous variable. Excluded instruments are the log average yearly RER of each firm using destination country shares of 1997, and the shares of each firm's exports to MERCOSUR in 1997 interacted with time dummies. The standard errors are clustered by firm level.
t statistics in parentheses
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table A5. Destination income and firm average import prices, IV-GMM and IV-CUE using alternative set of instruments

	(1)	(2)	(3)	(4)	(5)	(6)
Percentage of imports from high income countries	-1.095 (-1.55)			-0.989 (-1.16)		
Log average GDP per capita of destination countries		0.066 (0.26)	-0.178 (-1.15)		0.117 (0.41)	-0.081 (-0.45)
Exports over sales	-1.692 (-1.00)	-2.044 (-1.22)	-1.654 (-0.97)	-4.293** (-2.16)	-5.281** (-2.57)	-5.103** (-2.50)
Log average distance to destination countries	0.028 (1.17)	-0.055 (-0.25)		0.036 (1.25)	-0.085 (-0.34)	
Log of total factor productivity of firm	0.121** (2.25)	0.126** (2.25)	0.118** (2.09)	0.190*** (2.90)	0.213*** (3.02)	0.207*** (2.96)
N	2212	2212	2212	2212	2212	2212
Hansen J statistic	7.871	7.940	8.175	7.515	7.928	7.830
p-value	0.547	0.540	0.517	0.584	0.541	0.551
Kleibergen-Paap rk LM stat.	14.083	12.939	12.132	14.083	12.939	12.132
p-value	0.1692	0.2271	0.2763	0.1692	0.2271	0.2763
Kleibergen-Paap rk Wald F stat.	1.328	1.217	1.164	1.328	1.217	1.164
Stock-Yogo (10% max.)	10.69	10.69	10.69	3.60	3.60	3.60

Notes: Columns 1-3 report IV-GMM estimates and 4-6 IV-CUE estimates. Dependent variable in second stage: firm's average import prices. All regressions include firm and year fixed effects. Excluded instruments are the log average yearly RER of each firm using destination country shares of 1997, and the shares of each firm's exports to MERCOSUR in 1997 interacted with time dummies. Columns 1-3 report Stock-Yogo critical values for the maximal IV relative bias, while columns 4-6 for the maximal LIML size. The standard errors are clustered by firm level.

t statistics in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table A6. Destination income and firm average import prices, IV-GMM and IV-CUE using main set of instruments

	(1)	(2)	(3)	(4)	(5)	(6)
Percentage of imports from high income countries	-0.455 (-1.36)			1.016 (1.03)		
Log average GDP per capita of destination countries		0.007 (0.06)	-0.297** (-2.53)		-2.115*** (-2.99)	-0.622*** (-3.42)
Exports over sales	-0.379 (-0.36)	-0.510 (-0.47)	-1.556 (-1.23)	-10.037*** (-3.89)	-22.224*** (-3.59)	-5.329*** (-2.64)
Log average distance to destination countries	0.005 (0.36)	-0.011 (-0.09)		0.013 (0.29)	1.881*** (3.05)	
Log of total factor productivity of firm	0.067* (1.88)	0.071** (1.97)	0.104** (2.37)	0.269*** (3.00)	0.535** (2.46)	0.203*** (2.69)
N	2047	2047	2047	2047	2047	2047
Hansen J statistic	24.079	25.294	15.548	19.156	14.363	11.946
p-value	0.152	0.117	0.624	0.3823	0.705	0.850
Kleibergen-Paap rk LM stat.	20.026	15.341	18.313	20.026	15.341	18.313
p-value	0.3930	0.7007	0.5016	0.3930	0.7007	0.5016
Kleibergen-Paap rk Wald F stat.	1.420	1.068	1.310	1.420	1.068	1.310
Stock-Yogo (10% max.)	11.03	11.03	11.03	3.58	3.58	3.58

Notes: Columns 1-3 report IV-GMM estimates and 4-6 IV-CUE estimates. Dependent variable in second stage: firm's average import prices. All regressions include firm and year fixed effects. Excluded instruments are the log average yearly RER of each firm using destination country shares of 1997, and the log average RER of each firm to MERCOSUR using the shares of exports in 1997 interacted with time dummies. Columns 1-3 report Stock-Yogo critical values for the maximal IV relative bias, while columns 4-6 for the maximal LIML size. The standard errors are clustered by firm level.
t statistics in parentheses
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table A7. Destination income and firm average import prices, IV-CUE with lags using alternative set of instruments

	(1)	(2)	(3)
Percentage of imports from high income countries	-3.499***		
	(-2.82)		
Log average GDP per capita of destination countries		0.889**	-0.796***
		(2.14)	(-3.00)
Exports over sales	0.046	1.987	1.720
	(0.05)	(1.51)	(1.22)
Log average distance to destination countries	0.098**	-0.791**	
	(2.32)	(-2.14)	
Log of total factor productivity of firm	0.029	-0.015	0.040
	(0.70)	(-0.25)	(0.63)
N	1449	1247	1247
Hansen J statistic	6.301	7.985	5.886
p-value	0.614	0.435	0.660
Kleibergen-Paap rk LM stat.	12.431	11.270	10.302
p-value	0.1901	0.2577	0.3266
Kleibergen-Paap rk Wald F stat.	1.593	1.239	1.256
Stock-Yogo (10% max. LIML)	3.64	3.64	3.64

Notes: IV-CUE regressions. Dependent variable in second stage: firm's average import prices. All regressions include firm and year fixed effects and the second lag of the endogenous variable. Excluded instruments are the log average yearly RER of each firm using destination country shares of 1997, and the shares of each firm's exports to MERCOSUR in 1997 interacted with time dummies. The standard errors are clustered by firm level.
t statistics in parentheses
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table A8. Source income and firm average import prices, IV-GMM and IV-CUE using alternative set of instruments

	(1)	(2)	(3)	(4)	(5)	(6)
Percentage of imports from high income countries	0.596 (0.96)			0.860 (1.14)		
Log average GDP per capita of source countries		0.313 (0.95)	0.260 (1.28)		0.404 (1.04)	0.328 (1.33)
Imports over purchases of intermediate goods	2.268* (1.70)	1.956* (1.78)	2.099* (1.72)	3.220** (2.00)	2.516** (2.01)	2.924** (1.97)
Log average distance from source countries	-0.042 (-0.35)	-0.085 (-0.49)		-0.099 (-0.67)	-0.136 (-0.68)	
Log of total factor productivity of firm	-0.029 (-0.66)	-0.020 (-0.53)	-0.026 (-0.62)	-0.058 (-1.06)	-0.038 (-0.84)	-0.054 (-1.02)
N	3997	3997	3997	3997	3997	3997
Hansen J statistic	4.492	4.935	4.892	4.012	4.590	4.387
p-value	0.876	0.840	0.844	0.911	0.868	0.884
Kleibergen-Paap rk LM stat.	8.336	10.062	8.568	8.336	10.062	8.568
p-value	0.5961	0.4351	0.5735	0.5961	0.4351	0.5735
Kleibergen-Paap rk Wald F stat.	0.752	0.914	0.774	0.752	0.914	0.774
Stock-Yogo (10% max.)	10.69	10.69	10.69	3.60	3.60	3.60

Notes: Columns 1-3 report IV-GMM estimates and 4-6 IV-CUE estimates. Dependent variable in second stage: firm's average import prices. All regressions include firm and year fixed effects. Excluded instruments are the log average yearly RER of each firm using source country shares of 1997, and the shares of each firm's imports from MERCOSUR in 1997 interacted with time dummies. Columns 1-3 report Stock-Yogo critical values for the maximal IV relative bias, while columns 4-6 for the maximal LIML size. The standard errors are clustered by firm level.
t statistics in parentheses
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table A9. Source income and firm average import prices, IV-GMM and IV-CUE using main set of instruments

	(1)	(2)	(3)	(4)	(5)	(6)
Percentage of imports from high income countries	-0.027 (-0.06)			-0.846 (-1.15)		
Log average GDP per capita of source countries		0.205 (0.83)	0.279* (1.70)		-0.173 (-0.38)	-0.339 (-0.93)
Imports over purchases of intermediate goods	-0.523 (-0.83)	-0.380 (-0.63)	-0.214 (-0.34)	-4.525*** (-3.74)	-4.493*** (-3.80)	-5.559*** (-3.85)
Log average distance from source countries	0.084 (1.02)	-0.028 (-0.22)		0.258* (1.78)	0.189 (0.80)	
Log of total factor productivity of firm	0.054** (2.15)	0.050** (2.10)	0.044* (1.72)	0.169*** (3.42)	0.167*** (3.45)	0.210*** (3.46)
N	3997	3997	3997	3997	3997	3997
Hansen J statistic	28.707	28.462	27.750	20.101	20.977	20.054
p-value	0.052	0.055	0.066	0.327	0.281	0.330
Kleibergen-Paap rk LM stat.	28.139	28.735	24.743	28.139	28.734	24.743
p-value	0.0808	0.0703	0.1692	0.0808	0.0703	0.1692
Kleibergen-Paap rk Wald F stat.	1.671	1.700	1.452	1.671	1.700	1.452
Stock-Yogo (10% max. IV RS)	11.03	11.03	11.03	3.58	3.58	3.58

Notes: Columns 1-3 report IV-GMM estimates and 4-6 IV-CUE estimates. Dependent variable in second stage: firm's average import prices. All regressions include firm and year fixed effects. Excluded instruments are the log average yearly RER of each firm using source country shares of 1997, and the log average RER of each firm from MERCOSUR using the shares of imports in 1997 interacted with time dummies. Columns 1-3 report Stock-Yogo critical values for the maximal IV relative bias, while columns 4-6 for the maximal LIML size. The standard errors are clustered by firm level.
t statistics in parentheses
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table A10. Destination income and firm average import prices, IV-CUE with lags using alternative set of instruments

	(1)	(2)	(3)
Percentage of imports from high income countries	0.660 (1.26)		
Log average GDP per capita of source countries		0.294 (1.02)	0.397** (2.09)
Imports over purchases of intermediate goods	0.251 (0.72)	0.242 (0.71)	0.214 (0.62)
Log average distance from source countries	-0.048 (-0.49)	-0.076 (-0.50)	
Log of total factor productivity of firm	-0.007 (-0.33)	-0.007 (-0.30)	-0.011 (-0.50)
N	2756	2743	2743
Hansen J statistic	6.208	6.829	5.544
p-value	0.719	0.655	0.784
Kleibergen-Paap rk LM stat.	38.562	31.615	35.243
p-value	0.0000	0.0005	0.0001
Kleibergen-Paap rk Wald F stat.	4.936	3.090	4.267
Stock-Yogo (10% max. LIML)	3.60	3.60	3.60

Notes: IV-CUE regressions. Dependent variable in second stage: firm's average import prices. All regressions include firm and year fixed effects and the second lag of the endogenous variables. Excluded instruments are the log average yearly RER of each firm using source country shares of 1997, and the shares of each firm's imports to MERCOSUR in 1997 interacted with time dummies. The standard errors are clustered by firm level.
t statistics in parentheses
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table A11. Source income and firm average export prices, IV-GMM and IV-CUE using alternative set of instruments

	(1)	(2)	(3)	(4)	(5)	(6)
Percentage of imports from high income countries	1.657 (1.35)			7.155*** (3.52)		
Log average GDP per capita of source countries		0.935* (1.77)	0.573 (1.21)		2.322*** (3.56)	2.604*** (3.38)
Imports over purchases of intermediate goods	-0.109 (-0.07)	-0.470 (-0.37)	-0.419 (-0.31)	5.459*** (2.16)	1.305 (0.84)	4.248* (1.66)
Log average distance from source countries	-0.390* (-1.73)	-0.645** (-1.96)		-1.418*** (-3.68)	-1.474*** (-3.60)	
Log of total factor productivity of firm	-0.075 (-1.26)	-0.090 (-1.43)	-0.089 (-1.45)	-0.127 (-1.33)	-0.126 (-1.64)	-0.208* (-1.93)
N	2139	2139	2139	2139	2139	2139
Hansen J statistic	15.951	14.095	16.466	14.827	13.322	12.976
p-value	0.0679	0.1190	0.0578	0.0958	0.1485	0.1637
Kleibergen-Paap rk LM stat.	16.501	21.077	15.796	16.501	21.077	15.796
p-value	0.0862	0.0206	0.1056	0.0862	0.0206	0.1056
Kleibergen-Paap rk Wald F stat.	1.694	2.193	1.615	1.694	2.193	1.615
Stock-Yogo (10% max.)	10.69	10.69	10.69	3.60	3.60	3.60

Notes: Columns 1-3 report IV-GMM estimates and 4-6 IV-CUE estimates. Dependent variable in second stage: firm's average export prices. All regressions include firm and year fixed effects. Excluded instruments are the log average yearly RER of each firm using source country shares of 1997, and the shares of each firm's imports from MERCOSUR in 1997 interacted with time dummies. Columns 1-3 report Stock-Yogo critical values for the maximal IV relative bias, while columns 4-6 for the maximal LIML size. The standard errors are clustered by firm level.
t statistics in parentheses
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table A12. Source income and firm average export prices, IV-GMM and IV-CUE using main set of instruments

	(1)	(2)	(3)	(4)	(5)	(6)
Percentage of imports from high income countries	1.340 (1.35)			3.959*** (3.43)		
Log average GDP per capita of source countries		1.011* (1.98)	0.752 (1.48)		2.756*** (4.23)	2.871*** (3.66)
Imports over purchases of intermediate goods	0.623 (0.60)	0.402 (0.38)	0.465 (0.37)	2.332* (1.91)	1.470 (1.13)	3.369* (1.67)
Log average distance from source countries	-0.333* (-1.84)	-0.698** (-2.20)		-0.791*** (-3.67)	-1.745*** (-4.25)	
Log of total factor productivity of firm	-0.060 (-1.10)	-0.073 (-1.18)	-0.074 (-1.21)	-0.068 (-1.07)	-0.093 (-1.21)	-0.168 (-1.63)
N	2139	2139	2139	2139	2139	2139
Hansen J statistic	23.318	19.604	20.152	24.067	19.111	16.188
p-value	0.1786	0.3556	0.3243	0.1528	0.385	0.579
Kleibergen-Paap rk LM stat.	37.876	35.478	22.832	37.876	35.478	22.832
p-value	0.0062	0.0122	0.2448	0.0062	0.0122	0.2448
Kleibergen-Paap rk Wald F stat.	2.660	2.465	1.412	2.660	2.465	1.412
Stock-Yogo (10% max. IV RS)	11.03	11.03	11.03	3.58	3.58	3.58

Notes: Columns 1-3 report IV-GMM estimates and 4-6 IV-CUE estimates. Dependent variable in second stage: firm's average export prices. All regressions include firm and year fixed effects. Excluded instruments are the log average yearly RER of each firm using source country shares of 1997, and the log average RER of each firm from MERCOSUR using the shares of imports in 1997 interacted with time dummies. Columns 1-3 report Stock-Yogo critical values for the maximal IV relative bias, while columns 4-6 for the maximal LIML size. The standard errors are clustered by firm level.
t statistics in parentheses
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table A13. Source income and firm average export prices, IV-CUE with lags using alternative set of instruments

	(1)	(2)	(3)
Percentage of imports from high income countries	0.908 (0.90)		
Log average GDP per capita of source countries		0.771 (1.61)	1.040** (2.32)
Imports over purchases of intermediate goods	-1.322* (-1.82)	-1.461** (-2.04)	-1.547* (-1.94)
Log average distance from source countries	-0.242 (-1.45)	-0.529* (-1.88)	
Log of total factor productivity of firm	-0.108* (-1.76)	-0.126* (-1.91)	-0.130* (-1.78)
N	1591	1579	1579
Hansen J statistic	17.278	15.582	15.063
p-value	0.045	0.076	0.089
Kleibergen-Paap rk LM stat.	28.024	28.449	23.457
p-value	0.0018	0.0015	0.0092
Kleibergen-Paap rk Wald F stat.	3.126	2.969	2.518
Stock-Yogo (10% max. LIML)	3.60	3.60	3.60

Notes: IV-CUE regressions. Dependent variable in second stage: firm's average export prices. All regressions include firm and year fixed effects and the second lag of the endogenous variables. Excluded instruments are the log average yearly RER of each firm using source country shares of 1997, and the shares of each firm's imports to MERCOSUR in 1997 interacted with time dummies. The standard errors are clustered by firm level.
t statistics in parentheses
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table A14. Summary statistics, exports and imports, 1997

country	export rank	all exports	estimation sample	country	import rank	all imports	estimation sample
Brazil	1	0.336	0.342	Argentina	1	0.217	0.226
Argentina	2	0.130	0.133	Brazil	2	0.215	0.222
United States	3	0.057	0.070	United States	3	0.118	0.091
United Kingdom	4	0.046	0.035	Italy	4	0.048	0.065
Germany	5	0.043	0.050	France	5	0.033	0.044
China	6	0.041	0.028	Germany	6	0.032	0.053
Italy	7	0.032	0.036	Spain	7	0.032	0.038
Netherlands	8	0.026	0.020	Japan	8	0.026	0.013
Israel	9	0.026	0.028	Korea, Rep. of	9	0.021	0.011
Hong Kong, SAR	10	0.023	0.026	United Kingdom	10	0.018	0.013
Paraguay	11	0.022	0.029	China	11	0.018	0.007
Spain	12	0.022	0.015	Chile	12	0.017	0.015
Chile	13	0.021	0.025	Nigeria	13	0.017	0.000
Mexico	14	0.012	0.010	Mexico	14	0.014	0.025
Canada	15	0.011	0.013	Hong Kong, SAR	15	0.012	0.007
Japan	16	0.010	0.009	Chinese Taipei	16	0.012	0.006
Peru	17	0.010	0.014	Sweden	17	0.010	0.005
France	18	0.008	0.010	Switzerland	18	0.009	0.024
Iran, IR	19	0.008	0.012	Russian Federation	19	0.009	0.032
Malaysia	20	0.008	0.013	Netherlands	20	0.009	0.010
Russian Federation	21	0.006	0.002	Venezuela, BR	21	0.008	0.004
Belgium	22	0.006	0.008	South Africa	22	0.008	0.002
Venezuela, BR	23	0.005	0.008	Canada	23	0.007	0.010
Colombia	24	0.005	0.006	India	24	0.007	0.006
Norway	25	0.005	0.000	Paraguay	25	0.006	0.013
Korea, Rep. of	26	0.005	0.003	Iran, IR	26	0.005	0.000
Portugal	27	0.004	0.003	Belgium	27	0.005	0.010
Senegal	28	0.004	0.006	Ecuador	28	0.005	0.000
Turkey	29	0.004	0.001	Egypt	29	0.004	0.000
Saudi Arabia	30	0.004	0.001	Israel	30	0.004	0.006
Switzerland	31	0.003	0.005	Panama	31	0.004	0.001
Sweden	32	0.003	0.004	Denmark	32	0.004	0.007
Puerto Rico	33	0.003	0.003	Australia	33	0.003	0.001
Chinese Taipei	34	0.003	0.003	Singapore	34	0.002	0.000
Ecuador	35	0.002	0.001	British Virgin Islands	35	0.002	0.000
Morocco	36	0.002	0.000	Finland	36	0.002	0.004
Jordan	37	0.002	0.000	Poland	37	0.002	0.001
Finland	38	0.002	0.000	Malaysia	38	0.002	0.000
South Africa	39	0.002	0.002	Colombia	39	0.002	0.003
Trinidad and Tobago	40	0.002	0.002	Libya	40	0.002	0.001
India	41	0.001	0.001	Thailand	41	0.002	0.001
Greece	42	0.001	0.001	Austria	42	0.002	0.001
Poland	43	0.001	0.001	Morocco	43	0.001	0.005
Pakistan	44	0.001	0.000	New Zealand	44	0.001	0.002
Australia	45	0.001	0.001	Indonesia	45	0.001	0.001
Bolivia, PS	46	0.001	0.001	Peru	46	0.001	0.001
Viet Nam	47	0.001	0.001	Bulgaria	47	0.001	0.004
Indonesia	48	0.001	0.000	Turkey	48	0.001	0.000
Singapore	49	0.001	0.001	Greece	49	0.001	0.000
Bahamas	50	0.001	0.001	Ireland	50	0.001	0.002

*SEZ not reported in ranking

Table A15: List of markets by level of income at 2005 (World Bank)

Low income	Low-middle income	High-middle income	High income
Afghanistan	Albania	Argentina	Andorra
Bangladesh	Algeria	Barbados	Antigua and Barbuda
Bhutan	Angola	Botswana	Australia
Solomon Island	Azerbaijan	Belize	Austria
Myanmar	Armenia	Chile	Bahamas
Cambodia	Bolivia, PS	Costa Rica	Bahrain
Central African Republic	Bosnia and Herzegovina	Croatia	Belgium
Comoros	Brazil	Czech Republic	Bermuda
Benin	Bulgaria	Dominica	British Virgin Islands
Ethiopia	Belarus	Equatorial Guinea	Brunei Darussalam
Eritrea	Cameroon	Estonia	Canada
Gambia	Cabo Verde	Gabon	Cayman Islands
Ghana	Sri Lanka	Grenada	Chinese Taipei
Guinea	China	Hungary	Cyprus
Haiti	Colombia	Lebanon	Denmark
India	Congo	Latvia	Faroe Islands
Côte d'Ivoire	Cook Islands	Lithuania	Finland
Kenya	Cuba	Malaysia	France
Korea, DPR	Dominican Republic	Mauritius	French Guiana
Kyrgyzstan	Ecuador	Mexico	French Polynesia
Lao, PDR	El Salvador	Oman	Germany
Liberia	Fiji	Panama	Greece
Madagascar	Georgia	Poland	Greenland
Mali	Kiribati	Russian Federation	Guadeloupe
Mauritania	Guatemala	Saint Kitts and Nevis	Hong Kong
Mongolia	Guyana	Saint Lucia	Iceland
Montserrat	Honduras	Saint Vincent and the Grenadines	Ireland
Mozambique	Indonesia	Seychelles	Israel
Nauru	Iran, IS	Slovakia	Italy
Nepal	Iraq	South Africa	Japan
Niger	Jamaica	Trinidad and Tobago	Korea, Republic of
Nigeria	Kazakhstan	Turkey	Kuwait
Pakistan	Jordan	Venezuela, BR	Luxembourg
Papua New Guinea	Lesotho		Macao
Guinea-Bissau	Maldives		Malta
Rwanda	Moldova, Republic of		Martinique
Sao Tomé and Principe	Morocco		Netherlands
Senegal	Namibia		Netherlands Antilles
Sierra Leone	Vanuatu		Aruba
Viet Nam	Nicaragua		New Caledonia
Somalia	Marshall Islands		New Zealand
Zimbabwe	Paraguay		Norway
Tajikistan	Peru		Portugal
Togo	Philippines		Puerto Rico
Uganda	Suriname		Qatar
Tanzania, UR	Syrian Arab Republic		Anguilla
Burkina Faso	Thailand		San Marino
Uzbekistan	Tonga		Saudi Arabia
Yemen	Tunisia		Singapore
Zambia	Turkmenistan		Slovenia
	Ukraine		Spain
	Macedonia, FYR		Sweden
	Egypt		Switzerland
	Samoa		United Arab Emirates
			Turks and Caicos Islands
			United Kingdom
			United States

Table A16: List of markets by geographic classification

Rest of the World		**MERCOSUR**	**High income**
Afghanistan	Mauritius	Argentina	Andorra
Albania	Moldova	Brazil	Antigua and Barbuda
Algeria	Mongolia	Paraguay	Australia
Angola	Morocco		Austria
Armenia	Mozambique		Bahamas
Azerbaijan	Myanmar	**Rest of LAC**	Bahrain
Bangladesh	Namibia	Barbados	Belgium
Belarus	Nepal	Belize	Bermuda
Benin	Niger	Bolivia	British Virgin Islands
Bhutan	Nigeria	Chile	Brunei Darussalam
Bosnia and Herzegovina	Oman	Colombia	Canada
Botswana	Pakistan	Costa Rica	Cayman Islands
Bulgaria	Philippines	Cuba	Chinese Taipei
Burkina Faso	Poland	Dominica	Cyprus
Cape Verde	Russian Federation	Dominican Rep.	Denmark
Cambodia	São Tomé and Príncipe	Ecuador	Faroe Islands
Cameroon	Senegal	El Salvador	Finland
China	Seychelles	Grenada	France
Comoros	Sierra Leone	Guatemala	French Guiana
Congo, Rep. of	Slovakia	Guyana	French Polynesia
Côte d'Ivoire	Solomon Islands	Haiti	Germany
Croatia	South Africa	Honduras	Greece
Czech Republic	Sri Lanka	Jamaica	Greenland
Egypt	Swaziland	Mexico	Guadeloupe
Equatorial Guinea	Syrian Arab Rep.	Montserrat	Hong Kong
Eritrea	Tanzania, United Rep.	Nicaragua	Iceland
Estonia	Thailand	Panama	Ireland
Ethiopia	Togo	Peru	Israel
Fiji	Tunisia	Saint Kitts and Nevis	Italy
Gabon	Turkey	Saint Lucia	Japan
Gambia	Turkmenistan	Saint Vincent and the Grenadines	Korea, Republic of
Georgia	Uganda	Suriname	Kuwait
Ghana	Ukraine	Trinidad and Tobago	Luxembourg
Guinea	Uzbekistan	Venezuela	Macao
Guinea-Bissau	Vanuatu		Malta
Hungary	Viet Nam		Martinique
India	Yemen		Netherlands
Indonesia	Zambia		Netherlands Antilles
Iran, Islamic Rep.	Zimbabwe		Aruba
Iraq			New Caledonia
Jordan			New Zealand
Kazakhstan			Norway
Kenya			Portugal
Korea, Dem. Rep.			Puerto Rico
Kyrgyzstan			Qatar
Latvia			Anguilla
Lebanon			San Marino
Liberia			Saudi Arabia
Libya			Singapore
Lithuania			Slovenia
Macedonia, FYR			Spain
Madagascar			Sweden
Malaysia			Switzerland
Maldives			United Arab Emirates
Mali			Turks and Caicos Islands
Marshall Islands			United Kingdom
Mauritania			United States