Multinational Retailers and Home Country Exports

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September 2013

Abstract:
This paper questions whether food exports to a given market are impacted by the implantation of a domestic retailer in the country concerned. To answer this question, we consider an empirical trade model based on gravity. We tested our model with data on bilateral exports on a large panel of countries and the foreign sales of world's one hundred largest retail companies for the decade 2001-2010. We found a strong positive effect of the overseas presence of retailers from a given country on its exports to those markets. This outcome is far from trivial, as most products sold in retailers' foreign outlets are produced locally. It testifies to the fact that the presence of a country's retail companies overseas contributes to reducing trade costs towards these markets for other firms from the same country of origin. Our result is robust to different specifications, the use of different sets of instrumental variables and econometric approaches.

Keywords: International Trade, Multinational Retailers.

JEL classification codes: F10, F12, F14, F23.

1 Introduction

Retail sales in emerging countries have increased strikingly since the end of the 20th century. For example, between 2000 and 2010, total retail sales of grocery products on the Chinese market grew from 3 to 35 billion US dollars, and from 9 to 33 billion USD on the Brazilian market. This phenomenon is likely to persist since these retail markets are far from being saturated (for comparison, grocery retail sales in France amount to USD 186 billion). Retail sales in developing and emerging countries are concentrated in the hands of a relatively small number of foreign companies, all characterized by strong overseas expansion during the last decade. Nowadays 26% of retailers' sales are on foreign markets.

The internationalization of retail companies can shape international trade in many different ways. In the present paper, we analyze to what extent a country's exports of food products to a specific market are impacted by the entry of domestic retailers on that market. We show that the overseas expansion of a country's retailers fosters its exports to these foreign markets by reducing trade costs for the country of origin of the suppliers and by modifying consumer preferences in the host country.

The effects of multinational retailers on international trade have only recently been explored in the literature and related works are still rare. Head et al. (2010) analyzed how the presence of multinational retailers influences exports from the host country. Their analysis drew on the Chinese city-level exports of retail goods and the geographic expansion (in China and worldwide) of the world's four largest retailers. They found evidence for a positive impact on the export capabilities of local suppliers. Nordås et al. (2008) used a case study analysis to study how the arrival of multinational retailers shapes host country exports. They separated food from non-food products and confirmed the existence of a positive effect on host country exports to the retailers' country of origin.

Our work is closely linked to the recent strand of international trade literature evaluating the role of intermediaries (Antràs and Costinot, 2010; Bernard et al., 2010; Blum et al., 2010; Ahn et al., 2011; Antràs and Costinot, 2011; Crozet et al., 2010). It is important to note that most of these works refer to wholesale companies, although the term "retailer" is also employed. Whereas this literature regards retailers as trade intermediaries, their trade patterns differ significantly from those of wholesalers. Unlike wholesalers, retail companies are not specialized in trade, but aim to sell final goods to consumers. This activity may lead them to reshape international trade directly or

indirectly. Consequently, the different models and conclusions drawn by the literature that mainly deals with wholesalers do not apply to retailers to the same extent. More broadly, our paper is also related to research in the field of foreign direct investment (FDI). A recent strand of this literature investigates the internationalization of major world retailers and extrapolates the classical results to the retail sector (Javorcik and Li, 2008; Javorcik et al., 2008; Iacovone et al., 2011).

The current paper questions the existence of causality between the expansion of retailers' activities beyond their domestic market and exports from their countries of origin in the food sector. We investigate this relationship empirically using data on bilateral exports for a large panel of countries and data on the sales of the top 100 world's retailers during the decade 2000-2010. We restrict our analysis to food trade, as these products are the main goods sold in supermarkets. The contribution of the paper is threefold. First, we ask and answer a new question that, to our knowledge, has not been raised in the literature to date. Secondly, we use an original dataset of retail sales of grocery products disaggregated by the country of sales and by the nationality of retailers. Third, we propose an original instrumental variable approach to control for the endogeneity bias induced by the fact that both bilateral exports and retailers' sales share a number of common observed and non-observed factors. We compare the traditional instrumental-variables approach used in most of the empirical trade literature with the approach suggested by Wooldridge (2001, 2010), which relies on generated instruments.

We confirm a positive effect of operations conducted on foreign markets by a country's retailers on exports from this country to these markets. This outcome is far from trivial, because most retailers' foreign sales consist of locally produced goods. It suggests that the dynamics of international retail companies constitutes a competitive advantage for domestic food industries. This conclusion mitigates the classical criticism of the retail sector concerning the pressure on their suppliers and the food industry.

The paper is structured as follows. In the next section, we present stylized facts related to the world's largest retail companies and their operations on foreign markets. We emphasize that emerging economies (Brazil, India and China) are among the most dynamics markets in terms of growth of foreign retailers' sales. In section 3, we provide details on our empirical model based on gravity. In section 4, we discuss the data, and econometric approaches used and our main results. We pay particular attention to dealing with endogeneity aspects in order to validate the positive significant role of multinational retail investment on trade. We draw some conclusions in the final section.

2 Stylized facts

Retail sales of groceries more than doubled between 2000 and 2010.[1] This increase was particularly high in developing countries (+ 220% of sales) and in the four main emerging countries, Brazil, Russia, India and China (BRIC), with a 526% increase. Population and income growth, especially in emerging countries, together with changes in consumer habits, are the reasons behind the recent expansion of retail chains (Evans et al., 2008; Reardon et al., 2003). The increasing liberalization of the retail sector in developing and emerging countries, especially in India, and the continuing low share of retail in total grocery expenditures of households in these countries (Figure 1) suggest that this trend will continue in the coming years.

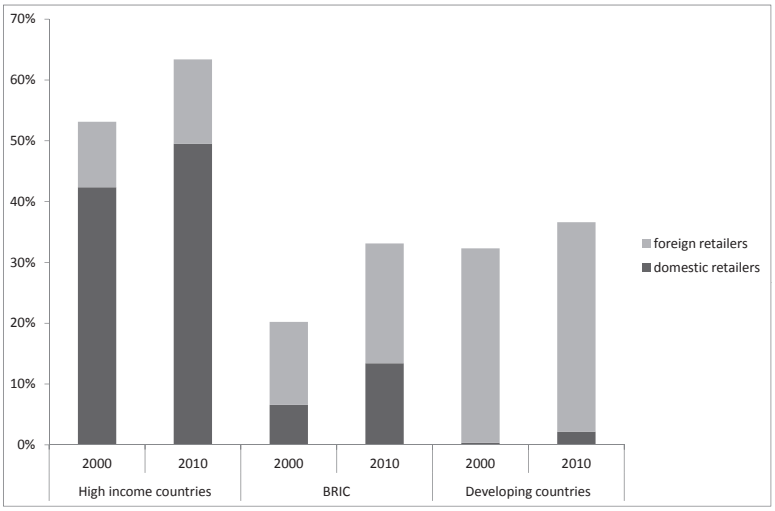

Figure 1: The share of "modern" retail in total grocery expenditures of households, by countries

Source: Authors' calculation using data from Planet Retail.

The expansion of the retail sector has mainly benefited multinational retail companies. Thus, as can be seen in Figure 1, in 2010, 94% of retail sales in developing countries and 60% of retail sales in BRIC countries were made in foreign-owned retail chains. The internationalization of retail

[1] This observation is based on data from the Planet Retail, a database that provides data on the sales of the world's top one hundred retailers in domestic and foreign markets, at company level, since 2000. As the retail sector is highly concentrated (Reardon et al., 2003), we can consider our dataset as almost exhaustive. The origin, or the nationality, of retail companies were added using information available on companies' websites. Mergers and acquisitions are taken into account only if they imply a change in the name of outlets. For each firm we consider only one country of origin.

companies is not a recent phenomenon. The leading French retail company Carrefour established its first foreign outlet in Belgium in 1969, while Wal-Mart entered the Mexican market in 1991. However, foreign investment in the retail sector has accelerated in the last decade, mainly due to the rapid development of the retail market in developing and emerging countries and to the saturation of the retailers' domestic markets. Sales made on foreign markets by multinational retailers increased by 144% between 2000 and 2010, compared with only 110% for domestic sales.

The Figure 2 shows retailers' sales, differentiated by their country of origin, on domestic and foreign markets. According to our data, the internationalization of the retail sector only concerns companies of a few geographical origins. The overall leading position of American retail companies (27% of sales in the global retail sector) is due essentially to the US domestic market. Indeed, only 9 out of the 21 American retailers in the database, including Wal-Mart - the world's largest retailer, have outlets in foreign markets. Sales in foreign markets represent as little as 17% of total sales by American retailers. In contrast, German and French retail companies make over 40% of their total sales on foreign markets (see Table 3 in the Appendix for detailed data). Given the size of these companies,[2] this implies that almost half of the sector's total sales on foreign markets take place in outlets owned by German and French retailers. Retailers from Netherlands, Belgium and Hong Kong have the highest degree of internationalization: over 60% of their turnover (total sales) comes from abroad. This is indicated in Figure 2 by the dots located closest to the horizontal axis. At the other extreme, Canadian, Italian and Spanish retailers sell almost exclusively on their domestic market.

Geographical specialization can also be observed in terms of the host countries targeted by different multinational retailers (Figure 3). Most of the foreign outlets of retailers from Germany, Belgium and the Netherlands are located in European high income countries. In contrast, a large proportion of the foreign activity of French and American companies is concentrated in BRIC and other developing countries. In particular, Brazil and China are two strategic markets for French retailers, accounting for respectively 19% and 7% of their foreign sales. US retailers are also very active on the Brazilian and Chinese markets, even though sales on their neighboring Mexican market account for 20% of their foreign sales.

This geographical specialization is also reflected in the share of the local market attributed to retailers from different origins (Figure 4). German companies are the main retailers in Kazakhstan

[2] French retailers account for 16% of the world market and German retailers for 15%. The global market is defined here as the sum of sales by the world's largest 100 retailers.

Figure 2: Sales of retailers in 2010, by main country of origin, in billion USD
Source: Authors' calculation using data from Planet Retail.

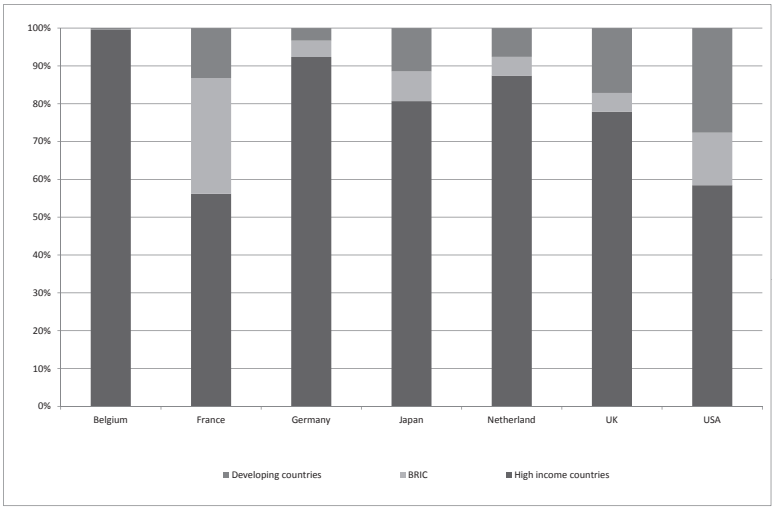

Figure 3: Sales in foreign markets, by country of origin of retailers in 2010
Source: Authors' calculation using data from Planet Retail.

(where they have 100% of the local market), Bulgaria (96%), Croatia (85%) and Ukraine (80%). French companies are the only foreign retailers in Jordan, Lebanon, Saudi Arabia, and Senegal, and

have the biggest share of the Brazilian (66%) and Chinese markets (24%). North American retailers' foreign outlets are mainly concentrated in Central and South America. Next, we question whether the geographically diversified foreign investments of multinational retailers represent an advantage for exports from their countries of origin.

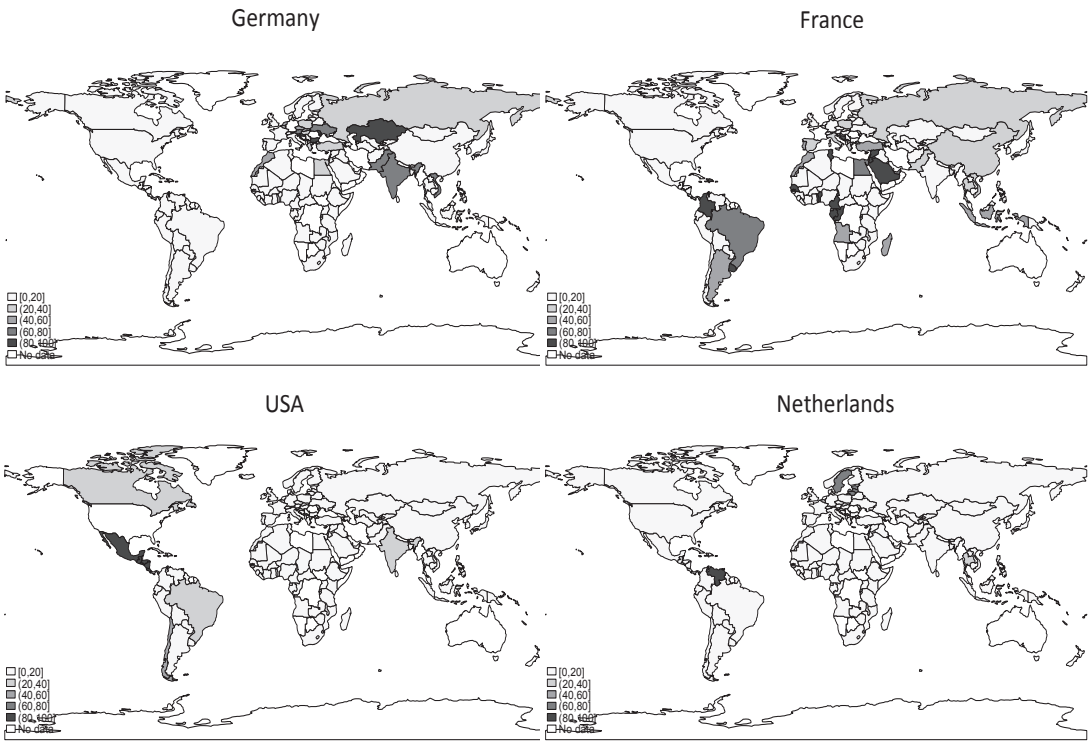

Figure 4: Retailers' market shares in 2010
Source: Authors' calculation using data from Planet Retail.

3 The empirical model

We consider a trade structure with a differentiated good of n_i varieties produced in each country i. Product differentiation is at country level. Consumer preferences are homothetic and represented by a CES utility function. The difference in the price of the same good at two different locations is entirely explained by the difference in trade costs to these locations. For the sake of simplicity, we assume an *iceberg* trade costs function: the price to country j consumers of a good produced in i, p_{ij}, is the product of its mill price $p_{i,t}$ and the corresponding trade cost τ_{ij}. Consumers in

each country j spend a total amount E_j on domestic and foreign products and choose quantities that maximize their utility function under the budget constraint. Country j's overall demand for products from origin i is expressed as:

$$m_{ij} = a_{ij}^{\sigma-1} \left(\frac{p_i \tau_{ij}}{P_j} \right)^{1-\sigma} n_i E_j, \tag{1}$$

where P_j is a non-linear (CES) price index of imports from country j, depending on the elasticity of substitution σ and the bilateral preference parameter a_{ij}. Under market clearance, the exporter-specific part of equation (1) can be expressed as the country's production Y_i adjusted by a non-linear average cost Π_{ij} of shipping its products to the global market: $n_i p_i^{1-\sigma} = Y_i \Pi_i^{\sigma-1}$.[3] Using these result, Anderson and van Wincoop (2003, 2004) showed that the importer price index P_j also reflects the average cost of importing into country j from all origins combined. The trade equation (1) then becomes:

$$m_{ij,t} = \left(\frac{\tau_{ij,t}}{a_{ij}} \right)^{1-\sigma} Y_{i,t} \Pi_{i,t}^{\sigma-1} E_{j,t} P_{j,t}^{\sigma-1}. \tag{2}$$

We add subscript t to reflect the time dimension of variables. $\Pi_{i,t}$ and $P_{j,t}$ are referred to in the literature as outward and inward multilateral resistances.[4] The non-linearity of these terms and the presence of bilateral preference parameters a_{ij} make it virtually impossible to estimate equation (2) in its structural form without additional simplifying assumptions.

Consumer preferences can be expressed as a function of observables, just like trade costs. However, we have no way to disentangle the impact of a variable on preference parameters from its impact on trade costs. Therefore, estimated coefficients on any exogenous component of trade costs or preferences will actually capture the global effect of these variables on both trade costs and consumer preferences. In the rest of the paper we consider preference-adjusted trade costs and interpret any increase in the term $\tau_{ij,t}/a_{ij}$ as an increase in trade costs. An alternative interpretation of preference parameters is that an identical equally-priced good from source country s is perceived differently by consumers in country i and consumers in country j. A strong taste for good s leads consumers to overvalue the virtues of the product and shifts their demand function upward. Thus, the actual price to which consumers in country j respond is $p_{sj,t}/a_{sj}$ rather than $p_{sj,t}$.

One can directly estimate equation (2) in logarithmic form with time-varying importer and

[3] The market clearing assumption implies that a country's production equals the sum of its exports to all destinations, including the domestic market, $Y_i = \sum_j m_{ij}$, and is usually verified for aggregate data.

[4] More specifically, $\Pi_{i,t} = \sum_j \left(\frac{\tau_{ij,t}}{a_{ij}} \right)^{1-\sigma} E_{j,t} P_{j,t}^{\sigma-1}$ and $P_{j,t} = \sum_i \left(\frac{\tau_{ij,t}}{a_{ij}} \right)^{1-\sigma} Y_{i,t} \Pi_{i,t}^{\sigma-1}$.

exporter fixed effects after grouping i and j terms.[5] We assume that multilateral resistances do not vary significantly over time and use time-invariant exporter and importer fixed effects.[6] This enables us to explore the time-varying dimension of countries' production and consumption levels and to take advantage of the panel structure of our data:

$$\ln m_{ij,t} = \ln Y_{i,t} + FE_i + \ln E_{j,t} + FM_j + (1-\sigma)\ln\frac{\tau_{ij,t}}{a_{ij}} \tag{3}$$

We use a preference-adjusted trade costs function which includes the standard proxy variables cited in the literature, some innovative factors, and a zero-mean randomly distributed error term $e_{ij,t}$:

$$\begin{aligned}\ln\frac{\tau_{ij,t}}{a_{ij}} &= b_1 \ln dist_{ij} + b_2 contig_{ij} + b_3 colony_{ij} + b_4 RTA_{ij,t} + b_5 UNvotes_{ij,t} \\ &\quad + b_6 \ln NonFoodTrade_{ij,t} + \ln\left(1 + tariff_{ij,t}\right) + c \ln SALES_{ij,t} + e_{ij,t}\end{aligned} \tag{4}$$

Variable $dist_{ij}$ represents the physical distance separating countries i and j. It increases trade costs and we expect the data to confirm that $b_1 > 0$. Variables $contig_{ij}$, $colony_{ij}$ and $RTA_{ij,t}$ denote respectively a common land border, a common colonial history, and membership to the same Regional Trade Agreement (RTA) for countries i and j. These variables reduce trade costs and facilitate trade and, as a result, we expect coefficients b_2 – b_4 to be negative. Variable $UNvotes_{ij,t}$ corresponds to an affinity index between countries i and j, computed by **?** using their votes in the United Nation General Assembly. $NonFoodTrade_{ij,t}$ is the amount of bilateral trade in non-food products exchanged between i and j. The aim of including the last two variables is to capture the bilateral preferences linking the two countries, thus anticipate negative values for parameters b_5 and b_6. Import tariffs $tariff_{ij,t}$ are expressed as *ad valorem* equivalents and enter the trade costs function (4) with a unitary coefficient. The last term $SALES_{ij,t}$ reflects the sales of domestic and foreign grocery products by multinational retailers from country i in their outlets located in host market j.

The trade equation to be estimated is obtained by integrating the trade costs function (4)

[5] Rose and van Wincoop (2001) and Redding and Venables (2004) use country-specific effects in a cross-section setting to capture the exporter- and importer-specific variables of a trade equation. Estimating the non-linear system formed by trade equation (2) and equations defining remoteness terms $\Pi_{i,t}$ and $P_{j,t}$ requires additional constraints ensuring that the system has a single solution, such as symmetric trade costs in Anderson and van Wincoop (2003, 2004). We specifically wanted to avoid creating such constraints in the present study and therefore used the fixed-effects estimation approach.

[6] This assumption does not appear to be very strong for a period of one decade.

in equation (3) and using importer and exporter gross domestic products (GDP) as proxies for production and expenditure levels:

$$\begin{aligned} \ln m_{ij,t} &= \alpha_1 GDP_{i,t} + \alpha_2 GDP_{j,t} + \beta_1 \ln dist_{ij} + \beta_2 contig_{ij} + \beta_3 colony_{ij} + \beta_4 RTA_{ij,t} \\ &+ \beta_5 UNvotes_{ij,t} + \beta_6 \ln NonFoodTrade_{ij,t} + (1-\sigma) \ln \left(1 + tariff_{ij,t}\right) \\ &+ \gamma \ln SALES_{ij,t} + FE_i + FM_j + \varepsilon_{ij,t}. \end{aligned} \quad (5)$$

The rest of the paper is dedicated to estimating the parameters in equation (5), and special attention is paid to the impact of retailers' foreign sales (parameter γ).

4 Retailers' overseas expansion and exports from their country of origin

4.1 Employed data

The data panel used in this paper covers bilateral trade between a large number (171) of exporting and (101) importing countries between 2000 and 2010. The main variable of interest in our analysis is $SALES_{ij,t}$, which corresponds to the total sales of all retailers from country i in outlets established in host market j. We computed this variable using data from Planet Retail,[7] the database used for computing the descriptive statistics in section 2. The original database contains records of grocery sales by the world's top one hundred individual retail companies in each country. We aggregated the data according to the country of origin of the retailers and obtained the sales volume of all retailers from each country i in each host market j.[8] At the global level, foreign investments in the retail sector are a relatively rare phenomenon. To better illustrate the impact of retailers' sales in foreign markets on exports from their countries of origin, we limited our panel to importing countries familiar with retailing, i.e. that host at least one foreign or domestic retailer. Even doing so, the observations with positive sales of multinational retailers in foreign markets represent only 2.3% of the dataset.

For trade data, we used the BACI database developed by the CEPII.[9] BACI trade data are produced at a high level of product disaggregation: at the 6-digit level of the Harmonized System

[7] http://www1.planetretail.net/

[8] See section 2 for details.

[9] Gaulier and Zignago (2010). This database uses original procedures to harmonize the United Nations COMTRADE data: e.g. evaluation of the quality of countries' declarations to average mirror flows; evaluation of cost, insurance and freight (CIF) rates to reconcile import and export declarations.

(HS) nomenclature. We selected food products sold in supermarkets,[10] aggregated trade data across products, and ended up with a single trade value for each pair of exporting and importing countries.

Countries' GDPs were taken from the World Development Indicators database of the World Bank. Variables corresponding to the geographical and historical links (*dist*, *contig*, *colony*) came from the CEPII geodist database.[11] Participation in RTA and import tariffs were taken from the MAcMap-HS6 dataset, the latter variable only being available for three years of our sample: 2001, 2004 and 2007.[12] The MAcMap database provided ad valorem equivalents of tariff protection for each importer, exporter and product defined at the 6-digit level of the HS nomenclature. We aggregated tariff data across the food products included in our trade variable and used world trade at the HS 6-digit level as weights to obtain the average level of protection for each pair of countries and each year.

The affinity index between the importing and exporting countries is the Affinity of Nations index of similarity computed by **?** using countries' roll-call voting in the United Nations General Assembly. The index is computed using three categories of vote data (approval, abstention, or disapproval of an issue) and ranges from -1 to 1. A value close to -1 indicates a negative correlation between the votes of the two countries and is interpreted as the absence of common interests. Inversely, an index approaching 1 indicates a strong positive correlation between the two countries' UN votes and very similar national interests. Non-food trade corresponds to the sum of imports and exports in all products except HS chapters 1 to 24 between the two countries, and is computed using BACI data.

4.2 Different econometric approaches

The objective of this section is to identify the econometric techniques that enable correct estimation of how the presence of multinational retailers originating from country i with retail outlets in country j affects the volume of exports from i to j. A positive sign parameter γ in equation (5) suggests that the foreign activity of retailers improves the export performance of their country of origin on the respective foreign markets. However, the sales in country j of retailers based in country i, $SALES_{ij,t}$, and the bilateral exports from i to j, $m_{ij,t}$, have a common set of observed and non-observed determinants. Both exports and retail investments increase with the economic size of the destination country, the presence of cultural, linguistic and historical ties between the country of

[10] Of the first 24 chapters of the Harmonized System which correspond to food products, we excluded live animals (chapter 1), hair, fur and ivory (chapter 5), flowers (chapter 6), raw cereals (chapter 10), vegetal extracts (chapter 13), plaiting materials (chapter 14), food residues (chapter 23) and tobacco (chapter 24).

[11] Mayer and Zignago (2011).

[12] See Guimbard et al. (2012) for a description of the data set.

origin and destination countries. The simultaneous determination of the two variables is a potential source of endogeneity. Estimating equation (5) directly with ordinary least squares (OLS) may thus yield biased results.

To eliminate the endogeneity bias and obtain a correct estimation of the causality effect between variables $SALES_{ij,t}$ and $m_{ij,t}$, we used an instrumental variable approach. We identified two exogenous variables that affect the decision of a retail company to invest abroad or the amount of sales in its outlets located abroad, but not the volume of bilateral exports between the retailers' country of origin and the host countries. First, we considered the purchases in "modern" retail stores by households in the host (importing) country, expressed as a share of their overall expenditures for groceries. By "modern" retail stores, we mean the outlets of large retail chains, in contrast to traditional - usually one-outlet family-run - small retailers. We associate a large share of the host country's modern retailing with a high volume of sales by foreign retailers. The more developed a country's modern retail sector, the higher the capacity of foreign retail companies to attract local consumers already accustomed to purchasing their groceries purchases in supermarkets. The second instrument we used is the market share of the retailers in their country of origin. We make the assumption that retail companies are more eager to sell abroad when they already have a high share of the domestic market in their country of origin. A larger domestic market share of a country's retailers rhymes with more bounded growth opportunities on this market. Therefore, entering new markets becomes the retailers' main strategy for expanding their activities (Reardon et al., 2003). Both instruments were computed using data from Planet Retail. To take into account the bilateral dimension of our data, we considered the product of these two variables as a third instrument. To reduce endogeneity, we used lagged values (by one year, in $t-1$) of all our instruments.

Let us denote the three instrumental variables described above by vector $Z_{ij,t-1}$, which can be used untransformed to construct the standard two-stage least squares (2SLS) estimator of parameters in equation (5). This is the traditional econometric approach that makes it possible to control for endogeneity (simultaneity) between explained and explanatory variables. In addition, we used two other 2SLS estimators that take into account the specific distribution of the instrumented variable $SALES_{ij,t}$. Variable $SALES_{ij,t}$ takes the value zero for a large number of observations in our dataset. As mentioned earlier in the paper, foreign investment in the retail sector is relatively rare at the global level, even when we limited the data panel to importing countries that host at least one retailer. Rather than directly using $Z_{ij,t-1}$ to control for the endogeneity of retailers' sales in foreign markets, we used transformations $f(.)$ of these variables that take into

account the partly continuous and partly discrete distribution of the variable $SALES_{ij,t}$. Following Wooldridge (2010)[p.117], we computed $f(.)$ as the best prediction of $SALES_{ij,t}$ obtained with the vector of exogenous variables in equation (5), $X_{ij,t}$, and our set of instrumental variables $Z_{ij,t-1}$: $f(Z_{ij,t}) = E(SALES_{ij,t}|X_{ij,t}, Z_{ij,t-1})$. First, we assumed that variable $SALES_{ij,t}$ follows a standard Tobit model and used the corresponding maximum likelihood estimator to compute $f(Z_{ij,t})$. Second, we used a Heckman estimator that allows $Z_{ij,t-1}$ to affect the occurrence (the discrete part) and the volume (the continuous part) of retailers' sales in foreign markets $SALES_{ij,t}$ differently. In this estimation, the cost of registering a property in the host country, expressed as a percentage of the property value, was used as the selection variable in the Heckman procedure.[13] Variables $f^T(Z_{ij,t})$ and $f^H(Z_{ij,t})$, generated respectively with Tobit and Heckman estimators, were used as an alternative to $Z_{ij,t-1}$ in a two-stage least squares procedure to estimate the equation (5) coefficients.

Another difficulty in our estimations is the fact that country and partner fixed effects themselves explain a large share of observations with nil retail sales. To get round this problem, we replaced country-specific importer and exporter effects with region-specific effects (listed in Table 4 in the Appendix). The fact that geographical areas are exogenously defined (unlike groups defined by income levels, etc.) and that countries in each geographical area face comparable trade costs (due to their geographic proximity and the large number of regional trade agreements) underpins this approach.

4.3 Main estimated results

In this section, we present the results obtained from the estimation of equation (5) using the data presented in section 4.1 and the econometric approaches described in section 4.2.

Table 1 shows the estimates of coefficients in equation (5) using six alternative specifications. In all specifications, we used importer and exporter GDPs as a proxy for the size of demand and supply in the two countries. The geographical distance, non-food trade, the affinity index, and dichotomous variables for a shared border, past colonial ties and RTA membership were used to account for unobservable bilateral trade costs and preferences. Import tariff data covered only three years of our sample, i.e. less than 30% of the total number of observations. Therefore, in the first five columns of Table 1 we dropped this variable from our estimations. The main variable of interest for our study is $SALES_{ij,t}$, the sales of retailers in foreign markets. Its coefficient indicates whether an

[13] Data on the cost of registering a property came from the World Bank's Doing Business database: http://doingbusiness.org/ .

increase in the sales of a country's retailers in a foreign market allows agri-food firms from the same country of origin to export more (and at lower costs) to these destinations. Importer and exporter fixed effects for 12 geographical zones and year fixed effects are included in all specifications.

Results obtained by estimating trade equation (5) with OLS are listed in the first column of Table 1. The coefficients of traditional variables are highly significant and in line with values obtained by previous studies in the literature. The size of the country of origin and of the destination country, geographical contiguity, the existence of a shared colonial history or RTA, the value of non-food trade and the similarity of votes in the United Nations enhance bilateral exports of food products. We found a positive and significant coefficient for sales by retailers in foreign markets. Nevertheless, as explained in the previous section, this coefficient may be biased because of the endogeneity of the variable. In column (2), equation (5) was estimated with OLS, on the sample for which instrumental variables are available. Restricting the number of observations did not change the coefficients of the different variables.

The third column lists the coefficients obtained with the standard two-stage least squares (2SLS) estimator. Both Wu-Hausman F and Durbin-Wu-Hausman χ^2 tests were highly significant, confirming the endogeneity of our variable of interest, $SALES_{ij,t}$. The standard tests for endogeneity (Sargan and Cragg-Donald statistics) validated our choice of instrumental variables. When we controlled for this aspect, the coefficient of variable $SALES_{ij,t}$ increased more than tenfold from 0.03 to 0.26. This result suggests than a ten percent increase in the sales volume of a country's retailers in a foreign market would lead to a 2.6 percent increase in the exports of the country's retailers to this market. The impact of other variables on exports remained almost unchanged.

The next two columns of Table 1 correspond to 2SLS estimates, where the endogeneity of $SALES_{ij,t}$ is controlled for with instruments generated using first-stage Tobit and Heckman estimators, respectively.[14] The magnitude of the effect of variable $SALES_{ij,t}$ on the exports of country i to destination j estimated with these two methods is very similar to the one obtained in column (2).

In column (6) we replicated the 2SLS estimates from column (2) on equation (5) including import tariffs.[15] We obtained a negative and highly significant coefficient on this variable, in accordance with the existing theoretical and empirical literature. It should be recalled that import tariffs enter

[14] Using the Heckman estimator reduced our estimation panel by more than half. This is due to the fact that data on the administrative costs of establishing a new business are available only from 2005.

[15] Due to the limited availability of data on the administrative costs of establishing a new business and on import tariffs, results in column (5) in Table 1 correspond only to observations for the year 2007.

Table 1: The impact of multinational retailers' sales in foreign markets on home country exports

	Explained variables: $\ln m_{ij,t}$					
	OLS		2SLS, instrumental variables:			
			$Z_{ij,t-1}$	$f^T(Z_{ij,t-1})$	$f^H(Z_{ij,t-1})$	$Z_{ij,t-1}$
	(1)	(2)	(3)	(4)	(5)	(6)
ln GDP exporter	0.57***	0.55***	0.47***	0.48***	0.50***	0.49***
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.02)
ln GDP importer	0.43***	0.43***	0.41***	0.41***	0.35***	0.45***
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.02)
ln distance	-0.72***	-0.71***	-0.63***	-0.64***	-0.56***	-0.66***
	(0.01)	(0.02)	(0.02)	(0.02)	(0.03)	(0.03)
contiguity	0.64***	0.62***	0.42***	0.44***	0.49***	0.42***
	(0.05)	(0.05)	(0.06)	(0.06)	(0.08)	(0.1)
colony	1.27***	1.21***	0.94***	0.97***	0.87***	1.04***
	(0.05)	(0.05)	(0.05)	(0.05)	(0.05)	(0.10)
RTA	0.36***	0.36***	0.36***	0.36***	0.39***	0.21***
	(0.02)	(0.02)	(0.02)	(0.02)	(0.03)	(0.04)
UN votes similarity index	0.07**	0.08***	0.10***	0.10***	0.01	0.18***
	(0.03)	(0.03)	(0.03)	(0.03)	(0.05)	(0.06)
ln non food trade	0.34***	0.33***	0.33***	0.33***	0.38***	0.32***
	(0.00)	(0.00)	(0.00)	(0.00)	(0.01)	(0.01)
ln retailers' sales	0.03***	0.03***	0.20***	0.18***	0.15***	0.16***
	(0.00)	(0.00)	(0.01)	(0.01)	(0.02)	(0.02)
ln (1+tariff)						-1.25***
						(0.13)
Nb obs.	92542	78297	78297	78297	39581	21481
R^2, centered	0.54	0.53	0.51	0.52	0.53	0.52
R^2, uncentered			0.91	0.91	0.91	0.92
Sargan statistic			2.48			0.45
Sargan p-value			0.289			0.800
F stat weak identification			1748.52	5475.1	2091.48	518.66
LM test underidentification			4918.72	5119.77	1988.13	1453.22
underidentification p-value			0.000	0.000	0.000	0.000
ln likelihood	-212333.8	-176898.59	-178470.34	-178135.59	-91380.12	-48371.91

Notes: Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1. Estimations in all columns include a fixed effect for each year, each exporting and each importing geographic zone. Instruments $Z_{ij,t-1}$ are the share of "modern" retail in the grocery expenditure of host country households, the share of origin country retailers on their domestic market, and the products of these two variables. Instruments $f^H(Z_{ij,t-1})$ and $Z_{ij,t-1}$ are the best predictions of retailers' sales with all the model's exogenous variables, using Tobit and Heckman estimators, respectively. See the text for details. The test for weak identification is an F version of the Cragg-Donald Wald statistic. The test for underidentification is an LM version of the Anderson canonical correlations test.

the trade costs function with coefficient one. Therefore, the tariff coefficient in column (6) allows us to deduce the magnitude of the elasticity of substitution between exchanged products: $\sigma = 2.25$. The impact of variable $SALES_{ij,t}$ on bilateral exports is very similar to the impacts obtained with the other 2SLS estimators.

One could argue that the positive effect of retailers' sales in Table 1 could be the result of an upward shift in the price of exported goods. An increase in the foreign activity of a country's retailers may help domestic firms to export their products at higher prices, or to export larger amounts of high quality (and consequently high-priced) products. To analyze the issue of possible price effects, in Table 5 of the Appendix we replicate estimates from Table 1 on exported quantities (expressed in tonnes). We find a positive and significant effect of retailers' foreign sales in all specifications. We conclude that the positive effect on exported values (Table 1) is explained by a similar effect on quantities (Table 5), with price effects playing a minor role.

To sum up, the results presented in Tables 1 and 5 testify that retail investments abroad foster exports by producers from the country of origin. Taking endogeneity into account increased this effect. Different economic mechanisms can explain this outcome. In our empirical model (section 2) we assumed that $SALES_{ij,t}$, the sales of retailers of country i in the host country j, enter in the preference-adjusted trade cost function (equation 4). In this empirical framework, foreign retail investment can impact trade through two channels, a reduction in bilateral *trade costs* for exporters from the country of origin and a modification of consumer *preferences* in the host country.

Establishing a retail company in a host country may reduce *trade cost* for suppliers of domestic retail stores. Indeed, retailers that penetrate foreign markets may continue to supply their overseas stores using domestic suppliers (at least at the beginning). Having access to the retailers' network of overseas outlets would allow these domestic suppliers to avoid some of the regular sunk costs of entering foreign markets (e.g. searching for foreign partners, learning about foreign regulations and consumer preferences) and to reduce the variable costs of selling their goods abroad (e.g. grouping exports with other domestic suppliers of the same retailer to reduce transport and distribution costs). Suppliers of retail brands should be the main beneficiaries of the overseas retail network, as they are involved in specific contracts with the retail company.

The multinational retail investment may also reduce the *trade cost* for all domestic food exporters by generating information spillovers. The successful entry of a retailer in a foreign market informs other domestic firms of the potential for increased sales and profits on that market. In addition, the other food exporters may benefit from scale economies in transportation.

The establishment of foreign outlets by retail companies may also lead to a change in consumer *preferences*. Indeed, retailers adapt their offer to the markets they enter, but they also introduce new products. Due to their large size, continuous presence, and repeated contact with local customers, they may accustom the latter to the consumption culture and life style of their country of origin,

and thereby shift demand. For example, the rise in Chinese demand for wine may be linked with the fact that Chinese consumers have access to French wines in Carrefour outlets in China. This modification in consumer taste may benefit not only domestic retail suppliers, but also all national and foreign exporters of these products.Moreover, a multinational retailer can also publicize a good image of its country of origin, which, in the end, may be transformed into a higher local demand for products of this origin.

Finally, the arrival of multinational retailers in developing countries often coincides with an increase in the local consumption of processed food (Veeck and Burns, 2005). Higher incomes and the evolution of life styles (less time spent at home and at cooking) induce a change in *consumption habits* that benefits all exporters of processed food.

4.4 Robustness of results

4.4.1 Different instrumental variables

To check robustness, we estimated equation (5) with three sets of alternative instrumental variables. To instrument $SALES_{ij,t}$, we first used the share of households with a female head[16] and the retailers' share of their domestic market, computed using the Planet retail database. In the second estimation, the instruments used were the cost of starting a new business in the host country[17] and the number of retail companies in the country of origin (Planet retail). Finally, we used the index of regulation in the retail sector of the host country computed by the OECD[18] and the retailers' share of their domestic market. The index of regulation summarizes conditions in retail distribution sectors, taking into account barriers to entry, operational restrictions, and price controls. As previously, we used cross variables as a third instrument to have bilateral instruments and used lagged values. The results (see Table 6 in the Appendix) were robust to these new specifications.

4.4.2 Approximations of multilateral resistances

In section 4.3, we used importer and exporter fixed effects to control for multilateral resistance terms. Here, instead of fixed effects, we used approximations of these terms compatible with their definition in theoretical trade models. If it were possible to directly measure multilateral resistances

[16] Data from the World Development Indicators database of the World Bank.

[17] Data from the Doing Business database of the World Bank.

[18] http://stats.oecd.org/Index.aspx?DatasetCode=RETAIL. The index of regulation in the retail sector is available only for a limited sample of countries, mainly OECD countries and a few emerging countries and only for 2003 and 2008, which explains the small number of observations in column (3).

$P_{j,t}$ and $\Pi_{i,t}$ in equation (2), estimating the impact of different trade cost elements on the volume of trade would be straightforward and would not require the use of exporter and importer fixed effects.

The computation of multilateral resistances, as defined by the theoretical model,[19] requires the use of unknown parameters (the elasticity of substitution σ and the coefficients of the trade costs equation (4)) and cannot be achieved directly with observed data. As a result, a variety of ad-hoc formulas have emerged in the empirical trade literature, but none is consistent with the theoretical model. An improved alternative was provided by Baier and Bergstrand (2009), who approximate multilateral resistance terms by their first-order log-linear Taylor series expansions. This method means the same trade costs function can be used to derive trade volumes and remoteness terms, and to directly estimate all unknown parameters. Its implementation implies computing a bilateral remoteness term for each variable X of the trade costs function (4):

$$MR\_X_{ij,t} = \sum_j \theta_{j,t} X_{ij,t} + \sum_i \theta_{i,t} X_{ij,t} - \frac{1}{2} \sum_i \sum_j \theta_{i,t} \theta_{j,t} X_{ij,t} - \frac{1}{2} \sum_i \sum_j \theta_{i,t} \theta_{j,t} X_{ji,t}, \qquad (6)$$

with parameters θ standing for countries' shares in world GDP.[20] By replacing importer and exporter fixed effects in equation (3) by the sum of multilateral resistance terms $MR\_X_{ij,t}$ given by (6) and grouping variables, we obtain a trade equation that enables direct estimation of all the parameters of our trade model:

$$\begin{aligned} \ln m_{ij,t} \;=\; & \alpha_0 + \alpha_1 GDP_{i,t} + \alpha_2 GDP_{j,t} + \beta_1 \left[\ln dist_{ij} - MR\_ \ln dist_{ij}\right] \qquad (7) \\ & + \beta_2 \left[contig_{ij} - MR\_contig_{ij}\right] + \beta_3 \left[colony_{ij} - MR\_colony_{ij}\right] \\ & + \beta_4 \left[RTA_{ij,t} - MR\_RTA_{ij,t}\right] + \beta_5 \left[UNvotes_{ij,t} - MR\_UNvotes_{ij,t}\right] \\ & + \beta_6 \left[\ln NonFoodTrade_{ij,t} - MR\_ \ln NonFoodTrade_{ij,t}\right] \\ & + (1-\sigma) \left[\ln\left(1 + tariff_{ij,t}\right) - MR\_ \ln\left(1 + tariff_{ij,t}\right)\right] \\ & + \gamma \left[\ln SALES_{ij,t} - MR\_ \ln SALES_{ij,t}\right] + \epsilon_{ij,t}. \end{aligned}$$

We added a constant term α_0 in equation (7) to increase the flexibility of our empirical model. We estimated equation (7) with and without tariffs, according to the five approaches listed in

[19] See footnote 3.

[20] The term $MR\_X_{ij,t}$ is simply the sum of importer and exporter multilateral remoteness in Baier and Bergstrand (2009). Because our trade costs structure includes asymmetric variables (e.g. import tariffs), we cannot further simplify equation (6) to a sum of three terms like Baier and Bergstrand (2009).

Table 1. We used the same instrumental variables as in section 4.3 to control for the endogeneity of multinational retailers' sales in foreign markets. The coefficients obtained are listed in Table 2. Each column corresponds to the econometric approach used in the column with the same number in Table 1. Again, we found a positive and significant effect of retailers' sales in a foreign market on the exports from their country of origin to this market. The magnitude of the effect is very similar to that in Table 1. The coefficients of standard trade model variables in the two tables are also very close, confirming the robustness of our findings.

5 Conclusions

Retail sales in developing countries have increased dramatically since the beginning of the 21st century. This is a major advantage for food exporters from countries with internationalized retail companies (Germany, France, USA, the Netherlands, etc.). Indeed, our results show that when a domestic retailer establishes retail outlets in another country, exports of food by other domestic firms to this market increase. Our result is robust to different specifications, the use of different sets of instrumental variables and econometric approaches.

This outcome is far from trivial since only a small fraction of the products sold in retailers' foreign outlets come from their country of origin: the bulk of retailers' foreign sales are locally produced goods. Two economic mechanisms can explain this finding. First, the overseas presence of a country's retail companies helps reduce trade costs towards these markets. Second, the establishment of outlets in a foreign country may change consumption habits in favor of products from the retailers' country of origin. However, our analysis does not enable us to distinguish the role of the reduction in trade costs from that of changes in consumer preferences.

Further research is needed to evaluate the relative importance of these two channels. The effect of a reduction in trade costs on export performance of food producers due to overseas expansion of retailers can be analyzed using firm level data. This will allow us to measure the impact of the retailer foreign network by distinguishing between suppliers of retailers and other exporters.

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Table 2: Robustness of impacts: multilateral remotenesses

	Explained variables: $\ln m_{ij,t}$					
	OLS		2SLS, instrumental variables:			
			$Z_{ij,t-1}$	$f^T(Z_{ij,t-1})$	$f^H(Z_{ij,t-1})$	$Z_{ij,t-1}$
	(1)	(2)	(3)	(4)	(5)	(6)
ln GDP exporter	0.89***	0.89***	0.82***	0.83***	0.79***	0.80***
	(0.00)	(0.01)	(0.01)	(0.01)	(0.02)	(0.03)
ln GDP importer	0.77***	0.75***	0.72***	0.72***	0.70***	0.71***
	(0.00)	(0.01)	(0.01)	(0.01)	(0.01)	(0.02)
ln distance	-0.97***	-0.92***	-0.86***	-0.87***	-0.84***	-0.87***
	(0.02)	(0.02)	(0.02)	(0.02)	(0.03)	(0.06)
contiguity	0.47***	0.52***	0.29***	0.33***	0.20**	0.26
	(0.05)	(0.07)	(0.08)	(0.08)	(0.09)	(0.21)
colony	0.77***	0.80***	0.70***	0.71***	0.66***	0.67***
	(0.05)	(0.07)	(0.08)	(0.08)	(0.08)	(0.20)
RTA	0.62***	0.68***	0.65***	0.66***	0.64***	0.46***
	(0.02)	(0.03)	(0.03)	(0.03)	(0.03)	(0.09)
UN votes similarity index	-0.83***	-0.70***	-0.61***	-0.63***	-0.58***	-0.39***
	(0.03)	(0.04)	(0.04)	(0.04)	(0.05)	(0.11)
ln non food trade	0.14***	0.16***	0.15***	0.15***	0.14***	0.14***
	(0.00)	(0.01)	(0.01)	(0.01)	(0.01)	(0.02)
ln retailers' sales	0.05***	0.04***	0.25***	0.22***	0.33***	0.31***
	(0.00)	(0.00)	(0.03)	(0.03)	(0.04)	(0.08)
ln (1+tariff)						-1.26***
						(0.31)
Nb obs.	92584	49516	49516	49516	49516	8239
R^2, centered	0.46	0.44	0.41	0.42	0.39	0.39
R^2, uncentered			0.89	0.89	0.89	0.88
Sargan statistic			3.92	0.00	0.00	0.94
Sargan p-value			0.141			0.625
F stat weak identification			341.67	814.14	567.23	55.51
LM test underidentification			1004.55	801.21	560.97	163.48
underidentification p-value			0.000	0.000	0.000	0.000
ln likelihood	-220461.49	-118019.84	-119280.31	-118925.37	-120401.11	-20107.89

Notes: Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1. Estimations in all columns include year fixed effects. Instruments $Z_{ij,t-1}$ are the number of retailers in the origin country, the minimum amount of capital necessary to start a business in the host country, expressed as percentage of income per capita, and the products of these two variables. Instruments $f^H(Z_{ij,t-1})$ and $Z_{ij,t-1}$ are the best predictions of retailers' sales with all the model's exogenous variables, using Tobit and Heckman estimators, respectively. Explanatory variables ln *distance*, *colony*, *contiguity*, and $\ln\left(1+tariff_{ij,t}\right)$ are transformations of original variables as in equation (7). See the text for details. The test for weak identification is an F version of the Cragg-Donald Wald statistic. The test for underidentification is an LM version of the Anderson canonical correlations test.

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6 Appendix

Table 3: Internationalization of world's largest retailers, by country of origin, 2010

Origin country of retail companies	Sales in foreign markets (bn USD)	Share of sales in foreign markets* (%)	Share of the global market† (%)	Number of overall retail companies	Number of multi-national retailers
Germany	134	45	27	7	7
France	113	41	23	6	6
USA	84	17	17	21	9
Netherlands	44	78	9	2	2
United Kingdom	28	20	6	7	4
Belgium	26	63	5	3	3
Japan	16	10	3	6	5
Hong Kong	9	72	2	2	2
Portugal	6	58	1	1	1
Chile	5	56	1	1	1
Australia	5	5	1	3	3
Austria	5	46	1	1	1
Ireland	4	48	1	1	1
Denmark	4	17	1	3	1
Norway	4	18	1	2	1
Slovakia	3	70	1	1	1
Korea	2	11	0	2	2
South Africa	1	8	0	2	2
Finland	1	4	0	2	2
China	0.4	2	0	2	1
Switzerland	0.2	1	0	2	1
Spain	0.1	0	0	3	1
Italy	0.1	0	0	3	2
Russian Federation	0.03	0	0	1	1
Sweden	0.001	0	0	1	1
Canada	-	0	0	3	-
New Zealand	-	0	0	1	-
United Arab Emirates	-	0	0	1	-
Puerto Rico	-	0	0	1	-
Total	492	26	100	91	61

Source: Authors's calculation using data from Planet Retail.
* The degree of internationalization. † Excluding sales in domestic markets.

Table 4: Geographical area fixed effects

Geographic area	
European Union (27)	Northern Africa
Rest of Europe	Sub-Saharan Africa
Northern America	North-Eastern Asia
Central and Southern America	South-Eastern Asia
Community of Independent States	Southern Asia and Pacific
Middle East	Oceania

Table 5: The impact of multinational retailers' sales in foreign markets on home country export quantities

	Explained variables: $\ln m_{ij,t}$					
	OLS		2SLS, instrumental variables:			
			$Z_{ij,t-1}$	$f^T(Z_{ij,t-1})$	$f^H(Z_{ij,t-1})$	$Z_{ij,t-1}$
	(1)	(2)	(3)	(4)	(5)	(6)
ln GDP exporter	0.63***	0.60***	0.43***	0.45***	0.51***	0.44***
	(0.01)	(0.01)	(0.02)	(0.02)	(0.03)	(0.05)
ln GDP importer	0.42***	0.40***	0.35***	0.36***	0.33***	0.38***
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.03)
ln distance	-0.89***	-0.88***	-0.66***	-0.68***	-0.67***	-0.70***
	(0.02)	(0.02)	(0.03)	(0.03)	(0.04)	(0.08)
contiguity	1.03***	1.03***	0.53***	0.57***	0.80***	0.49**
	(0.06)	(0.08)	(0.10)	(0.10)	(0.11)	(0.25)
colony	1.36***	1.30***	0.57***	0.63***	0.73***	0.63**
	(0.06)	(0.08)	(0.11)	(0.11)	(0.13)	(0.28)
RTA	0.37***	0.41***	0.41***	0.41***	0.42***	0.26***
	(0.02)	(0.03)	(0.03)	(0.03)	(0.04)	(0.09)
UN votes similarity index	0.09**	0.08*	0.15***	0.14***	-0.04	0.30**
	(0.03)	(0.05)	(0.05)	(0.05)	(0.06)	(0.12)
ln non food trade	0.37***	0.37***	0.39***	0.39***	0.41***	0.38***
	(0.00)	(0.01)	(0.01)	(0.01)	(0.01)	(0.02)
ln retailers' sales	0.02***	0.01***	0.44***	0.41***	0.23***	0.43***
	(0.00)	(0.00)	(0.04)	(0.05)	(0.05)	(0.11)
ln (1+tariff)						-1.70***
						(0.29)
Nb obs.	93648	50073	50073	50073	39895	8337
R^2, centered	0.51	0.50	0.40	0.42	0.48	0.40
R^2, uncentered			0.86	0.86	0.88	0.86
Sargan statistic			0.66	0.00	0.00	3.19
Sargan p-value			0.718			0.203
F stat weak identification			213.93	523.60	314.00	35.13
LM test underidentification			634.17	518.56	311.81	104.51
underidentification p-value			0.000	0.000	0.000	0.000
ln likelihood	-227867.85	-120961.47	-125342.72	-124748.70	-97307.42	-20891.77

Notes: Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1. Estimations in all columns include a fixed effect for each year, each exporting and each importing geographic zone. Instruments $Z_{ij,t-1}$ are the number of retailers in the origin country, the minimum amount of capital necessary to start a business in the host country, expressed as percentage of income per capita, and the products of these two variables Instruments $f^H(Z_{ij,t-1})$ and $Z_{ij,t-1}$ are the best predictions of retailers' sales with all the model's exogenous variables, using Tobit and Heckman estimators, respectively. See the text for details.

Table 6: The impact of multinational retailers' sales in foreign markets on home country exports - Robustness checks using different instrumental variables

	Explained variables: $\ln m_{ij,t}$		
	(1)	(2)	(3)
ln GDP exporter	0.36***	0.35***	0.64***
	(0.04)	(0.02)	(0.03)
ln GDP importer	0.19***	0.36***	0.68***
	(0.05)	(0.01)	(0.03)
ln distance	-0.64***	-0.45***	-0.48***
	(0.07)	(0.03)	(0.06)
contiguity	0.83***	0.09	0.3
	(0.23)	(0.09)	(0.21)
colony	0.38	0.41***	1.07***
	(0.38)	(0.10)	(0.13)
RTA	0.46***	0.41***	0.32***
	(0.10)	(0.03)	(0.07)
UN votes similarity index	0.49***	0.18***	0.25**
	(0.18)	(0.05)	(0.12)
ln non food trade	0.35***	0.36***	0.28***
	(0.02)	(0.01)	(0.01)
ln retailers' sales	0.28***	0.50***	0.10***
	(0.06)	(0.04)	(0.03)
Nb obs.	3787	49501	7399
R^2, centered	0.43	0.38	0.58
R^2, uncentered	0.89	0.89	0.93
Sargan statistic	1.04	2.45	0.88
Sargan p-value	0.593	0.294	0.643
F statistic for weak identification	66.91	209.96	236.44
LM test for underidentification	192.5	622.44	649.67
underidentification p-value	0	0	0
ln likelihood	-8703.99	-120512.42	-16562

Notes: Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1. Estimations in all columns include a fixed effect for each year, each exporting and each importing geographic zone. In column (1), instruments are the share of household with female head, the share of origin country retailers in their domestic market and the cross variable of the two. In column (2), instruments are the cost of starting a new business in the host country, the number of retail companies in the origin country and the cross variable of the two. In column (3), instruments are the index of regulation in the retail sector of the host country, the share of origin country retailers in their domestic market and the cross variable of the two.