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Multinational Retailers and Home Country Exports

Angela Cheptea, Charlotte Emlinger and Karine Latouche

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NON-TECHNICAL SUMMARY

The internationalization of the retail companies has accelerated over the last decade. All the worlds' largest retailers have now established their outlets in foreign countries. This overseas expansion of multinationals can shape international trade (of home and host countries) in multiple ways. Most of the existing literature focuses on the impact of the internationalization on host countries' exports (Nordås et al. (2008) and Head et al. (2010)). In this paper we adopt a different angle of approach and investigate the mechanisms through which retailers that invest abroad contribute to the export competitiveness of their origin country, in the food sector.

The current paper analyzes and measures to what extend domestic food exports to a given market are impacted by the implantation of a domestic retailer in this given country. We investigate this relationship empirically using data on bilateral exports for a large panel of countries and data on the foreign sales of the top one hundred world's retailers over the 2000-2010 decade. We use the instrumental variables approach in order to control for simultaneity and endogeneity bias, both bilateral exports and retailers' sales being determined by a number of common observed and non-observed factors.

We find confirmation of the positive effect of the overseas presence of retailers of a given country on its exports to those markets. This outcome is far from being trivial, because most of retailers' foreign sales consist of locally-produced goods. It suggests that when a retailer from a given country establish or intensify operations abroad, domestic firms exporting to these markets experience a drop in their trade costs. Our finding can be explained by four mechanisms or intuitions. First, retailers implanted in another country may choose to continue to work with their domestic suppliers. Second, domestic exports can benefits from informational externalities. Third, retailers implanted abroad can also influence consumer demands on foreign markets. Fourth and more globally, the implantation of domestic retailers abroad may also impact the global image of the domestic country in the destination country and then improve sales of domestic exporters (not only retailer suppliers).

ABSTRACT

This paper questions whether the overseas expansion of a country's retailers fosters overall bilateral exports towards these host markets. To address this question, we consider an empirical trade model,

where the foreign sales of multinational retailers reduce the fixed and variable trade costs of their co-national firms towards the same destination markets. We test our model with data on bilateral exports on a large panel of countries and the foreign sales of world's largest one hundred retail companies over the 2001-2010 decade. We find a strong positive effect of the overseas presence of retailers of a given country on its exports to those markets. This outcome is far from being trivial, as most products sold in retailers foreign outlets are locally-produced. It testifies that the overseas presence of a country's retail companies contributes to the reduction of trade costs towards these markets for other firms of the origin country. Our result is robust to different specifications, the use of different sets of instrumental variables and econometric approaches.

JEL Classification: F10, F12, F14, F23

Keywords: International Trade, Multinational Retailers.

IMPLANTATION À L'ÉTRANGER DE LA GRANDE DISTRIBUTION ET COMMERCE BILATÉRAL

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RÉSUME NON TECHNIQUE

L'internationalisation des enseignes de la grande distribution a connu une forte accélération depuis le début des années 2000. La plupart des grandes enseignes sont à présent implantées dans plusieurs pays. L'impact de ce phénomène sur les échanges internationaux a été essentiellement analysé du point de vue des exportations des pays hôtes (Nordås et al. (2008) and Head et al. (2010)). Dans ce papier, nous adoptons un angle d'approche différent puisque nous cherchons à appréhender l'effet de l'implantation des enseignes nationales à l'étranger sur les performances nationales à l'exportation. Plus précisément, nous cherchons à estimer dans quelle mesure les exportations de produits alimentaires vers un pays donné réagissent à l'implantation d'enseignes nationales de la grande distribution dans ce pays. Nous testons empiriquement cet effet en utilisant, pour la période 2000-2010, des données bilatérales de commerce et des données de ventes par pays des 100 plus grandes enseignes mondiales de distribution. Nous utilisons des variables instrumentales pour corriger les biais d'endogénéité et de simultanéité, le commerce bilatéral et les ventes de la grande distribution pouvant s'expliquer par des facteurs communs.

Nos résultats montrent que l'implantation à l'étranger de nouvelles enseignes stimule le commerce bilatéral de produits alimentaires entre le pays hôte et le pays d'origine. Ce résultat, loin d'être évident puisque la grande majorité des produits alimentaires vendus en grande surface sont d'origine domestique, peut s'expliquer par plusieurs facteurs. Premièrement, une enseigne de grande distribution implantée à l'étranger peut vouloir continuer à s'approvisionner chez ses fournisseurs habituels. Deuxièmement, l'implantation à l'étranger de la grande distribution nationale peut entraîner une réduction des coûts informationnels pour les exportateurs nationaux. Troisièmement, elle peut aussi, dans le pays hôte, orienter la demande des clients vers les produits du pays d'origine. Enfin, plus globalement, l'implantation à l'étranger de la grande distribution d'un pays peut avoir un impact positif sur son image dans le pays hôte, et y favoriser les ventes de l'ensemble de ses exportateurs (pas seulement de ceux qui fournissent la grande distribution).

RÉSUMÉ COURT

Ce papier étudie l'effet de l'internationalisation des enseignes de grande distribution sur le commerce des pays d'origine vers les pays hôtes. Nous mobilisons un modèle théorique dans lequel l'implantation

et les ventes des enseignes de grande distribution dans un pays réduisent les coûts fixes et variables d'exportation vers ce pays. Nous testons ce modèle sur le commerce alimentaire bilatéral d'un large panel de pays et les ventes à l'étranger des cent plus grosses enseignes mondiales de grande distribution sur la période 2000-2010. Nos estimations montrent que les ventes réalisées dans un pays hôte par les enseignes d'un autre pays stimulent le commerce entre les deux pays. Ce résultat est loin d'être évident puisque les produits alimentaires vendus par la grande distribution sont essentiellement des produits locaux. Il signifie que l'implantation à l'étranger d'enseignes nationales améliore l'accès au marché des exportateurs du pays hôte au-delà des seuls fournisseurs de ces grands distributeurs. Nos résultats sont robustes à différentes spécifications, à l'utilisation des différentes variables instrumentales et approches économétriques.

Multinational Retailers and Home Country Exports[1]

Angela Cheptea * Charlotte Emlinger † Karine Latouche ‡

1. Introduction

All the worlds' largest retailers have established and multiplied their outlets in foreign countries. This trend has accelerated over the last decade and the struggle for new markets remains on the top of these firms' agenda. The overseas expansion of these multinationals can shape international trade (of home and host countries) in multiple ways. The pronounced internationalization of major world retailers over the last two decades has given rise to a growing recent literature on this subject. There are four different strands of economic literature focusing on retailers that invest in foreign markets and the resulting impacts on home and host economies.

First, the very process of internationalization in the retail sector is investigated by the literature on managerial sciences and economic geography. The main questions addressed are why do we observe retail internationalization, what forms does it take, how is it different from product globalization (Traill, 2006; Dawson, 2007; Coe and Wrigley, 2007). To answer them, a strategic management and a retail management perspective is adopted. Secondly, the overseas expansion of retailers is also studied in industrial economics. This literature focuses on retailers' market power, the degree of sector concentration, and the consequences in terms of competition and employment in host and origin markets. It consists mainly of theoretical papers that try to understand the underlying economic mechanisms (Girma et al., 2008; Eckel, 2009; Raff and Schmitt, 2009, 2011). Third, the results of the wide literature on foreign direct investments (FDI) can be extrapolated, extended to the retail sector. Helpman (2006) represents an illustrative attempt in this sense. Javorcik and Li (2008), Javorcik et al. (2008), Iacovone et al. (2011) represent other significant contributions. Finally, multinational retailers have been at the origin of a very recent (and still narrow) stand of international trade literature. For example, Basker and Van (2008) link economies of scale in retail to economies of scale in importing to explain why larger retail chains import disproportionately more than smaller ones from low-cost remote countries. Differently, Nordås et al. (2008) and Head et al. (2010) study how the arrival of multinational

retailers shapes host country exports. This literature is closely linked to that on intermediaries in international trade (Antràs and Costinot, 2010; Bernard et al., 2010; Blum et al., 2010; Basker and Van, 2010; Ahn et al., 2011; Antràs and Costinot, 2011; Crozet et al., 2010). Multinational retailers have been compared to, or even considered as a form of, intermediaries.

Still, most of the existing literature focuses on the process of internationalization *per se*, the forms it may take, and the ways it may impact host countries, its firms, employees and consumers. In this paper we adopt a different angle of approach and investigate the mechanisms through which retailers that invest abroad contribute to the export competitiveness of their origin countries.

The current paper explores the link between globalization of the retail sector and international trade activities of food products. More precisely, we analyze and measure to what extend domestic food exports to a given market are impacted by the implantation of a domestic retailer in this given country. We investigate this relationship empirically using data on bilateral exports for a large panel of countries and data on the foreign sales of the top one hundred world's retailers over the 2000-2010 decade. We use an instrumental variables approach in order to control for a simultaneity and an endogeneity bias, both bilateral exports and retailers' sales being determined by a number of common observed and non-observed factors. Bilateral retail investments arise only for a small share of country pairs in our data. In order to address this feature of the data, in addition to the traditional instrumental-variables approach used in most of the empirical trade literature, we use generated instruments (computed following Wooldridge, 2001, 2010) that take into account the specific distribution (partially continuous and partially discrete) of our endogenous variable.

We find confirmation of the positive effect of the overseas presence of a country's retailers on its exports to those markets. This outcome is far from being trivial, because most of retailers' foreign sales consist of locally-produced goods. It suggests that when a retailer from a given country establish or intensify operations abroad, domestic firms exporting to these markets experience a drop in their trade costs. This result is very robust, and confirmed both in terms of exported values and quantities.

Our finding can be explained by four mechanisms or intuitions. First, retailers implanted in another country may choose to continue to work with their domestic suppliers. Second, domestic exports can benefit from informational externalities. Third, retailers implanted abroad can also influence consumer demands on foreign markets. Fourth and more globally, the implantation of domestic retailers abroad may also impact the global image of the domestic country in the destination country and then improve sales of domestic exporters (not only retailer suppliers).

The paper is structured as follows. The next section discusses stylized facts relative to the world's largest retailer companies. The empirical model is detailed in section 3. Employed data, the econometric approaches and main results are discussed in section 4. The last section resumes our conclusions.

2. STYLIZED FACTS

The internationalization of retail companies is not a recent phenomenon. The French retail company Carrefour established its first outlet in Belgium in 1969 and Wal-mart arrived in Mexico in 1991. However, foreign investment in the retail sector experienced an acceleration during the last decade. The main drivers of this process cited in the literature are the overall globalization, the development of emerging economies and the saturation of retailers' domestic markets (Evans et al., 2008; Reardon et al., 2003). Figure 1 draws the evolution of world sales by multinational retailers whose sales abroad increased by at least 150% between 2000 and 2010.[2] This trend was only slightly inferior to that of food exports of retailers' origin countries.
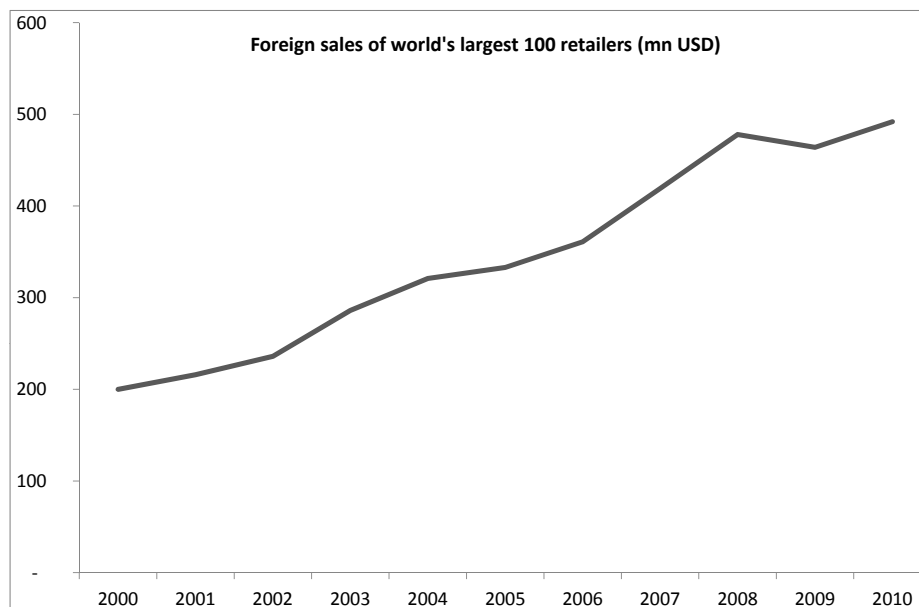
Figure 1 – World retail sales in foreign markets
Source: Authors's calculation using data from Planet Retail.

The internationalization of the retail sector concerns companies of few geographical origins. Table 1 presents descriptive statistics about the state of the art of the retail sector in 2010, using data from the Planet Retail database. This database provides data on the sales of world top one hundred retailers in domestic and foreign markets, at company level.[3]The database covers the

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[2]Domestic sales of these companies increased on average by 110% over the same period.

[3]Since 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 have been added using information available on companies' websites. Mergers and acquisitions are taken into account only if it implies a change of the the name of outlets. For each firm we consider only one origin country.

period from 2000 to 2010 and retailer's sales in each market where it operates. This assumption is particularly verified with respect to internationalization, a process that concerns essentially the largest firms in the sector. From these data we conclude that half of retailers' sales in the foreign markets are made by German and French companies. Moreover, these retailers are characterized by a high degree of internationalization, with over 40% of their total sales coming from abroad. The overall leading position of American retail companies (27% of world sales) is due essentially to the US domestic market. Indeed, only 9 out of 21 US retailers in the database have outlets in foreign markets, and their sales in these outlets represent only 17% of US retailers' total sales. Some smaller countries, such as the Netherlands, Belgium and Hong Kong, have highly internationalized retail companies with more than 60% of their total sales coming from foreign markets.

American and German retail companies have increased their shares of the world market over the last decade (excluding sales in domestic markets, Figure 2). Retailers of these two origins have either increased the number of their outlets in foreign market, or their sales in existing outlets. At the same time, French companies have maintained their overall market share, while Dutch and Belgian companies lost market share in foreign markets.

Figure 2 – Shares of the world market (foreign sales) in the retail sector, by retailers' origin country
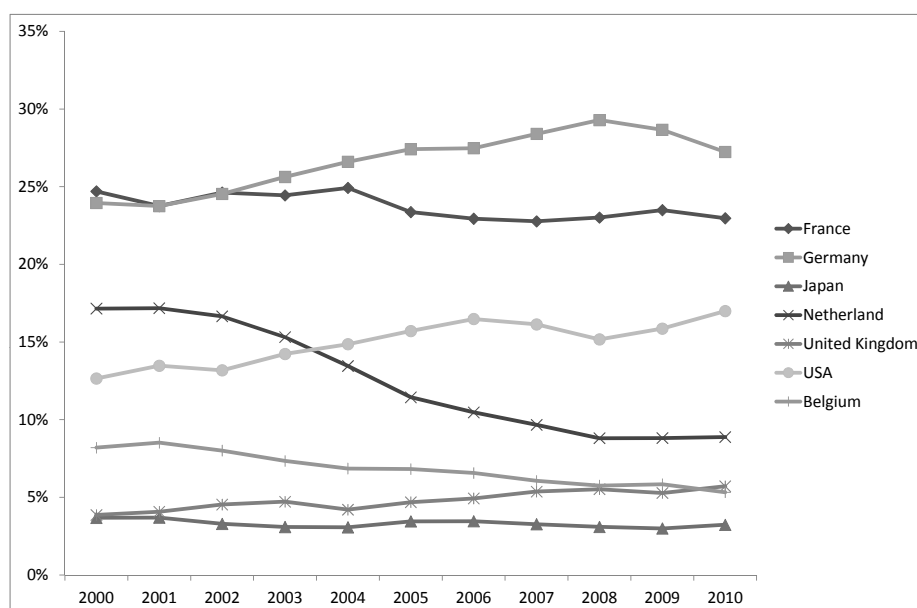
Source: Authors's calculation using data from Planet Retail.

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Table 1 – 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.

The overseas expansion of multinational retailers is a phenomenon involving mainly rich countries: 76% of foreign sales of the world's largest retail companies are made in high-income countries (upper part of Table 2). Still, the share of sales in outlets located in the main five emerging countries (Brazil, Russia, India, China and South Africa - abbreviated BRICS) in-

creased continuously: it doubled from 2000 to 2010 to reach 12%. With the increasing liberalization of the retail sector in these countries, especially in India, we expect this trend to continue in the years to come. Developing countries represented about 12% of the foreign sales of retail companies in 2010, only two percentage points more than a decade earlier. Finally, least developed countries (LDC) lag behind other destination markets, absorbing less than one percent of the foreign sales in retailing.

Table 2 – Destination of foreign sales of world's largest retailers

	Destination markets:				
	High income countries	BRICS	Developing countries	LDCs	Total
Retailers of all origins combined[*]:					
shares of all foreign sales, 2000 (%)	85	6	10	0.04	100
shares of all foreign sales, 2010 (%)	76	12	12	0.06	100
sales' growth rate, 2000-2010 (%)	121	452	204	236	147
Shares of foreign sales, 2010 (%)					
for retailers from:					
Belgium	99.6	0	0.4	0	100
France	56	31	13	0.1	100
Germany	92	4	3	0	100
Japan	81	8	11	0	100
Netherland	87	5	8	0	100
USA	58	14	28	0	100

Source: Authors's calculation using data from Planet Retail.
    [*] Foreign sales by the world's top 91 multinational retailers combined.

Looking at the specific host countries targeted by multinational retailers, we see a clear geographical specialization (lower part of Table 2). Thus, most of the foreign outlets of retailers from Germany, Belgium and the Netherlands are in high income countries, mainly in Europe. On the contrary, a significant share of French and American companies' sales come from the BRICS and other developing countries. In particular, Brazil and China constitute two strategic markets for French retailers, with respectively 19 and 7% of their sales abroad. The same is also true for US retailers, even if their sales in the neighbor Mexican market account for 20% of their sales. We note that French retailers are the only ones to establish operations in least developed countries and North Africa, mainly due to their common colonial past.

The stylized facts emphasized in this section suggest that both geographical and strategic components determine the decision of retailers to open outlets and increase sales in foreign markets. The high income growth of emerging countries is one of the factors explaining the increasing internationalization of retailers.

3. THE EMPIRICAL MODEL

We consider a trade structure with a differentiated good of n_{it} 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 in two different locations is entirely explained by the difference in trade costs to these locations. For simplicity we assume an *iceberg* trade costs function: the price to country j consumers of a good produced in i, p_{ijt}, is the product of its mill price p_{it} and the corresponding trade cost τ_{ijt}. Consumers of each country j spend a total amount E_{jt} on domestic and foreign products and choose quantities that maximize their utility function under the budget constraint. Country j's demand for products from origin i at time t is derived

$$m_{ijt} = a_{ij}^{\sigma-1} \left(\frac{p_{it}\tau_{ijt}}{P_{jt}} \right)^{1-\sigma} n_{it} E_{jt}, \tag{1}$$

where P_{jt} is a non-linear (CES) price index of country j imports, depending on the elasticity of substitution σ and a_{ij} the bilateral preference parameter. Under market clearance, the exporter-specific part of (1) can be expressed as the country's production Y_{it} adjusted by a non-linear average cost Π_{ijt} of shipping its products to the global market: $n_{it} p_{it}^{1-\sigma} = Y_{it} \Pi_{it}^{\sigma-1}$.[4] Using these results, Anderson and van Wincoop (2003, 2004) show that price index P_{jt} reflects as well the average importing cost of country j from all origins combined. Trade equation (1) becomes then:

$$m_{ijt} = \left(\frac{\tau_{ijt}}{a_{ij}} \right)^{1-\sigma} Y_{it} \Pi_{it}^{\sigma-1} E_{jt} P_{jt}^{\sigma-1} \tag{2}$$

Π_{it} and P_{jt} are referred to in the literature as the outward and inward multilateral resistances.[5] The non-linearity of these terms and the presence of bilateral preference parameters a_{ij} make virtually impossible the estimation of 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 means to disentangle the impact of a variable on preferences 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. Throughout the rest of the paper we consider preference-adjusted trade costs and interpret any increase in the term τ_{ijt}/a_{ij} as a reduction of 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

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

[5]More specifically, $\Pi_{it} = \sum_j \left(\frac{\tau_{ijt}}{a_{ij}} \right)^{1-\sigma} E_{jt} P_{jt}^{\sigma-1}$ and $P_{jt} = \sum_i \left(\frac{\tau_{ijt}}{a_{ij}} \right)^{1-\sigma} Y_{it} \Pi_{it}^{\sigma-1}$.

demand function upward. Thus, the actual price to which consumers in country j respond is p_{sjt}/a_{sj} rather than p_{sjt}.

One can estimate directly equation (2) in logarithmic form with time-varying importer and exporter fixed effects after grouping i and j terms.[6] We assume that multilateral resistances do not vary significantly over time and use time-invariant exporter and importer fixed effects to estimate (3):[7]

$$\ln m_{ijt} = \ln Y_{it} + FE_i + \ln E_{jt} + FM_j + (1-\sigma)\ln\frac{\tau_{ijt}}{a_{ij}} \qquad (3)$$

This permits us to use observed time-varying data on countries' production and consumption levels and to take advantage of the panel structure of our data.

We adopt a trade costs function which includes the standard elements found in the literature and a zero-mean randomly distributed error term e_{ijt}:

$$\ln\frac{\tau_{ijt}}{a_{ij}} = \delta\ln d_{ij} + b_1 contig_{ij} + b_2 colony_{ij} + b_3 landlock_i + b_4 landlock_j \qquad (4)$$
$$+ \ln\left(1 + tariff_{ijt}\right) + c\ln SALES_{ijt} + e_{ijt}$$

Variable d_{ij} represents the physical distance separating countries i and j. It increases trade costs and we expect the data to confirm that $\delta > 0$. Variables $contig_{ij}$ and $colony_{ij}$ denote respectively a common land border and a common colonial history for countries i and j, while variables $landlock$ indicate the absence of access to the sea/ocean. We expect coefficients b_1 and b_2 to be negative (diminishing trade costs, facilitate trade), and coefficients b_3 and b_4 to be positive (hinder, restrain trade). Import tariffs $tariff_{ijt}$ are expressed as ad-valorem equivalents and enter the trade costs function (4) with a unitary coefficient. The last term $SALES_{ijt}$ reflects the sales of domestic and foreign products by multinational retailers from country i in outlets they established in host market j. We believe that the presence of retailers from i in foreign markets helps other firms from country i to export at lower costs to these markets. This effect arises for domestic firms that supply multinational retailers, as well as for other domestic firms, through the different channels discussed previously in the paper, and is similar to the effect analyzed by Ahn et al. (2011).

The trade equation to be estimated is obtained by integrating the trade costs function (4) in equation (3) and using importer and exporter gross domestic products (GDP) as proxies for production and expenditure levels:

$$\ln m_{ijt} = \alpha_1 GDP_{it} + \alpha_2 GDP_{jt} + \alpha_3\ln d_{ij} + \beta_1 contig_{ij} + \beta_2 colony_{ij} + \beta_3 landlock_i \qquad (5)$$
$$+ \beta_4 landlock_j + (1-\sigma)\ln\left(1 + tariff_{ijt}\right) + \gamma\ln SALES_{ijt} + FE_i + FM_j + \varepsilon_{ijt}$$

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[6]Rose and van Wincoop (2001) and Redding and Venables (2004) use country-specific effects in a cross-section setting to capture exporter- and importer-specific variables of a trade equation.

[7]This assumption does not seem very strong for a time period of one decade.

4. RETAILERS' OVERSEAS EXPANSION AND HOME COUNTRY EXPORTS

4.1. Data

The data panel used in this paper covers bilateral trade between a large number of exporting (171) and importing (101) countries over the 2000-2010 period. Our main variable of interest is $SALES_{ijt}$ that corresponds to the total sales of retailer from country i in outlets established in country j. We compute this variable using data from the Planet Retail dataset [8] we used for the descriptive statistics of the section 2. The original dataset gives grocery sales by retail company and country, for the first 100 retail companies. We aggregated these data in order to have the sales of all the companies of country i in host country j.[9] At the global level, foreign investments in the retail sector are a relatively rare phenomenon. In order to better illustrate the impact of retailers' sales in foreign markets on their origin countries' exports we limit our panel to importing countries that host at least one foreign or domestic retailer. Even doing so, the observations with positive sales of multinational retailers of origin i in destination market j represent only 2.3% of the data.

For trade data, we use the BACI database developed by the CEPII.[10]. BACI's trade data are defined at the 6-digit level of the HS nomenclature. We aggregated the trade value data at the country level in order to have only one trade value by exporter i and importer j. We only keep the chapters that corresponds to food products sold in supermarkets.[11]

We use GDP of exporting and importing countries from the World Development Indicators database of the World Bank. Distance and the other geographical variables (landlocked, contig and Colony) come from the CEPII's geodist database.[12] Import tariff data comes from the MAcMap-HS6 dataset and are available only for three years of our sample: 2001, 2004 and 2007.[13] This database gives ad-valorem equivalents of tariff protection for each importer, exporter and product defined at the 6-digit level of the HS nomenclature. For food products included in our trade variable, we aggregate tariff data using world trade as the HS 6-digit level as weights to obtain the average level of protection each country pair and year.

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

[9]See section 2 for details.

[10]Gaulier and Zignago (2010) This database uses original procedures to harmonize the United Nations COMTRADE data (evaluation of the quality of country declarations to average mirror flows, evaluation of cost, insurance and freight (CIF) rates to reconcile import and export declarations)

[11]Thus, from the first 24 chapters of the Harmonized System which correspond to food products, we exclude Live animals (chapter 1), Hairs, furs 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).

[12]Mayer and Zignago (2011).

[13]See Guimbard et al. (2012) for a description of the dataset.

4.2. Different econometric approaches

The objective of this section is to identify the econometric techniques that allow to correctly estimate how the presence of multinational retailers from country i in country j affects the volume of exports from i to j. Equation (5) suggests the existence of a positive effect: the amount of sales of country i retailers in j, $SALES_{ijt}$, should have a significant and positive impact on bilateral exports, m_{ijt}. However, the two variables 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 cultural, linguistic and historical ties linking the origin and destination countries. Therefore, estimating equation (5) directly with ordinary least squares (OLS) may yield results biased by an endogeneity problem.

To eliminate this endogeneity bias and obtain a correct estimation of the causality effect between variables $SALES_{ijt}$ and m_{ijt}, we use an instrumental variable approach. We identify three exogenous variables that affect the decision to invest abroad or the amount of sales in outlets located abroad, but not the volume of bilateral exports. First, we consider the share of women in active workers in the host country. The data on this variable comes from the World Development Indicators database of the World Bank. Women's employment is supposed to entail the development of supermarket and retail, in particular in developing countries (Reardon et al., 2003), and to have few impacts on trade. As a second instrument, we use the cost of administrative procedures supported by a foreign company when establishing a new business in the host country. Data on this indicator is obtained from the Doing Business database[14] and is expressed in USD. Fixed investment costs are larger in countries with high administrative costs (red tape), leading to lower levels of foreign investment, i.e. to a smaller number of outlets operated by foreign retailers in the host country. Since retailing is a proximity service, fewer outlets also means a lower volume sales by foreign retailers in a particular host country. The last instrument we employ is the market share of retailers from the origin country on their domestic market. We compute this variable using the Planet Retail database, under the assumption that retail companies are more eager to sell abroad when they already have a high share of the domestic (origin country) market. Retailers expand overseas in their quest for new consumers (Reardon et al., 2003). To reduce endogeneity, we use lagged values (by one year, in $t-1$) of all our instruments.

The three instrumental variables described above, let us denote them by vector Z_{ijt-1}, can be used untransformed to construct the standard two-stage least squares (2SLS) estimator of parameters in equation (5). This represents the traditional econometric approach that allows to control for endogeneity/ simultaneity between explained and explanatory variables. In addition to it, we consider two other 2SLS estimators that take into account the specific distribution of the instrumented variable $SALES_{ijt}$. Variable $SALES_{ijt}$ 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 a relatively rare phenomenon at the global level, even when we limit the data panel to

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[14] http://www.doingbusiness.org/

importing countries that host at least one retailer. Rather than using directly Z_{ijt-1} to control for the endogeneity of retailers' sales in foreign markets, we employ transformations $f(.)$ of the exogenous variables that take into account the partially-continuous and partially-discrete distribution of variable $SALES_{ijt}$. Following Wooldridge (2010)[p.117], we compute $f(.)$ as the best prediction of $SALES_{ijt}$ obtained with the vector of exogenous variables in equation (5), X_{ijt}, and our set of instrumental variables Z_{ijt-1}: $f(Z_{ijt}) = E(SALES_{ijt}|X_{ijt}, Z_{ijt-1})$. First, we assume that variable $SALES_{ijt}$ follows a standard Tobit model and use the corresponding maximum likelihood estimator to obtain $f(Z_{ijt})$. Second, we use a Heckman estimator that allows Z_{ijt-1} to affect differently the occurrence (the discrete part) and the volume (the continuous part) of retailers' sales in foreign markets $SALES_{ijt}$. In this estimation, the cost of a new business is used as a selection variable in the Heckman procedure. Variables $f^T(Z_{ijt})$ and $f^H(Z_{ijt})$, generated respectively with Tobit and Heckman estimators, are used alternatively instead of Z_{ijt-1} in a two-stage least squares procedure to obtain the equation (5) coefficients.

Another difficulty in our estimations is the fact that country and partner fixed effects alone explain a large share of nil retail sales observations. To overcome this situation, we replace country-specific effects importer and exporter effects with region-specific effects (listed in Table 5 of the Appendix).

4.3.   Main estimation results

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

Table 3 shows the estimates of coefficients in equation (5) using five alternative specifications. In all specifications, we use importer and exporter GDPs to proxy for the size of demand and supply in the two countries. The geographical distance and dichotomous variables for common land border, past colonial ties and the fact of being landlocked are used to account for unobservable bilateral trade costs. Import tariff data cover only three years of our sample, i.e. less than 30% of the total number of observations. Therefore, in the first four columns of Table 3 we drop this variable from our estimations. The main variable of interest for our study is $SALES_{ijt}$, the sales of retailers in foreign markets. Its coefficient indicates whether an increase in the sales of a country's retailers in a foreign market allows other firms from the same origin to export more (and at lower costs) to these destinations. Importer and exporter fixed effects for twelve geographical zones and year fixed effects are included in all specifications.

Results obtained by estimating trade equation (5) with OLS are displayed in the first column of Table 3. The coefficients of traditional variables are highly significant and in line with values obtained by previous studies in the literature. The size of origin and destination countries, geographical contiguity and the existence of a common colonial history enhance bilateral exports. Conversely, remote countries and countries without access to the sea exchange significantly less than an average pair of countries. We find a positive and significant coefficient for the sales of

retailers in foreign markets. Nevertheless, as explained in the previous section, this coefficient may be biased because of the endogeneity of the variable.

The second column shows coefficients obtained with the standard two-stage least squares (2SLS) estimator.[15] Both Wu-Hausman F and Durbin-Wu-Hausman χ^2 tests are highly significant, confirming the endogeneity of our variable of interest, $SALES_{ijt}$. The classical tests for endogeneity (Sargan and Cragg-Donald statistics) validate our choice of instrumental variables. When we control for this aspect, the coefficient of variable $SALES_{ijt}$ increases by more than tenfold from 0.02 to 0.27. This result suggests than a ten percent increase in the sales volume of a country's retailers in a foreign market would induce a 2.7 percent increase in the exports of the country's firms to this market. The impact on exports of other variables remains almost unchanged. As an illustration, this means that the removal of the French retailers on foreign market would entail a reduction of French exports of food products on these markets of 2450 billions dollars.

The next two columns of Table 3 correspond to 2SLS estimates, where the endogeneity of $SALES_{ijt}$ is controlled for with instruments generated using first-stage Tobit and, respectively, Heckman estimators. The magnitude of the effect of variable $SALES_{ijt}$ on the exports of country i to destination j estimated with these two methods is very similar to the one obtained in column (2).

Finally, in column (5) we replicate the 2SLS estimates from column (2) on equation (5) including import tariffs.[16] We obtain a negative and highly significant coefficient on this variable, in accordance with the existing theoretical and empirical literature. Recall that import tariffs enter the trade costs function with coefficient one. Therefore, the tariff coefficient in column (5) allows us to deduce the magnitude of the elasticity of substitution between exchanged products: $\sigma = 2.92$. The impact of variable $SALES_{ijt}$ on bilateral exports is very similar to the ones obtained with the other 2SLS estimators.

One could argue that the positive effect of retailers' sales in Table 3 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 6 of the Appendix we replicate estimates from Table 3 on exported quantities (expressed in tonnes). We find a positive and significant effect of retailers' foreign sales in all specifications. In terms of magnitude, roughly half of the effect on exported values

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[15]The use of instrumental variables reduces our estimation panel by more than half. This is due to the fact that data on one of our instruments (administrative costs of establishing a new business) exist only from 2005. Accordingly, the results in columns (2) to (4) capture average effects for the 2006-2010 period. For comparability, we have replicated the estimates in column (1) on the 2006-2010 sub-pannel and found coefficient values very close in the ones obtained on the full 2000-2010 panel.

[16]Due to the limited availability of data on administrative costs of establishing a new business and on import tariffs, results in column (5) of Table 3 correspond only to observations for the year 2007.

Table 3 – The impact of multinational retailers' sales in foreign markets on home country exports

	OLS	2SLS, instrumental variables:			
Explained variables: $\ln m_{ijt}$					
		Z_{ijt-1}	$f^T(Z_{ijt-1})$	$f^H(Z_{ijt-1})$	Z_{ijt-1}
	(1)	(2)	(3)	(4)	(5)
ln GDP exporter	0.96***	0.87***	0.88***	0.90***	0.85***
	(0.01)	(0.01)	(0.01)	(0.01)	(0.02)
ln GDP importer	0.75***	0.71***	0.71***	0.69***	0.71***
	(0.01)	(0.01)	(0.01)	(0.01)	(0.02)
ln distance	-1.30***	-1.20***	-1.21***	-1.16***	-1.20***
	(0.01)	(0.02)	(0.02)	(0.02)	(0.05)
contiguity	0.96***	0.68***	0.71***	0.74***	0.63***
	(0.05)	(0.08)	(0.08)	(0.09)	(0.19)
colony	1.57***	1.02***	1.07***	0.98***	1.15***
	(0.05)	(0.08)	(0.08)	(0.09)	(0.19)
landlock exporter	-0.61***	-0.61***	-0.62***	-0.37***	-0.60***
	(0.02)	(0.04)	(0.04)	(0.04)	(0.09)
landlock importer	-0.61***	-0.75***	-0.75***	-0.68***	-0.71***
	(0.03)	(0.04)	(0.04)	(0.05)	(0.01)
ln retailers' sales	0.02***	0.27***	0.24***	0.25***	0.25***
	(0.00)	(0.02)	(0.02)	(0.02)	(0.04)
ln (1 + tariff)					-1.92***
					(0.25)
Nb obs.	98292	43411	43411	34577	8561
R^2, centered	0.52	0.46	0.46	0.46	0.46
R^2, uncentered		0.90	0.90	0.90	0.90
Sargan statistic		0.88			1.70
Sargan *p*-value		0.645			0.428
F statistic for weak identification		979.54	3083.08	2083.80	187.69
LM test for underidentification		2754.52	2880.80	1967.08	530.31
underidentification *p*-value		0.000	0.000	0.000	0.000
ln likelihood	-229280.86	-103227.89	-102924.18	-82379.21	-20365.95

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_{ijt-1} are the share of women in active workers in the host country, the cost of administrative procedures supported by a foreign company when establishing a new business in the host country, and the share of origin country retailers in their domestic market. Instruments $f^H(Z_{ijt-1})$ and Z_{ijt-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.

(Table 3) is explained by the effect on quantities (Table 6), with the other half being driven by price effects.

To sum up, results presented in Tables 3 and 6 testify that foreign retail investment fosters the exports of origin country producers. Taking into account endogeneity enhances this effect. Several economic mechanisms may explain this outcome.

First, *retailers* that penetrate foreign markets may *continue to source from domestic suppliers for their overseas stores* (at least at the beginning). Long-lasting and trustful relationships with suppliers in the home country are likely to determine retailers to offer the latter shelf space in their (new) foreign affiliates. The access to retailers' network of overseas outlets would permit domestic suppliers to avoid some of the regular sunk costs for entering foreign markets (e.g. searching foreign partners, learning about foreign regulation and consumer preferences), to face lower variable costs for selling their goods abroad (e.g. group exports with other domestic suppliers of the same retailer to lower transport and distribution costs), and to export larger volumes than similar third country firms that do not benefit from such an advantage. If this phenomenon is at the origin of the positive effect identified in Table 3, the magnitude of the effect would be determined by the share of exported goods sold via the foreign network of origin country retailers. Still, since most of retailers' sales of agri-food products in a given market consist of locally produced/processed goods, we believe that this channel provides at most a partial explanation of our finding.

Second, the presence of home country retailers on foreign markets may reinforce the exports of co-national firms by generating *information spillovers*. After several years of selling their products via the retailer's overseas network of outlets, a supplier may decide to export directly its products, or eventually buy cheaper shelf space from a local retailer. Domestic firms (suppliers) willing to internationalize may also hunt for managers working for multinational retailers and use their knowledge (expertise) of foreign markets in order to incur lower fixed (sunk) costs of exporting.[17] The successes and failures of domestic retailers in foreign markets are usually closely followed by origin country mass-media. This is another source of cheap information that co-national firms may explore in their decision to enter (sell to) the same markets. The successful entry of a foreign market by a domestic retailer signals to other domestic firms the potential for positive/increased sales and profits on that market.

Third, recent studies show that multinational retailers not only adapt to each market they enter, but also may *shape local consumption habits*. Due to their large size, continuous presence and repeated contact with local customers, they may accustom the latter to their origin country consumption culture and life style, and thereby shift demand. For example, the rising Chinese demand for wines may be correlated to the fact that Chinese consumers have access to French

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[17]It is not unusual that managers provide consulting services to other firms or even switch firms when offered better positions. This practice is often employed by firms since acquiring information about foreign markets is a long and costly process, while employing a senior manager that already has knowledge of and connections in this environment permits to cut costs by an important amount.

wines in Carrefour outlets in China. We believe this effect of foreign retailers on host country consumers' habits are particularly strong in the case of food products.[18]

Moreover, following the same line of reasoning, a retailer that settles abroad represents to local consumers, firms, officials and institutions (through its policy towards workers, local authorities, customers, etc.) the very values and culture of its home country. Therefore, a multinational retailer also *publicizes a good image of its country of origin*, which translates by the end of the day into a higher or lower local demand for products of this origin. The previous three channels via which retail investment generates exports towards the same host country concern mainly the retailer's suppliers in the home country. Differently, an improved or a deteriorated image of the origin country that a retailer disseminates on foreign markets will affect the demand for goods exported by all its co-national firms to these markets.

All the mechanisms discussed above can be modeled as a reduction in the bilateral export costs of origin country producers, including sunk costs. In the light of the international trade theory with heterogeneous firms, apart the increase in the volume of exports, this should also lead to a larger share of origin country firms exporting to each importing market with an increased activity of origin country retailers.

4.4. Robustness of results

4.4.1. Different instrumental variables

As a robustness check, we estimate equation (5) with alternative instrumental variables. To instrument $SALES_{ijt}$, we use the number of retail companies in the exporting country i and the growth rate of total retail sales in the host country j. We compute these two variable using the Planet Retail database and as previously, we use lagged variables.[19] The results are robust to this new specification.

4.4.2. Approximations of multilateral resistances

In section 4.3 we used importer and importer fixed effects to control for multilateral resistance terms. Here, instead of fixed effects, we use approximations of these terms compatible with their definition in theoretical trade models.

If one could measure multilateral resistances P_{jt} and Π_{it} in equation (3), estimating the impact of different trade costs elements on the volume of trade would become straightforward and would no require the use of exporter and importer fixed effects:

$$\ln m_{ijt} = \ln Y_{it} + \ln E_{jt} + (\sigma - 1)\ln \Pi_{it} + (\sigma - 1)\ln P_{jt} + (1 - \sigma)\ln \frac{\tau_{ijt}}{a_{ij}} + e_{ijt} \qquad (6)$$

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[18]Culinary cultures vary significantly across countries and there is higher potential to create new demand when foreign products are very different from domestic ones than when they are close substitutes.

[19]Data on both instruments are available for all years of our panel, and the drop in the number of observations induced by the use of 2SLS estimators is less important than in Table 3.

According to the theory, the computation of multilateral resistances P_{jt} and Π_{it} involves un-known parameters, such as the elasticity of substitution σ, and cannot be achieved directly with observed data. Consequently, a variety of ad-hoc formulas emerged in the empirical trade lit-erature. Baier and Bergstrand (2009) introduce an alternative method, based on a first-order log-linear Taylor-series expansion of multilateral resistance terms in accordance with their def-inition by Anderson and van Wincoop (2003, 2004):

$$MR_{kt} \quad = \quad \sum_s \theta_{kt} \ln \tau_{skt} - \frac{1}{2} \sum_k \sum_s \theta_{st} \theta_{kt} \ln \tau_{skt}, \quad \forall\, k,s = i,j \tag{7}$$

where θ_{kt} and θ_{st} are the shares of countries k and s in world GDP. Integrating the trade costs function (4) in equation (7), we obtain country-specific multilateral resistances.[20] The over-all multilateral resistance for trade between any pair of countries is the sum of exporter and importer multilateral resistances and depends on unknown parameters δ, b_1 and b_2 from equa-tion (4). Therefore, multilateral resistance terms cannot be computed directly. To overcome this difficulty, a multilateral resistance term is computed for each element x of the trade costs function:[21]

$$MR\_x_{ijt} = \sum_j \theta_{jt} x_{ijt} + \sum_i \theta_{it} x_{ijt} - \frac{1}{2} \sum_i \sum_j \theta_{it} \theta_{jt} x_{ijt} - \frac{1}{2} \sum_i \sum_j \theta_{it} \theta_{jt} x_{jit}, \tag{8}$$

$$\forall x_{ijt} = \{\delta \ln d_{ij};\; b_1 contig_{ij};\; b_2 colony_{ij};\; \ln\left(1 + tariff_{ijt}\right)\}.$$

Note that when we replace true multilateral resistances in equation (6) with the set of variables MR_x_{ijt}, the coefficient of each of these variables is equal to the opposite of the coefficient of the corresponding trade costs element x:

$$
\begin{aligned}
\ln m_{ijt} \quad = \quad & \alpha_0 + \alpha_1 GDP_{it} + \alpha_2 GDP_{jt} + \alpha_3 \left[\ln d_{ij} - MR\_\ln d_{ij}\right] \\
& + \beta_1 \left[contig_{ij} - MR\_contig_{ij}\right] + \beta_2 \left[colony_{ij} - MR\_colony_{ij}\right] \\
& + (1 - \sigma)\left[\ln\left(1 + tariff_{ijt}\right) - MR\_\ln\left(1 + tariff_{ijt}\right)\right] \\
& + \beta_3 landlock_i + \beta_4 landlock_j + \gamma \ln SALES_{ijt} + \varepsilon_{ijt}
\end{aligned}
\tag{9}
$$

We estimate equation (9), with and without tariffs, according to the five approaches used in Table 3. We use the same instrumental variables to control for the endogeneity of multinational retailers' sales in foreign markets. Obtained coefficients are reported in Table 4. Each column corresponds to the econometric approach used in the column with the same number in Table 3.

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[20]If we are to exclude import tariffs, as in the first four columns of Table 3, the country-specific multilateral resistance MR_{kt} is the same, whether country k acts as exporter or importer.

[21]We do not compute multilateral resistance terms for variables $landlock_i$ and $landlock_j$ defined at country-level and for which the bilateral dimension is artificially defined, and for variable $SALES_{ijt}$ which is equal to zero for a large share of observations.

Again, we find a positive and significant effect of retailers' sales in a foreign market on the exports of its origin country to this market. The magnitude of the effect is very similar to that in Table 3. The coefficients of standard trade model variables in the two tables are also very close, which confirms the robustness of our findings.

5. CONCLUSIONS

The current paper explores the link between globalization of the retail sector and international trade activities. More precisely, we analyze and measure to what extend exports to a given market are impacted by the sales of domestic retailer in this country. To address this question, we consider an empirical trade model, where the foreign sales of multinational retailers reduce the fixed and variable trade costs of other domestic firms to the same destination markets. We test our model with data on bilateral exports of agri-food products on a large panel of countries and on the foreign sales of world's largest one hundred retailers over the 2001-2010 decade.

The direct estimation of the impact of retailers' sales in foreign on exports with OLS may be biased because both variables (retailers investments abroad and exports) are explained by a set of common factors. To deal with this endogeneity problem, we use an instrumental variable approach. Apart from the traditional 2SLS estimator, we propose two additional estimations using instrumental variables. We use a Tobit and a Heckman first-stage estimator to generate instruments for the volume of retailer's sales in a foreign country that we use in second-stage estimations. This approach takes into account the specific distribution (partially-continuous and partially-discrete) of our endogenous variable.

We find a positive effect of the overseas presence of a country's retailers on its origin country exports to those markets. A ten percent increase in the volume of retailers' sales in the importing country yields a $2.4 - 3.5\%$ increase in the exports of retailers' origin country to that destination. This outcome is far from being trivial, since origin country goods account only for a tiny share of the sales of origin country retailers in foreign markets. This result is robust to different specifications, the use of different sets of instrumental variables, and the use of pre-computed approximations of remoteness terms. One half of this effect comes from shifts in the quantities exported by origin country firms, and the other half from price and quality upgrading effects.

We identify four different channels that may explain the pro-trade effect of retailers' overseas expansion. First, retailers implanted in another country may choose to continue to work with their domestic suppliers. Second, domestic exports can benefit from informational externalities. Third, retailers implanted abroad can also influence consumer demands on foreign markets. Fourth and more globally, the implantation of domestic retailers abroad may also impact the global image of the domestic country in the destination country and then improve sales of domestic exporters (not only retailer suppliers).

Further research using firm level data is needed to evaluated the relative importance of these channels. In particular, we need to separate the effects on the exports of retailers' suppliers in

Table 4 – Robustness of impacts: multilateral remotenesses

	OLS	2SLS, instrumental variables:			
		Z_{ijt-1}	$f^T(Z_{ijt-1})$	$f^H(Z_{ijt-1})$	Z_{ijt-1}
	(1)	(2)	(3)	(4)	(5)
ln GDP exporter	0.91***	0.82***	0.83***	0.82***	0.80***
	(0.00)	(0.01)	(0.01)	(0.01)	(0.02)
ln GDP importer	0.84***	0.77***	0.77***	0.77***	0.75***
	(0.00)	(0.01)	(0.01)	(0.01)	(0.02)
ln distance	-1.15***	-1.10***	-1.11***	-1.10***	-1.05***
	(0.01)	(0.02)	(0.02)	(0.02)	(0.05)
contiguity	0.64***	0.38***	0.41***	0.39***	0.33*
	(0.05)	(0.09)	(0.09)	(0.09)	(0.20)
colony	0.94***	0.86***	0.87***	0.86***	0.86***
	(0.05)	(0.08)	(0.08)	(0.08)	(0.19)
landlock exporter	-0.68***	-0.72***	-0.72***	-0.72***	-0.71***
	(0.02)	(0.04)	(0.04)	(0.04)	(0.09)
landlock importer	-0.24***	-0.32***	-0.31***	-0.32***	-0.34***
	(0.03)	(0.04)	(0.04)	(0.04)	(0.10)
ln retailers' sales	0.06***	0.30***	0.28***	0.30***	0.35***
	(0.00)	(0.02)	(0.02)	(0.02)	(0.04)
ln (1 + tariff)					-1.62***
					(0.30)
Nb obs.	98336	43427	43427	43427	8789
R^2, centered	0.45	0.39	0.40	0.39	0.37
R^2, uncentered		0.88	0.89	0.89	0.88
Sargan statistic		17.42			4.53
Sargan p-value		0.000			0.104
F statistic for weak identification		996.76	3056.44	2986.52	184.77
LM test for underidentification		2798.56	2856.27	2795.14	522.10
underidentification p-value		0.000	0.000	0.000	0.000
ln likelihood	-235633.51	-105821.10	-105572.59	-105779.39	-21610.80

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_{ijt-1} are the share of women in active workers in the host country, the cost of administrative procedures supported by a foreign company when establishing a new business in the host country, and the share of origin country retailers in their domestic market. Instruments $f^H(Z_{ijt-1})$ and Z_{ijt-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 $\ln(1 + tariff_{ijt})$ are transformations of original variables as in equation (9). See the text for details.

the domestic market from the effects for other firms from retailers' origin country. We expect the effect to be higher for the former type of firms, and selling through a retailers foreign network to be a privileged way of exporting to new markets. Although information on retailers' suppliers is highly confidential, data on the certification of agri-food firms may be a good way to overcome this difficulty.

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6. APPENDIX

Table 5 – Geographical area fixed effects

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

Table 6 – The impact of multinational retailers' sales in foreign markets on home country export quantities

	OLS	2SLS, instrumental variables:			
		Z_{ijt-1}	$f^T(Z_{ijt-1})$	$f^H(Z_{ijt-1})$	Z_{ijt-1}
	(1)	(2)	(3)	(4)	(5)
ln GDP exporter	1.06***	1.00***	1.01***	1.05***	0.97***
	(0.01)	(0.01)	(0.01)	(0.01)	(0.03)
ln GDP importer	0.76***	0.73***	0.73***	0.72***	0.72***
	(0.01)	(0.01)	(0.01)	(0.01)	(0.02)
ln distance	-1.53***	-1.50***	-1.50***	-1.46***	-1.50***
	(0.01)	(0.02)	(0.02)	-0.03	(0.05)
contiguity	1.37***	1.20***	1.22***	1.32***	1.16***
	(0.06)	(0.09)	(0.09)	(0.01)	(0.21)
colony	1.66***	1.30***	1.33***	1.28***	1.41***
	(0.06)	(0.09)	(0.09)	(0.10)	(0.21)
landlock exporter	-0.58***	-0.58***	-0.58***	-0.30***	-0.53***
	(0.03)	(0.04)	(0.04)	(0.04)	(0.09)
landlock importer	-0.84***	-0.94***	-0.94***	-0.85***	-0.88***
	(0.03)	(0.05)	(0.05)	(0.05)	(0.10)
ln retailers' sales	0.01***	0.14***	0.12***	0.11***	0.11**
	(0.00)	(0.02)	(0.02)	(0.02)	(0.05)
ln (1+tariff)					-1.81***
					(0.27)
Nb obs.	99511	43942	43942	35065	8673
R^2, centered	0.48	0.46	0.46	0.47	0.46
R^2, uncentered		0.87	0.87	0.87	0.87
Sargan statistic		0.12	0	0	1.2
Sargan p-Value		0.942			0.548
F statistic for weak identification		991.11	3113.44	2111.23	190.09
LM test for underidentification		2787.08	2909.6	1993.05	537.07
underidentification p-value		0	0	0	0
lnlikelihood	-245814.65	-108222.45	-108135.42	-86239.99	-21343.56

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_{ijt-1} are the share of women in active workers in the host country, the cost of administrative procedures supported by a foreign company when establishing a new business in the host country, and the share of origin country retailers in their domestic market. Instruments $f^H(Z_{ijt-1})$ and Z_{ijt-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.

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