High-End Variety Exporters Defying Gravity: Micro Facts and Aggregate Implications*

Julien Martin† Florian Mayneris‡

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Abstract

We develop a new methodology to identify high-end variety exporters in French firm-level data. We find that they do not export to more countries, but they export to more distant destinations than low-end ones. We also show that in contrast to low-end exporters, distance has almost no effect on high-end variety export(er)s. Because of this lower sensitivity to distance at the micro-level, specializing in the production of high-end varieties has implications for the geography of aggregate exports. Specializing in high-end varieties allows for a greater geographic diversification of aggregate exports - in particular when demand arises from both neighboring and distant countries. It also makes a country better able to benefit from growth in remote destinations.

JEL classification: F14, F43, L15,
Keywords: Vertical differentiation, Gravity, Distance, Volatility

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†Department of Economics, Université du Québec à Montréal. martin.julien@uqam.ca

‡Université catholique de Louvain, IRES, CORE. florian.mayneris@uclouvain.be

1 Introduction

Developed countries are specializing, within products, in the production of high-end varieties. While this shift in the industrial pattern of developed countries is increasingly documented, its implications are not.[1] In this paper, we investigate how a specialization in high-end varieties shapes the geography of aggregate exports. We propose a novel methodology to identify high-end exporters. We then uncover new facts on the characteristics of high-end firms and we estimate the sensitivity of their exports to gravity variables relative to low-end ones. From these estimates, we show that the distinctive characteristics of high-end exporters have important implications for the geography of aggregate exports. Their lower sensitivity to distance in particular makes high-end aggregate exports more geographically diversified and more responsive to changes in the location of demand. This is important since it might end up affecting countries' welfare, volatility, long-run growth, labor market, and inequality.[2]

The methodological challenge for this paper is to identify, within products, exporters in the high-end segment of the market. Our empirical analysis builds on French customs data which report firm-level exports and quantities by product and destination country. To distinguish high-end exporters from low-end ones, we make use of the list of members of the Comité Colbert. This organization is composed of the main brands of the French luxury industry.[3] We (reasonably) assume that these firms export high-end varieties. To identify other high-end exporters, we apply the following rule. Firms that sell the same products at the same price at least as Colbert firms are tagged as high-end variety exporters. Our method allows us to distinguish high-end from low-end variety exporters for 200 products that accounted for 10% of total French exports in the last decade.

Collapsing the data by country and variety segment, we find that aggregate high-end exports are more geographically diversified. More than 70 percent of low-end variety exports are concentrated toward European countries. By contrast, less than 50 percent of high-end variety exports are directed to Europe. This fact is consistent with a quality version of the Melitz (2003) model in which large high-quality firms serve many markets while low-quality ones select in the easiest (and closest) markets only (Baldwin & Harrigan 2011, Crozet et al. 2012). However, we show that a careful comparison of high- and low-end exporters challenges this view for two reasons. First, among high-end variety exporters, extremely large players co-exist with very tiny niche producers, as is the case for the rest of the population of firms (Eaton et al. 2011). Second, high- and low-end exporters do not differ significantly in terms of

[1] See Schott (2004), Fontagné et al. (2008), Martin & Mejean (2014) for evidence of specialization. Regarding its implications, only the direct effect on the labor market has been studied (e.g. Verhoogen 2008, Mion & Zhu 2011).

[2] Brambilla et al. (2012) document why "where you export to" matters. Jansen et al. (2009) find that geographic diversification has an impact on income volatility.

[3] The Comité Colbert organizes shows and exhibitions and develops lobbying activities for the luxury industry. See http://www.comitecolbert.com/. There are 76 member firms in the Comité Colbert, including brands as famous and expensive as Baccarat, Cartier, Champagne Bollinger, Chanel, Christian Dior, Hermès, Louis Vuitton, or Yves Saint-Laurent.

product and destination scope. These two facts go against the theoretical view that high-end exporters are necessarily big firms selling to many markets and low-end ones are small firms selling to few destinations. In reality, the specific geography of high-end aggregate exports which we observe seems to be due to a last stylized fact: conditional on serving the same number of markets, high-end variety firms export to more distant markets on average than low-end variety ones.

To better understand the roots of the peculiar geography of high-end exports, we compare the sensitivity of high-end and low-end variety exports to different gravity variables. We first analyze the margins of exports aggregated by country, product, and variety segment. We then examine the decision to export and the value exported at the firm-country and firm-product-country level. The results are consistent across specifications. High-end variety export(er)s are more sensitive to average income and income distribution in the destination country, and less sensitive to distance.[4] One striking result from our analysis is that the elasticity of high-end variety exports to distance is very small, slightly above -0.08. A 10 percent increase in distance reduces high-end variety exports by 0.8 percent. By contrast, it reduces low-end exports by 8% which is more in line with the literature.[5]

A simple quantitative exercise demonstrates that the greater geographic diversification of French high-end variety exports is entirely driven by their lower sensitivity to distance. The higher sensitivity to income plays a minor role. If low-end exporters had the same sensitivity to distance as high-end ones, both segments would have the same geographic concentration in the aggregate. We also show that high-end variety exporters are more likely than low-end ones to redirect their sales toward countries where demand is growing rapidly. Their lower sensitivity to distance is again entirely responsible for this. Finally, we show that whether the lower sensitivity to distance shapes a specific geography for high-end exports depends on the actual distribution of world demand with respect to the exporting country: the geographic concentration of high-end and low-end exports would be the same if North America, Eastern Asia and Japan were as close to France as the other EU countries, or if France were as remote from both rich and poor continents as Australia.

Related literature. Our paper is related and contributes to several strands of the literature. First, it proposes a new method to identify high-end exporters. In the literature on trade and quality, three main approaches have been proposed so far to identify high-quality exporters: unit values (Schott 2004), parametric measures (Khandelwal 2010, Hallak & Schott 2011), and external measures (Crozet et al. 2012). Our approach combines the unit value and

[4]The results confirm the importance of non-homothetic preferences and income distribution to explain trade patterns (Fieler 2011, Choi et al. 2009, Ray & Vatan 2013). The results on distance echo indirect evidence provided by Alchian & Allen (1964), Hummels & Skiba (2004), and Manova & Zhang (2012) who show that average unit values increase with distance.

[5]Head & Mayer (2013) analyze 2,508 estimates obtained from 159 papers. They find an average elasticity of trade to distance of 0.9 with a standard deviation of 0.4.

external measure approaches. It has two main advantages. Data on Colbert firms allow us to select vertically differentiated sectors, since as suggested by Khandelwal (2010), unit values and quality/appeal of the products are highly correlated in these sectors. Information on Colbert firms also allows us to obtain product-specific price thresholds to identify high-end exporters in French Customs data[6]; there is indeed no reason for the price threshold defining a high-end exporter to be the same across products. We run different sensitivity checks on our measure of high-endness. We show that the analysis based on an arbitrary price threshold in terms of percentile is much noisier. We further test how our measure compares to two other measures of quality used in the literature. We find that they are positively correlated but differ along two dimensions. First, high-quality firms identified with a structural measure *à la* Khandelwal et al. (2013) are larger on average than high-end firms. Second, the high-end exporters identified with our method feature a lower sensitivity to distance.

We also contribute to the literature on vertical differentiation and international trade. Some recent theoretical and empirical contributions such as Baldwin & Harrigan (2011), Crozet et al. (2012), or Manova & Zhang (2012) show that top-quality producers are larger and more productive firms serving a higher number of markets. These papers suggest a one-to-one mapping between firm size and scope and quality. Our findings point to the importance of small "niche" producers among high-end exporters. This finding is related to Hallak & Sivadasan (2012) who show that heterogeneity along two dimensions, a firm's "process productivity" and "product productivity"[7], is required to account for the existence of small exporters. It also speaks to Holmes & Stevens (2013) who emphasize the existence of small firms producing custom goods together with large ones producing more standardized goods. However, while these papers rationalize empirical observations thanks to the notions of "product productivity" or "product specificity", our approach is different. We first identify high- and low-end variety exporters in the data, and then provide a complete characterization of the two populations. Our finding that many high-end exporters are niche producers serving few, often remote markets also fits well with the cases reported by González et al. (2012) in their study of high-end footwear exports in Argentina.

We finally participate in the analysis of the interplay between quality and gravity. So far, the literature has mainly studied the link between the quality *composition* of trade flows and the characteristics of the importing country. Alchian & Allen (1964) and Hummels & Skiba (2004) show that for a given product, the unit value of US exports increases with the distance and the GDP per capita of the destination country. In the same vein, Manova & Zhang (2012) and Bastos & Silva (2010) have produced a wealth of new stylized facts on export prices at the firm-product level. They show that across destinations, firms set higher prices in richer and more distant countries. The results can be interpreted in terms of quality when prices

[6]French Customs data have been extensively used. See among others: Bricongne et al. (2012), Berman et al. (2012), or Mayer et al. (2014).

[7]The latter referring to the firm-level efficiency in producing high-quality varieties.

and quality are positively correlated. However, these papers do not identify high- and low-quality exporters; hence, they cannot directly test for differences between quality segments in terms of the elasticity of exports to gravity determinants. To our knowledge, we are the first to directly show and quantify the different sensitivity of high- and low-end export(er)s to gravity variables. Our results on the higher sensitivity of high-end exports to GDP per capita confirm the importance of non-homothetic preferences and of income distribution to explain trade patterns (Hallak 2006, Choi et al. 2009, Fieler 2011, Ray & Vatan 2013). In a contemporaneous work, Fontagné & Hatte (2013) also rely on data provided by the Comité Colbert to identify vertically differentiated products and study the determinants of their exports. One of their results is that the exports of countries that specialize in the higher segments of production are less sensitive to distance. Instead, we focus on heterogeneity between firms within a country rather than between countries and we study the extensive and intensive patterns of high-end exports. We further use the estimates to draw aggregate implications for the geography of exports.

Regarding the relationship between geography and the quality/high-endness of the production, the literature is very scarce. Some papers investigate how import competition, in particular from low-wage countries, affects the quality of a country's exports (Amiti & Khandelwal 2013, Martin & Mejean 2014). However, they do not study how quality affects the geography of a country's exports. Closer to our study, Lugovskyy & Skiba (2011) study how a country's geographic position relative to other countries affects the quality of its exports. Our approach is different. We use firm-level data and focus on one single exporting country, and we try to explain why geographic distribution and concentration differ across vertically differentiated varieties.

The rest of the paper is organized as follows. Section 2 describes the data and the method used to identify high-end variety exporters. Section 3 presents stylized facts. Section 4 discusses the results of our empirical analysis of the gravity determinants of high- and low-end variety exports, both at the firm and at the aggregate level. Section 5 presents thought experiments based on our empirical analysis. These exercises allow us to highlight some implications of specializing in high-end varieties for the geography of aggregate exports. Lastly, Section 6 concludes.

2 Data

In this section, we describe the firm-level data we use and the procedure we follow to identify first the products we will keep in our sample, and then the French firms exporting high-end varieties of these products.

2.1 Comité Colbert and French Customs Data

We first use the list of members of the Comité Colbert, which will serve as our benchmark for the identification of French high-end variety exporters. The Comité Colbert is an organization founded in 1954 to promote the French luxury sector. Two main types of actions are undertaken by this committee. It organizes international events, so as to improve the visibility of French luxury products abroad; the Comité Colbert was very active in particular in the US and in Japan in the 1980s and the 1990s, while now it focuses its efforts on emerging markets (China, Russia, India, and the Middle East in particular). The Comité Colbert is also involved in lobbying activities to increase the French and European public authorities' awareness of the specific needs of the luxury industry. For instance, issues related to skill availability, training, or access to international markets are on its agenda. A firm needs to be co-opted to become a member of the Comité Colbert. According to the Comité's website, five criteria are taken into account: "international ambition and brand identity", "quality", "creation", "poetry of the product", and "ethics". In line with our definition of high-end variety exporters, Colbert firms are not only top-quality producers. Their products must also be perceived by consumers as having a strong specificity and identity, which explains consumers' willingness to pay for these products.

76 companies are currently members of the organization, among which the most emblematic brands of the French luxury industry (Baccarat, Dior, Chanel, Hermès, and Vuitton among others). They cover various industries such as cosmetics, wine and champagne, clothing, leather goods, or furniture. The entire member list is reported in the Online Appendix. Each brand might actually be composed of several firms, a firm being defined as a legal entity identified thanks to a unique identification number in all French administrative datasets.[8] We collect these identification numbers thanks to the website www.verif.com which allows us to recover French firms' identifiers based on their names. We end up with 136 firms (i.e. entities with legal identifiers) corresponding to the 76 members of the Comité Colbert. From now on, we will use the words "firm" and "exporter" interchangeably.

We then identify Colbert firms in customs data for the 2000-2011 period. French customs data record export flows at the firm/cn8 product[9]/country level. Both the value and the volume of exports (in kg) are available until 2006; after this date, reporting the volume of exports was no longer compulsory.[10] The information is available for all manufacturing exporters which export at least 100,000 euros within the EU, or 1,000 euros outside the EU.[11]

[8] This identification number is called the "SIREN number".

[9] 8-digit product of the combined nomenclature

[10] From 2000 to 2005, the information on the volume of exports was missing for slightly more than 1% of total exports in value; this share rose to almost 4% in 2006, and to over 30% afterwards.

[11] Actually, for intra-EU exports, this threshold was equal to 38,000 euros in 2000, 100,000 euros from 2001 to 2006, 150,000 euros from 2006 to 2011, and 460,000 euros in 2011. For extra-EU exports, firms exporting less than 1,000 euros and 1,000 kg in total did not have to declare their activities until 2009; after this date, all export flows were recorded. Since it is well known that small exporters account for a very small share of overall exports, we believe that these threshold changes do not affect the analysis we conduct in this paper.

2.2 Identification of Products Featuring French High-End Exporters

The aim of this paper is to compare firms exporting high- and low-end varieties of the same product. From now on, a product is defined as a 6-digit category in the harmonized system nomenclature. We prefer working at the 6- rather than the 8-digit level of the nomenclature to ensure that the number of exporters within a given product category is high enough to allow for comparisons.[12] Moreover, we only consider exports from 2000 to 2006, since export volumes suffer from many missing values after this date. We compute unit values as the ratio of the value of exports over quantities for each firm-hs6-country-year observation.[13]

Within a given product category, high-end exporters are by definition exporters of high-priced varieties. However, as shown on Graph A-1 in the Appendix, the distribution of firm-level prices (relative to the average observed for this product-country-year) varies from one sector to the other. Moreover, the price premium that consumers are willing to pay for high-end varieties might differ across products. In such a case, the price threshold defining high-end varieties might be product-specific, even when the distributions of firm-level prices are the same. Hence, using the same threshold (in terms of percentile) for each product to identify high-end variety exporters might be misleading. To address this issue, we use Colbert firm export prices as a benchmark to identify high-end exporters. We thus have to restrict our analysis to the HS6-products exported by Colbert firms. We now describe how we identify these products, for which we will then be able to distinguish both high- and low-end variety exporters in the data.[14]

Colbert firms are active in less than half of all products exported by French firms over the period (2,107 HS6-products over this period, out of 5,467 products exported by French firms). This is not surprising since luxury industries are final consumption product industries. There is no reason for firms in the nuclear industry, the construction material industry, or the basic chemical industry to be members of the Comité Colbert. Moreover, for some final consumption goods, France might not be a producer of high-end varieties. For example, there are no car producers in the Comité Colbert, which reflects the fact that French cars are mainly positioned in the middle range of the quality ladder[15], while Germany, the UK, and Italy have brands as famous as BMW, Porsche, Rolls-Royce, Aston Martin, Ferrari, or Lamborghini.

Moreover, Colbert firms are multi-product exporters. Over the period, each of them was active in 163 products on average (median equal to 93). However, the within-firm distribution of exports across products is very skewed: on average, the top product accounts for 54% of

[12] Among product categories featuring high-end exports, 54% of the codes do not have HS8 subheadings. We also checked whether aggregating at the 8- to 6-digit level creates some apple-orange comparisons. For 99% of the product categories studied, it does not.

[13] The share of overall exports for which quantity is documented was still very high in 2006, equal to 96%. We thus decided to work on the 2000-2006 period to identify high-end variety exporters. Moreover, since all the regression results presented in the paper hold when estimated year by year, we are confident that the year 2006 does not bias the picture we provide.

[14] The list of products and additional information on these products is presented in the Online Appendix.

[15] With the notable exception of Bugatti.

total firm-level exports (median equal to 47%). For example, some products such as "calendars and calendar blocks" or "glass mirrors"[16] are exported in small quantities and account for a marginal share of the total exports by Colbert firms. It is hard to say whether these products are products that are really traded by Colbert firms, in which case their exports would certainly follow the same determinants as the main products, or whether they are just artifacts in the data (misreported transactions, occasional intra-firm shipments etc.). This is why we decided to restrict our analysis to the main products exported by Colbert firms, i.e. products that represent at least 5% of total exports for at least one Colbert firm from 2000 to 2006, and that are exported by at least one Colbert firm every year. This definition leaves us with 269 HS6-products, accounting for 61% of the firm-product-country-year level observations of Colbert firms, but 94% of the overall value of their exports over the period. These products are thus very representative of Colbert firms' export activities.[17]

Finally, the harmonized system nomenclature is built in such a way that vertical differentiation sometimes occurs across, rather than within, HS6 lines. In this case, some HS6 lines might not be exported by Colbert firms because they correspond to low-end varieties of a given product. For example, no Colbert firm exports "Women's/girls' dresses of artificial fibers, knit", while some Colbert firms export women's and girls' dresses made of wool or hair, of cotton, of synthetic fibers, or of other material. This reflects the fact that artificial fibers are hardly considered as high-end raw material for clothes by consumers. We still want to consider these HS6 lines for our definition of high- and low-end variety exporters, these varieties being regarded as low-end exports. We checked the nomenclature and added such HS6 lines manually. We end up with 308 HS6 categories in our database, corresponding to 198 "broad" products once the HS6 categories which clearly represent varieties of a single product are grouped under a single identifier (gathering HS6 products under a single heading is also done manually, analyzing the details of the HS6 nomenclature). This is the case, for example, for HS6 categories 610441, 610442, 610443, 610444, and 610449 which all correspond to women's and girls' dresses made of different materials.[18] As expected, the great majority of these HS6 products are final products (259 out of 308). However, the fact that we have a few intermediate goods in our sample (mainly textile products exported by some of the Colbert brands) should not come as a surprise. As shown for example by Kugler & Verhoogen (2012), high-quality exports and imports often go hand in hand at the firm level, suggesting that high-quality inputs are necessary to produce high-quality final goods. Vertical differentiation is thus also at play for some intermediate goods.

As shown on Figure A-2 in the Appendix, the exports of the products we consider in our

[16] Their HS6 codes are respectively 491000, 700991, and 700992.

[17] If we use a threshold equal to 2% instead of 5%, we end up with 361 HS6-products representing 97.3% of the overall exports of Colbert firms. Hence, relaxing the threshold considerably increases the number of products in the list, but only modestly improves the representativeness of the sample. This confirms that the HS6-categories we exclude are very marginal in Colbert firms' exports.

[18] Product database available upon request.

analysis tended to increase between 2000 and 2011, except in 2009 where we can observe a dramatic drop in exports due to the financial crisis. However, they evolve more or less at the same pace as in the other sectors of the economy. As appears on Figure A-3, the share of the products we keep in our sample is rather stable as a result, fluctuating around 9% of overall French exports over the period. Beverages, cosmetics, and apparel and footwear account for the biggest share of overall exports in our sample (see Table A-1 in the Appendix).

2.3 Identification of High-End Variety Exporters

There are only 76 brands in the Comité Colbert, which certainly do not represent the entire population of French high-end variety exporters. In this section, we detail the procedure we follow to identify "non-Colbert" French high-end exporters.

Since high-end varieties are more expensive due to more expensive inputs (Baldwin & Harrigan 2011, Kugler & Verhoogen 2012), to a higher consumer willingness to pay (Gabszewicz & Thisse 1979), or to a lower elasticity of substitution (Fajgelbaum et al. 2011), we expect the export prices of Colbert firms to be significantly higher than those of other exporters, reflecting higher production costs and/or higher markups. Actually, a simple regression including product-country-year fixed effects shows that Colbert firms charge prices that are 2.25 times higher than prices charged by other firms on average. French firms exporting the same products as Colbert firms and charging at least the same price will then be defined as high-end variety exporters. Note that quantifying the exact determinants of the price premium, i.e. disentangling quality from reputation is beyond the scope of this paper.[19] We just want to identify firms that are able to charge high prices for their varieties and still meet demand abroad.[20]

Our procedure follows two steps:

- *Classification of firm-HS6 product pairs*: we use the firm-product-country-year level export database. One option would be to compute average unit values at the firm-HS6 level, and to compare Colbert and non-Colbert firm export prices. However, firms differ in terms of the countries they export to. This might be an issue, since several papers show that firm-level prices might vary across destinations: average income, through price discrimination (Simonovska 2010), or distance, through quality sorting (Bastos & Silva 2010) and price discrimination again (Martin 2012), could matter. Consequently, the average unit value at the firm-HS6 level may depend on the destination country portfolio. On the contrary, we want to capture a proxy for the firm-HS6 "baseline" price

[19] See Cagé & Rouzet (2013) for a study of the interplay of reputation and quality in an international trade context.

[20] To avoid the noise introduced by small importing countries, we also restrict the sample to the 85 most important destination countries for firms active in HS6 products featuring high-end varieties. These countries account for 99% of overall French exports for these products.

that is independent from the countries a firm exports to. It is all the more important as we are interested in the relationship between the variety type and the geography of exports.

This is why first we estimate the following equation separately for each HS6:

$$\text{luv}_{ict} = \mu_{ct} + \text{u}_i + \epsilon_{ict} \tag{1}$$

where, for a given HS6 product, luv_{ict} is the log of the export unit value of firm i to country c at time t, μ_{ct} is a country-year fixed effect capturing all the pricing-to-market or discrimination effects that might affect firm-level prices to country c at time t, as well as all aggregate changes in unit values over time, and ϵ_{ict} is an i.i.d. disturbance term. Finally, u_i is a firm fixed effect that captures the invariant part of firm-HS6 product unit values observed from 2000 to 2006.

On average, within a given HS6, the fixed effects for Colbert firms are 2.39 times greater than the fixed effects for other firms. Then, a firm is said to export high-end varieties of a given HS6 product if its fixed effect is at least equal to the first quartile of the fixed effects measured for this same HS6 product among Colbert firms.[21]

- *Classification of exporters*: After the first step, a variety type (high- or low-end) is assigned to each firm-HS6 cell. However, many firms are multiproduct exporters and some firms might appear as high-end variety exporters for some products, but not for others in their portfolio. We want to build a classification of high-end variety exporters at the firm level. A firm is then said to be a high-end variety exporter if at least 85% of the value of its exports from 2000 to 2006 corresponds to high-end variety exports. Consequently, firms that are not classified as high-end variety exporters are firms that export the same HS6 products as Colbert firms at a lower price, or firms that mainly export other HS6 products than those exported by Colbert firms.[22]

After this two-step procedure, we end up with 8,253 high-end variety exporters, out of nearly 65,000 exporters active for at least one year between 2000 and 2006 in the products in our sample. Checking that all these 8,253 firms are actually high-end variety exporters is not feasible in practice. However, we checked the identity of the 20 biggest ones. For confidentiality reasons, we cannot give their names but we can confirm that all of them belong to the French luxury industry: we are thus confident in the reliability of our method to identify high-end exporters.

[21] The value of this price premium threshold is available for each product in the Online Appendix. We use the first quartile as a threshold in order to avoid the potential noise brought by outliers. The results are unaffected when using less conservative definitions.

[22] We have tried different thresholds, both for the identification of high-end variety firm-HS6 product pairs (first decile instead of first quartile) and for the identification of high-end variety exporters (threshold equal to 90% instead of 85%). All the results in the paper remain qualitatively the same.

Table 1: Price Premium of High-End Variety Exporters

Industry	Share of high-end exporters (% of the total # of exporters in the ind.)	Price premium
Miscellaneous	5.7	3.8***
Beverages	19.9	2.9***
Food	5.3	2.9***
Apparel and footwear	7.1	2.8***
Leather goods	8.0	2.2***
Home art	11.2	2.2***
Cosmetics	13.9	2.2***
Jewels	22.5	1.8***
Clocks	12.1	1.6***
Textile	5.2	1.6***
Paper - books	8.2	1.4***

The exponentials of the coefficients are obtained thanks to OLS regressions on unit values including HS6 product-country-year fixed effects. *, **, and *** indicate significance at the 10, 5, and 1 percent level. The table reads as follows: the clocks exported by high-end variety exporters are on average 1.6 times more expensive than the clocks exported by other firms.

Note that in this paper, firm-level variety type is inferred based on all export flows observed for a given firm over the entire period. We do not allow firms to switch from low- to high-end varieties. However, we show in a robustness check in the Online Appendix that allowing firms to switch variety types over the period does not change the conclusions qualitatively.

2.4 High-End Variety Exporters and Price Premium

Table 1 presents the average price premium for all the high-end variety exporters we identify, by broad sector.[23] In all sectors, high-end variety exporters exhibit significantly higher unit values. This premium is actually quite big, from 40% for "paper and books" exporters to 280% for "miscellaneous" exporters (i.e. lighters and pencils). The share of high-end variety exporters in the population active between 2000 and 2006 also varies across sectors, from 5.2% in the textile industry to 22.5% for jewel exporters. This cross-sectoral heterogeneity, both in the price premium and in the share of high-end variety exporters, confirms the importance of having a product-specific benchmark to identify high-end variety exporters, rather than a single threshold common to all products, defined in terms of percentile or in terms of unit-value premium for example.

[23]The price premium is computed by estimating, for each broad sector separately, the following regression:

$$\text{luv}_{ipct} = \alpha \text{high\_end}_i + \mu_{pct} + \epsilon_{ict}$$

where luv_{ipct} is the log of the export unit value for firm i, HS6 product p, country c and time t, high_end_i is a dummy identifying high-end variety exporters, including Colbert firms, and μ_{pct} is an HS6 product-country-year fixed effect.

As stated above, there might be different reasons why high-end variety exporters are able to set high prices: higher quality, reputation, specificity of the products, or branding. Since quality has been emphasized recently as an important dimension of differentiation in the trade literature, we compare our high-end measure with two measures of quality: i) an exogenous measure for the Champagne industry (Crozet et al. 2012), and ii) a structural measure based on Khandelwal (2010) and Khandelwal et al. (2013). The comparison is developed in the Online Appendix. It shows that our measure of high-endness is very much correlated with a measure of quality *à la* Khandelwal et al. (2013) and with the exogenous rating of Champagne producers. Still, this correlation is not perfect. Our method allows us in particular to identify a population of firms that are smaller on average and that turn out to be even less sensitive to distance.

In the Online Appendix, we also conduct a series of robustness checks to verify that our results are not sensitive to certain arbitrary choices in our procedure. We also compare the dispersion of high-end goods to the price dispersion of homogenous goods. We expect prices to be more dispersed in high-end / vertically differentiated product categories. The checks are conclusive.

3 Stylized Facts

In this section, we analyze the evolution of French aggregate exports for high- and low-end varieties over time and across space. We also provide firm-level descriptive statistics on high-end variety exporters.

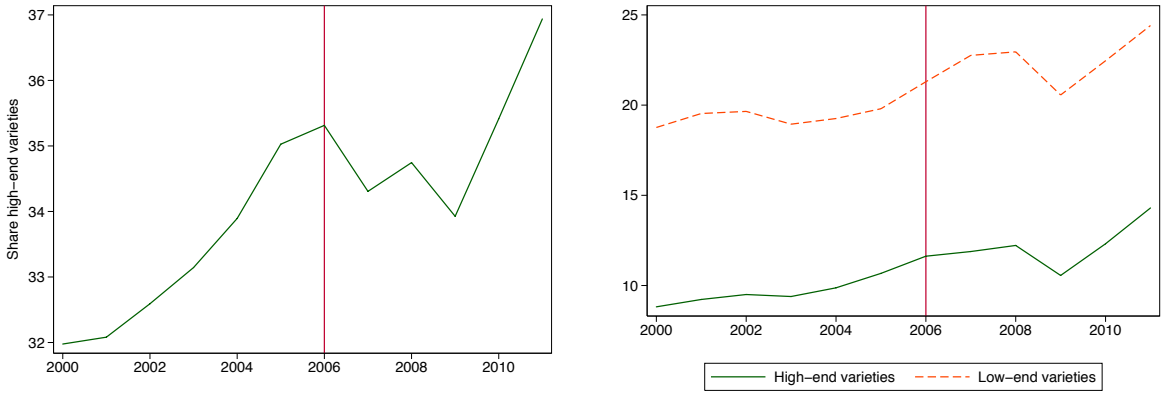
3.1 Evolution and Geographic Distribution of High-End Variety Exports

We present aggregate statistics for the entire sample of firms from 2000 to 2011. This sample takes the entry and exit of firms on export markets into account over the period. The amount of high-end variety exports is under-estimated from 2007 onwards, since we cannot identify high-end variety producers that started exporting after 2006 (see the description of our procedure above). This is why we draw a vertical line in 2007 for all the graphs based on this sample. However, all the results hold if we focus on the firms that were active in 2000 and that still were still exporting in 2011.[24]

Three broad industries - cosmetics, beverages, and leather goods - represent 75% of high-end variety exports over the period (see Table A-2). This reflects the well-known French "savoir-faire" in perfumes, champagne, wine, luxury handbags, and luggage.

Moreover, Figure 1 shows that for the products in our sample, the share of high-end variety exports increased regularly between 2000 and 2011, from 32% in 2000 to almost 37% in 2011. The export growth was faster for high-end than for low-end varieties. This increased

[24] The results are available upon request.



Share (%) Value (billions euros)

Figure 1: Share of high-end variety exports and value of exports

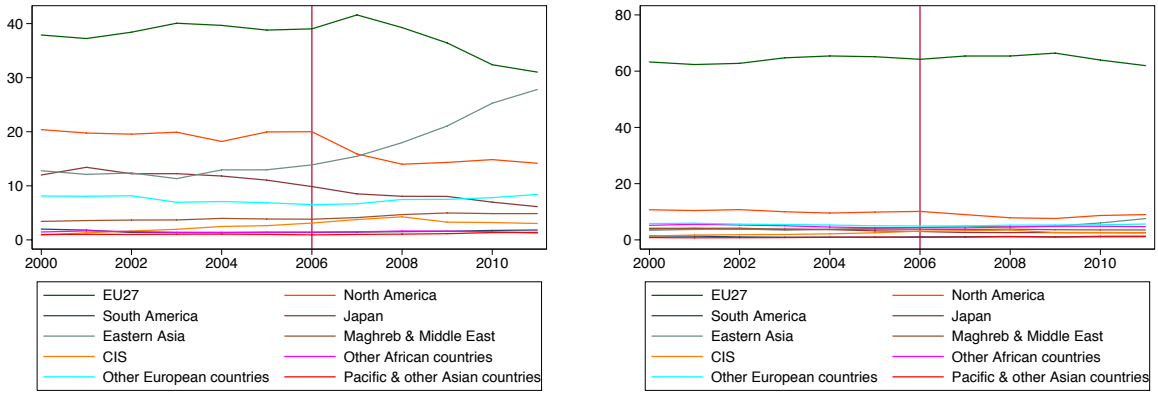
specialization of the French industry toward high-end varieties is consistent with a general trend observed in recent decades for most developed countries.

High- and low-end variety producers do not only differ in terms of export growth; the geographic distribution of their sales abroad also exhibits striking differences. We divide the world into 10 regions.[25] From a static point of view, as shown on Figure 2, high-end variety exports are much more geographically diversified. They rely in particular less on the European market. On average, the EU27 accounted for 65% of low-end variety exports over the decade, but for less than 40% of high-end variety exports. If we take other European countries into account, nearly 70% of low-end variety exports went to Europe versus less than 50% for producers of high-end varieties. Moreover, each of the other regions of the world accounted for less than 10% of low-end variety exports while, on the contrary, North America, Japan and Eastern Asia represented non-negligible markets for high-end varieties (at least 10% of overall exports for at least one year over the period).

The difference is not only static, it is also dynamic. Each region's share in overall exports was very stable from 2000 to 2011 for low-end variety exports. The share of Eastern Asia rose from 3.4 to 7.5%, that of North America decreased from 10.7 to 9.0%, and that of the EU27 from 63.3% to 62.0%: no significant geographic reshuffling was at play. The picture is very different for high-end varieties, whose geographic distribution of exports changed considerably over the period: the share of fast-growing Eastern Asia surged from 12.8 to 27.8% between 2000 and 2011 (especially from 2004 onward), that of Japan plummeted from 12.0 to 6.1%, as well as that of North America, from 20.4 to 14.1%.

Hence, high-end variety exports are not only geographically more diversified, they are also more prone to shift toward fast-growing economies. We will now go further in this descriptive analysis and investigate how these macro features can be accounted for by the individual characteristics of high- and low-end variety exporters.

[25] We follow the typology of the (CEPII 2008): EU27, other European countries, Community of Independent States (CIS), North America, South America, Maghreb and the Middle East, other African countries, Japan, Eastern Asia and Pacific, and other Asian countries.



High-end varieties Low-end varieties

Figure 2: Geography of exports: share of regions in overall exports (%)

3.2 Anatomy of High-End Variety Exporters

In this section, we present firm-level descriptive statistics for the year 2005 (which will be used for the econometric analysis).[26] Patterns are consistent however over the years. Moreover, among high-end variety exporters, we distinguish Colbert firms from the other high-end exporters we have identified thanks to our procedure.

Figure 3 focuses on the scope of the firm-level export portfolio in terms of products, countries, and transactions (i.e. number of product-country observations for each firm). It presents cumulative distributions. Colbert firms have a very broad portfolio: cumulative distributions show that they export many more products to many more countries, resulting into many more transactions than low-end variety firms. Actually, on average, Colbert firms export 31.8 products (median equal to 19) to 31.3 countries (median equal to 28), resulting in 246.5 transactions (median equal to 101). As a comparison, on average, low-end variety firms export 3.1 products (median equal to 1) to 5.9 countries (median equal to 3) with a total of 11 transactions (median equal to 4). The other high-end variety exporters tend to be even smaller: they export 2.5 products (median equal to 1) to 5.9 destinations (median equal to 3) for a total of 9.5 transactions (median equal to 3).

With regard to the value of shipments, firm-level export distributions graphed at the top of Figure 4 show that both Colbert firms and other high-end variety exporters export more than low-end variety exporters at the transaction level (firm-product-country level). Indeed, the density distribution of this variable is right-shifted for Colbert firms and other high-end exporters as compared to low-end exporters. Regarding total exports, on average, Colbert firms export 88 million euros (median equal to 14.6 million euros), while other high-end variety producers export 1.55 million euros (median equal to 0.08 million euros) and low-end variety exporters export 1.13 million euros (median equal to 0.08).[27] It is interesting to note

[26] Since high-end variety exporters are by definition firms whose main products exported are those exported by Colbert firms, we restrict the sample, for this descriptive analysis, to firms with at least 85% of their annual exports in the 308 HS6 products we focus on in this paper.

[27] Kolmogorov-Smirnov tests show that the distributions presented in Figures 3 and 4 are significantly different (except for the total value of exports of low-end and other high-end variety exporters). Moreover, adopting more conservative thresholds for the definition of high-end variety exporters does not change the overall picture

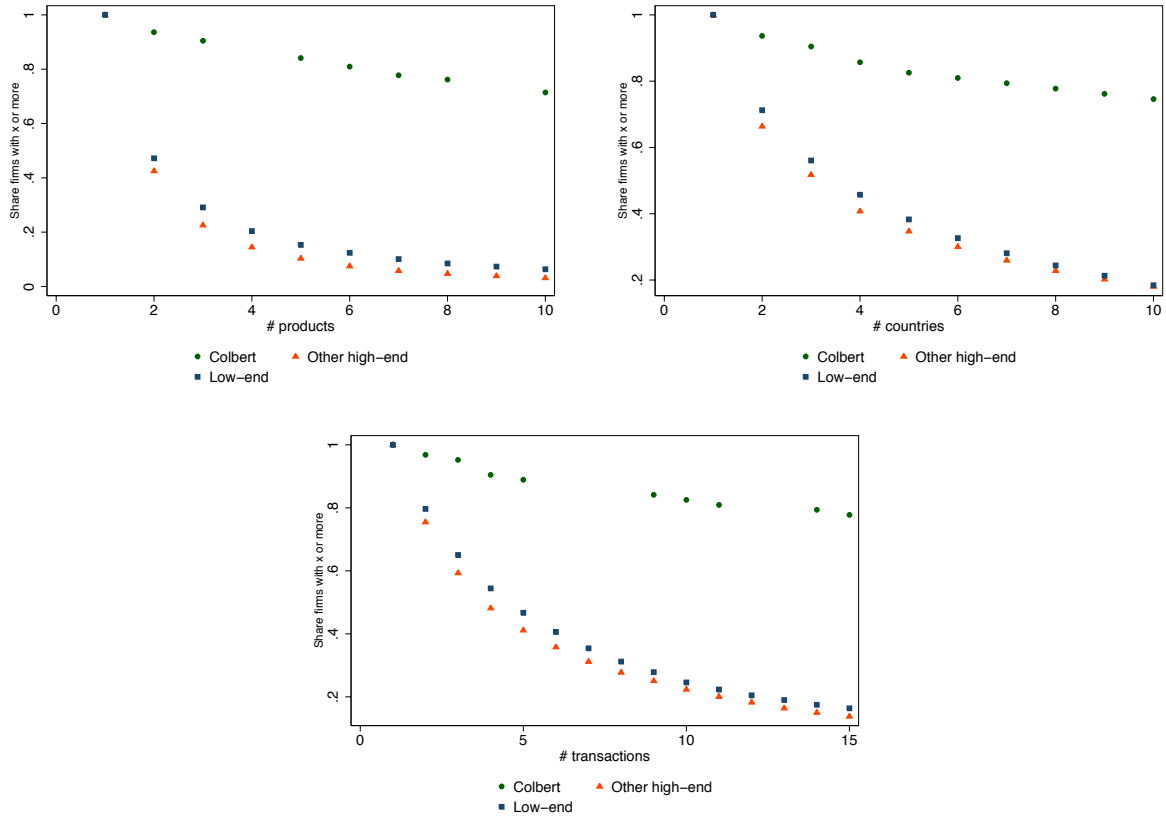


Figure 3: Portfolio scope of high- and low-end variety exporters - Cumulative distributions

that while on average high-end variety exporters charge a price that is twice as high as the low-end variety price, they do not sell less. This is at odds with the predictions of a model featuring firms that are heterogeneous in terms of productivity only and confirms the idea that the firms we identify as high-end variety exporters export goods that appeal specifically to consumers.

Finally, high-end variety exporters export, on average, to more distant countries.[28] While for the three groups of exporters, the distribution of the firm-level average distance of exports is double-peaked, there are more firms exporting to distant countries among Colbert firms and other high-end variety exporters. On the contrary, lower values of average distance of exports are more often represented among low-end variety exporters. As a result, the average distance of exports is equal to 5,007 km (median equal to 5,128) for Colbert firms, to 4,313 km (median equal to 3,664 km) for other high-end variety exporters and to 3,295 km (median equal to 1,831 km) for low-end variety exporters. Hence, the share of exports to more distant countries is substantially higher for Colbert firms and for other high-end variety exporters than for low-end variety exporters, as shown by the cumulative share of exports by distance on Figure 5 (this graph displays the share of exports to countries situated less than x km from France, by category of exporters). Again, these patterns are not compatible with models in which high prices reflect low productivity only.

much.

[28] The average distance of exports at the firm level is the weighted average of the bilateral distance between France and the destination countries, using the share of each country in total firm exports as weights.

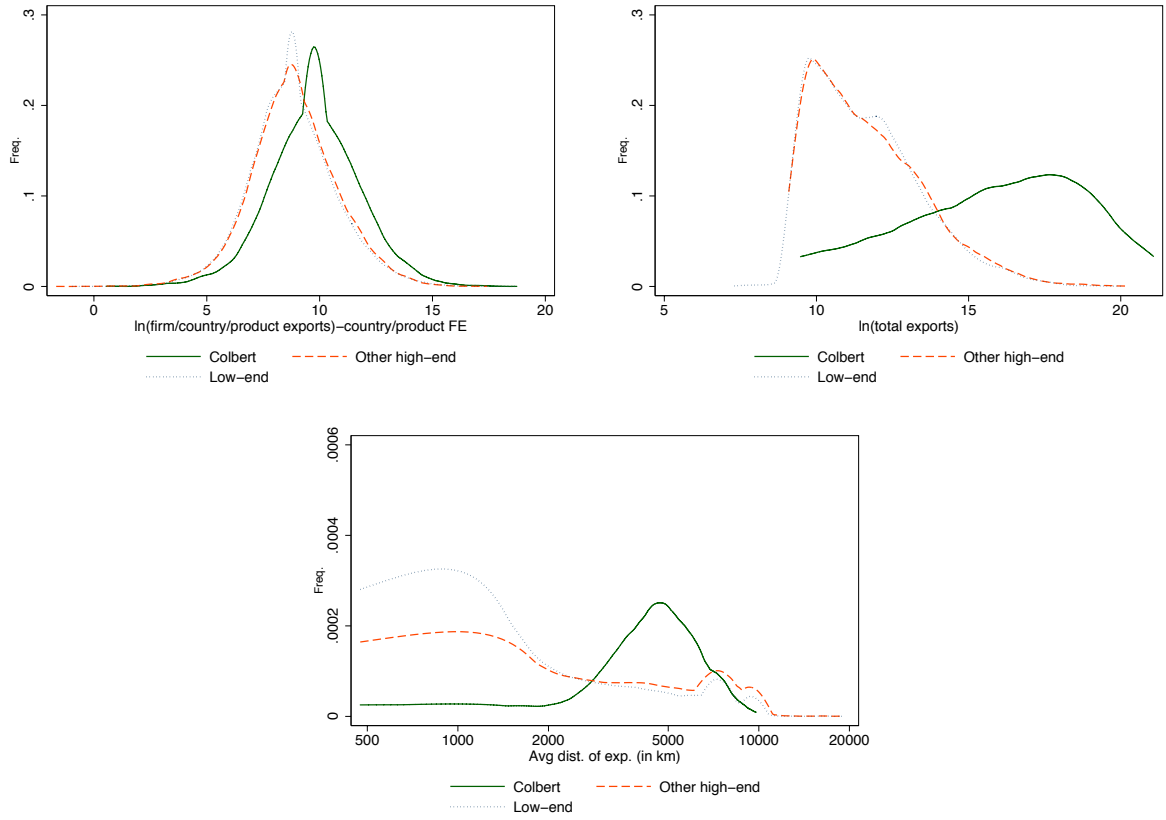


Figure 4: Distribution of firm-level exports of high- and low-end variety exporters

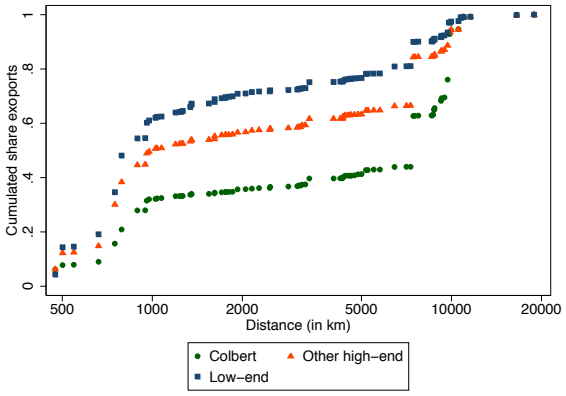


Figure 5: Cumulative share of exports by distance for high- and low-end variety exporters

4 Gravity Equation

In this section, we push the analysis further and compare the sensitivity of high- and low-end variety exports to the standard gravity determinants of exports. We use data for the year 2005, but the results are consistent over the years. We run the following regression:

$$y_{(f)hkc} = \sum_i \alpha_i gravity_{(k)c} + \sum_i \beta_i HighEnd_{hkc} \times gravity_{(k)c} + FE_{(f)hk} + \epsilon_{(f)hkc}$$

where h indicates whether exports are made of low- or high-end varieties, k is the product category of exports, and c is the destination country. The index f in parentheses indicates that part of our analysis is conducted at the firm level. $y_{(f)hkc}$ is either the value of exports at the product (k), firm (f), or firm-product (fk) level, the number of exporting firms (or a dummy identifying the firm export status), or the average value of exports per firm, in logarithm. $Gravity$ is a set of gravity determinants of exports. The baseline specification includes three variables: population (World Bank Data), GDP per capita (World Bank Data), and distance (from Mayer & Zignago 2006).[29] In robustness checks, we further include other variables which have been shown to be important to understand trade patterns (see e.g. Head & Mayer 2013). Namely, we add a dummy for the existence of a common language, a dummy for the existence of colonial linkages, and a dummy capturing the presence of a common border (all available in the "geo_cepii" database from CEPII). We also include the GINI index (World Bank Data) to control for the impact of income inequality on trade (see e.g. Fieler 2011). $HighEnd$ is a dummy equal to one if the flow we consider consists of high-end varieties. FE is (firm)-product-variety type fixed effects. In some specifications, we also add country fixed effects to account for the price index (or the multilateral resistance term) in the destination country. In all the specifications, robust standard errors are clustered by destination.[30]

4.1 Product-Variety Type-Destination Level Analysis

First, we work at the product-variety type-destination country level, and we ask whether gravity determinants affect the level of exports of high- and low-end varieties in a different way.

Then, we estimate to what extent these differences are driven by the extensive margin (the number of firms exporting a given product to a given country) or the intensive margin (the average sales per firm for that product and that country).

Table 2 reports our results, decomposing the total exports of product k, variety h (high- or low-end) to country c ($Export_{hkc}$) into the number of firms ($\#firms_{hkc}$) selling variety h to country c and the average sales per firm ($X/firm_{hkc}$). We include product-variety type fixed effects in every regression. The coefficients are thus identified in the within dimension, across countries. In the first three columns, we regress our three variables of interest on the log of distance, the log of population, and the log of GDP per capita and the interactions of these variables with a dummy equal to one for high-end varieties.

In column (1), as is standard in the literature, we find that exports at the product-variety type level increase with the size and wealth of the destination market and decrease with distance.

The interaction terms measure the different sensitivity of high- and low-end varieties

[29] We also tried GNI per capita instead of GDP per capita. The results are the same.

[30] Other dimensions of clustering have been tried, including firm-country clusters. This does not change the main results of the estimations.

Table 2: Determinants of Exports for High- and Low-End Varieties

Dimensions	Product Category, High-end/Low-end, Destination					
	(1)	(2)	(3)	(4)	(5)	(6)
	Exports	# firms	X/firm	Exports	# firms	X/firm
GDP/cap (log)	0.628***	0.430***	0.197***	-	-	-
	(7.358)	(7.256)	(4.519)	-	-	-
- × HighEnd	0.242***	-0.001	0.243***	0.161***	-0.048	0.208***
	(4.282)	(-0.036)	(5.659)	(3.223)	(-1.508)	(5.251)
Pop. (log)	0.595***	0.281***	0.313***	-	-	-
	(9.942)	(7.533)	(7.272)	-	-	-
- × HighEnd	0.016	-0.060**	0.076**	-0.020	-0.085***	0.066**
	(0.384)	(-2.496)	(2.584)	(-0.490)	(-4.143)	(2.037)
Distance (log)	-0.791***	-0.703***	-0.088	-	-	-
	(-7.477)	(-10.823)	(-1.449)	-	-	-
- × HighEnd	0.713***	0.492***	0.221***	0.754***	0.517***	0.237***
	(8.533)	(11.103)	(3.764)	(9.029)	(12.336)	(4.009)
Observations	17,837	17,837	17,837	17,837	17,837	15,799
R^2	0.324	0.494	0.144	0.636	0.767	0.488
Product-Variety type FE	Yes	Yes	Yes	Yes	Yes	Yes
Country FE	No	No	No	Yes	Yes	Yes

This table presents product-variety type-destination country level regressions of the log of exported values (col. 1-4), the number of exporting firms (col. 2-5), and the average value of exports per firm (col. 3-6) on the log of GDP per capita, the log of population, and the log of distance. These variables are interacted with a dummy equal to one for high-end variety trade flows (including varieties exported by the Comité Colbert). The data are for the year 2005. T-stat computed from standard errors clustered at the country level are reported between parentheses. *, **, and *** indicate significance at the 10, 5, and 1 percent level.

to gravity variables. High-end varieties are relatively more sensitive to GDP per capita. A ten percent increase in the GDP per capita increases the exports of low-end varieties by 6.5 percent, while it increases the exports of high-end varieties by 8.5 percent. This is consistent with the view that preferences are non-homothetic and that high-end varieties are mostly consumed by richer households.[31] Interestingly enough, we do not find any premium concerning the impact of population on high-end variety exports. The impact of distance is also significantly different for high- and low-end varieties. A 10 percent increase in distance reduces high-end variety exports by 0.8 percent, which is ten times less than for low-end varieties. Compared with estimates in the trade literature, the effect of distance on high-end variety exports is very small. After analyzing 2,508 estimates obtained from 159 papers, Head & Mayer (2013) report an average elasticity of trade to distance of 0.9 with a standard deviation of 0.4.

In columns (2) and (3), we decompose the value of exports into the number of firms of variety type h exporting product k to country c and the average value of exports per firm

[31] In Section 4.3, we discuss the impact of income inequality on high-end exports.

for that product, variety type and country. We see that the premium of high-end varieties in high-GDP-per-capita markets is due to the intensive margin: high-end variety exporters present in wealthy markets sell more than other exporters.

When looking at the effect of distance, most of the direct impact of distance on low-end variety exports goes through the extensive margin (0.703/0.791=0.889). In terms of sensitivity differential, 70 percent of the premium on distance of high-end variety exports is driven by the extensive margin too (0.492/0.713=0.690).

In the last three columns, we include country fixed effects to control for the multilateral resistance terms. In this case, we can only identify the interaction terms. The coefficients estimated on the interacted variable are very close to those estimated without country fixed effects, which supports our interpretation of the previous results.

The main lesson from Table 2 is therefore that product-destination country exports of high-end varieties have a different sensitivity to gravity determinants as compared to low-end variety exports. The most striking result concerns the negative impact of distance whose effect is 90 percent lower for high-end varieties. Table 3 reports similar regressions as Table 2, but considering the quantity of exports rather than the value of exports. Exported quantities present similar patterns as exported values. Columns (1) and (4) confirm that there is a premium for high-end variety exports in rich countries. The premium is greater for quantities than for values. Put differently, high-end variety exports are relatively bigger in rich countries, not because high-end variety exporters are able to charge a relatively higher price there, but because they manage to sell larger quantities. Consistent with what we find for the value of exports, most of the premium in rich countries is driven by the intensive margin. Concerning the impact of distance, we find that the quantity of exports is more sensitive to distance than the value of exports (-1.07 vs -0.79 - see column 1, Table 2 and 3). Interestingly, distance negatively affects both the extensive and the intensive margins of low-end exports in terms of quantities (it only impacts the extensive margin of exported values). Consistent with Table 2, we find that high-end variety exports are substantially less affected by distance: the effect of distance on exported quantities is 77% lower for high-end varieties. This is particularly true at the intensive margin where distance has virtually no effect on the exported quantity of high-end varieties.

One remaining question is whether our findings are due to selection effects or whether they can still be observed at the firm level. For instance, the higher sales in wealthier markets may be due to higher sales per firm or to the selection of relatively larger firms in these markets. To better understand the micro behavior behind our findings, Section 4.2 pursues the analysis at the firm-destination country and firm-product-destination country level.

Table 3: Determinants of Exported Quantities for High- and Low-End Varieties

Dimensions	Product Category, High-end/Low-end, Destination					
	(1)	(2)	(3)	(4)	(5)	(6)
	Quantity	# firms	Q/firm	Quantity	# firms	X/firm
GDP/cap (log)	0.496***	0.430***	0.067	-	-	-
	(5.193)	(7.256)	(1.328)	-	-	-
- × HighEnd	0.345***	-0.001	0.346***	0.260***	-0.048	0.306***
	(5.650)	(-0.036)	(8.918)	(4.634)	(-1.508)	(8.154)
Pop. (log)	0.609***	0.281***	0.328***	-	-	-
	(9.499)	(7.533)	(8.098)	-	-	-
- × HighEnd	-0.003	-0.060**	0.057*	-0.046	-0.085***	0.039
	(-0.060)	(-2.496)	(1.803)	(-1.055)	(-4.143)	(1.304)
Distance (log)	-1.065***	-0.703***	-0.360***	-	-	-
	(-9.233)	(-10.823)	(-5.570)	-	-	-
- × HighEnd	0.822***	0.492***	0.327***	0.861***	0.517***	0.342***
	(9.728)	(11.103)	(5.739)	(10.811)	(12.336)	(6.543)
Observations	17,676	17,837	17,676	17,676	17,837	17,676
R^2	0.320	0.494	0.135	0.720	0.767	0.651
Product-Variety type FE	Yes	Yes	Yes	Yes	Yes	Yes
Country FE	No	No	No	Yes	Yes	Yes

This table presents product-variety type-destination country level regressions of the log of exported quantities (col. 1-4), the number of exporting firms (col. 2-5), and the average quantity of exports per firm (col. 3-6) on the log of GDP per capita, the log of population, and the log of distance. These variables are interacted with a dummy equal to one for high-end variety trade flows (including varieties exported by the Comité Colbert). The data are for the year 2005. T-stat computed from standard errors clustered at the country level are reported between parentheses. *, **, and *** indicate significance at the 10, 5, and 1 percent level.

4.2 Firm-Level Analysis

In this section, we evaluate the importance of the gravity determinants introduced in the previous section for the value of exports and the probability of exporting at the firm level. We use firm-destination and firm-product-destination data for the year 2005. In all regressions, we have firm or firm-product fixed effects that capture firm characteristics such as variety type, productivity, size, and credit constraints among others. The coefficients are thus identified within firms (and products), across destinations.

Intensive margin. Table 4 reports the impact of gravity determinants on the value of firm exports. In the first two columns, we examine firm-destination total exports without taking the product dimension into account. At the firm-destination level, we find that high-end variety exporters sell relatively more to wealthy countries and are less adversely affected by distance. They also sell more in larger markets, as measured by population. In column (2), we add country fixed effects to account for the price index in the destination country. In this specification, we can only identify the coefficients for the interaction terms. The differences

between high- and low-end exporters remain qualitatively and quantitatively the same. In the last two columns, we examine the value of exports at the firm-product-destination level. The results are the same as those at the firm-destination level, but the effect of distance interacted with the high-end variety dummy is no longer significant once country fixed effects are included. This suggests that most of the premium on high-end variety exporters' sales in more distant markets is due to a composition effect across products.

The regressions in Table 4 abstract from zero trade flows. In the appendix, we estimate a non-linearized gravity equation. We thus conserve information zeros in this specification. We use the Poisson PML estimator to estimate this non-linear equation. The results are presented in Table A-3. They show that the results presented in Table 4 are robust to the inclusion of zeros.

Table 4: Intensive Margin, High- and Low-End Variety Exporters

Dep. variable	Exports (log)			
Dimensions	Firm-(Product), High-/Low-end, Dest.			
	(1)	(2)	(3)	(4)
GDP/cap (log)	0.280***	-	0.275***	-
	(32.355)	-	(22.795)	-
- × HighEnd	0.248***	0.219***	0.303***	0.277***
	(10.251)	(8.257)	(8.391)	(7.026)
POP. (log)	0.297***	-	0.330***	-
	(66.333)	-	(46.420)	-
- × HighEnd	0.057***	0.064***	0.071***	0.106***
	(5.192)	(5.191)	(4.460)	(6.044)
Distance (log)	-0.227***	-	-0.176***	-
	(-28.121)	-	(-16.680)	-
- × HighEnd	0.131***	0.095***	0.133***	0.023
	(6.973)	(4.578)	(5.846)	(0.903)
Observations	144,497	144,497	329,595	329,595
R-squared	0.089	0.539	0.096	0.696
Firm FE	Yes	Yes	No	No
Firm-Product FE	No	No	Yes	Yes
Country FE	No	Yes	No	Yes

This table presents the regressions of the log of exported values at the firm level (col. 1-2) and at the firm-product level (col. 3-4) on the log of GDP per capita, the log of population, and the log of distance. These variables are interacted with a dummy equal to one if exporters are high-end producers (including firms belonging to the Comité Colbert). The data are for the year 2005. T-stat computed from standard errors clustered at the country level are reported between parentheses. *, **, and *** indicate significance at the 10, 5, and 1 percent level.

Extensive margin. Table 5 reports the results of linear probability regressions explaining the firm-level decision to export.[32] In the first two columns, we consider the probability of

[32] We also ran conditional logit regressions. The results (available upon request) are qualitatively the same.

exporting to a country at the firm level. Column (1) reports our baseline regression, and column (2) includes country fixed effects to control for the price index in the destination market. We find that, at the firm level, the probability of exporting is higher in larger, wealthier markets, this positive relationship being even stronger for high-end varieties. The distance to the destination country has a negative impact on the probability of exporting, but this negative effect is significantly dampened for high-end variety exporters. In the last two columns, we analyze the probability of exporting at the firm and product level. High-end variety exporters export relatively more than others to wealthy countries and are more likely to enter more distant markets. The order of magnitude of the coefficients is the same as those at the firm level, though slightly lower.[33]

Table 5: Extensive Margin, High- and Low-End Variety Exporters

Dep. variable	Export Status			
Dimensions	Firm-(Product), High-/Low-end, Dest.			
	(1)	(2)	(3)	(4)
GDP/cap (log)	0.031***	-	0.021***	-
	(109.960)	-	(77.619)	-
- × HighEnd	0.016***	0.016***	0.016***	0.013***
	(17.241)	(17.137)	(12.287)	(9.554)
POP. (log)	0.022***	-	0.016***	-
	(129.939)	-	(90.798)	-
- × HighEnd	0.007***	0.007***	0.007***	0.006***
	(13.517)	(13.436)	(10.107)	(7.852)
Distance (log)	-0.040***	-	-0.036***	-
	(-102.871)	-	(-67.682)	-
- × HighEnd	0.018***	0.018***	0.014***	0.010***
	(16.982)	(16.881)	(8.849)	(6.278)
Observations	2,295,340	2,268,336	8,055,432	8,055,432
R-squared	0.000	0.079	0.067	0.228
Firm FE	Yes	Yes	No	No
Firm-Product FE	No	No	Yes	Yes
Country FE	No	Yes	No	Yes

This table presents the LPM regressions of a dummy equal to one if there is a positive export flow to a country and zero otherwise at the firm level (col. 1-2) and at the firm-product level (col. 3-4) on the log of GDP per capita, the log of population, and the log of distance. These variables are interacted with a dummy equal to one if exporters are high-end producers (including firms belonging to the Comité Colbert). The data are for the year 2005. T-stat computed from standard errors clustered at the country level are reported between parentheses. *, **, and *** indicate significance at the 10, 5, and 1 percent level.

[33]Note that in columns (1) and (3), the t-statistics on the non-interacted variable are very high. Changing the dimension of clustering does not affect the t-statitic. If we use conditional logit instead of a linear probability model, the results are qualitatively the same and the t-statistics on the level variables are also high in absolute value. Furthermore, we have to warn the reader that only 4 to 6% of the observations are non-zeros in these regressions which may create issues in the estimation. Despite this caveat, it is worth noting that the results are consistent with those presented in Table 4, columns 2 and 5.

4.3 Robustness Checks

Differences between Colbert firms and other high-end exporters. The *HighEnd* dummy takes the value 1 for two types of firms: Colbert firms (firms which belong to the Comité Colbert) and firms which we identify as exporting high-end varieties thanks to our procedure. To be sure that our effects are not entirely driven by the sub-sample of firms that belong to the Comité Colbert, we present regressions in which we further distinguish between Colbert firms and other high-end variety exporters.

The results are displayed in Table 6. The different specifications are the same as in Tables 2, 4, and 5. The first interaction, with the *HighEnd* dummy, gives the premium of non-Colbert high-end variety exports. The second interaction, with the *Colbert* dummy, gives the additional premium of Colbert firms as compared to other high-end exporters.[34]

First, we can see that, at the product-variety type-destination level, non-Colbert high-end variety exports do not exhibit a significant premium in terms of sensitivity to per capita income. Colbert exports have a modest premium which is almost significant at the 10% level. This weak effect is the result of a higher sensitivity of the sales per firm to per capita income, compensated by a lower sensitivity of the number of firms. However, within firms, we still find that high-end variety exporters are more likely to serve high-GDP-per-capita countries. Among the set of countries they serve, high-end exporters also sell more in higher-GDP-per-capita markets. An extra-premium is detected for Colbert high-end exporters.

The main difference in sensitivity between Colbert and other high-end exporters relates to distance. At the product-variety type-destination level (column 1), the premium is 0.65 for high-end exports, and nearly 0.95 for Colbert exports. Given the benchmark elasticity of distance of 0.79 (Table 2, column 1), this means that distance has virtually no impact (or a positive impact) on the exports by Colbert firms. This lower sensitivity to distance for Colbert firms remains in all specifications. Interestingly enough, the lower sensitivity to distance is mostly explained by the extensive margin for high-end exporters, while both the intensive and the extensive margins are important for the additional premium of Colbert firms.

[34] Put differently, for a low-end firm, both dummies equal 0. For a high-end firm which is not in the Comité Colbert, the *High-End* dummy equals 1, while the *Colbert* dummy is equal to 0. For a firm that is in the Comité Colbert, both dummies take the value 1. The *Colbert* dummy thus captures the extra-sensitivity of Colbert firms relative to other high-end firms to the gravity variables.

Table 6: Determinants of Exports for Colbert Firms, and High- and Low-End Varieties

Dep. variable	Exports	# firm	X/firm	Exports (log)		Decision to export	
Dimensions	*Product-Variety Type-Dest*			*Firm-Dest*	*Firm-Prod-Dest*	*Firm-Dest*	*Firm-Prod-Dest*
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
GDPc × HighEnd	0.016	-0.067**	0.083**	0.183***	0.212***	0.014***	0.007***
	(0.306)	(-2.225)	(2.091)	(6.566)	(6.018)	(15.682)	(10.106)
× Colbert	0.090	-0.161***	0.252***	0.234***	0.184**	0.068***	0.028***
	(1.614)	(-5.460)	(5.656)	(3.649)	(2.248)	(8.195)	(6.274)
Pop. × HighEnd	-0.086**	-0.093***	0.007	0.051***	0.067***	0.007***	0.003***
	(-2.535)	(-4.909)	(0.289)	(4.194)	(4.008)	(12.107)	(6.682)
× Colbert	0.045	-0.070***	0.115***	0.103***	0.111***	0.032***	0.016***
	(1.270)	(-4.190)	(3.430)	(2.601)	(3.276)	(7.343)	(6.773)
Dist. × HighEnd	0.653***	0.496***	0.157***	0.070***	-0.012	0.017***	0.012***
	(7.975)	(11.239)	(3.036)	(3.471)	(-0.502)	(16.307)	(8.149)
× Colbert	0.278***	0.118***	0.160***	0.215***	0.105**	0.021***	-0.010*
	(5.036)	(4.090)	(3.736)	(2.824)	(1.974)	(2.829)	(-1.955)
Observations	20,719	20,719	20,719	144,497	329,595	2,268,336	8,055,432
R-squared	0.772	0.521	0.658	0.539	0.696	0.250	0.228
Product-Variety type FE	Yes	Yes	Yes	No	No	No	No
Destination	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm	No	No	No	Yes	No	Yes	No
Firm-Prod.	No	No	No	No	Yes	No	Yes

This table presents the regressions of the log of exported values or the decision to export for the year 2005 on the log of GDP per capita, the log of population, and the log of distance. These variables are interacted with a dummy equal to one if exporters are high-end producers (including firms belonging to the Comité Colbert), and a second dummy equal to one if firms are members of the Comité Colbert. Columns 1-2-3 present regressions at the product level. Columns 4-6 present regressions at the firm level. Columns 5-7 present regressions at the firm-product level. The data are for the year 2005. T-stat computed from standard errors clustered at the country level are reported between parentheses. *, **, and *** indicate significance at the 10, 5, and 1 percent level.

High-end variety or high-productivity exporters? Section 2 provides evidence that high-end variety exporters are firms exporting very expensive, but also highly sophisticated, or high-quality, or high-reputation varieties. One potential concern is that firms identified as high-end exporters are also high-productivity firms. If this is the case, the higher sensitivity to income or the lower sensitivity to distance may simply be the consequence of a higher level of efficiency.

A first reassuring result is that in the data, high-end exporters do not seem to exhibit a much higher productivity. We have been able to merge a sub-sample of our data with balance sheet data and to compute firm-level labor productivity for these firms. The correlation between productivity and the high-end dummy is positive but very small (1.8%), which suggests that productivity is not the key characteristic of high-end variety exporters.[35]

Then, we have directly addressed the issue of not taking productivity into account in our baseline regressions. Table 7 reports the results of a regression of the logarithm of exports and the decision to export at the firm-destination level on the gravity variables interacted with both the *HighEnd* dummy and the logarithm of the labor productivity of firms. Since the sample is different from the one used in Tables 4 and 5, columns (1) and (3) show that while the number of observations declines compared with the previous estimates, the coefficients we obtain are very close. Columns (2) and (4) include the interactions with labor productivity. The coefficients on the interaction between the gravity variables and the high-end dummy are not affected by the introduction of productivity controls. If anything, both the value of exports and the probability of exporting decrease more rapidly with distance for high productivity firms. The stability of the results confirms that our high-end dummy captures more than technical efficiency and that the ability of high-end variety firms to export to more distant markets is not due to a higher productivity.

Alternative variables. Table 8 presents the results of alternative specifications. Choi et al. (2009) show that trade patterns depend on the distribution of income. In columns (1), (3), (5), (7), and (9), we ask if the results are robust to the introduction of a measure of income inequality (Gini index). In columns (2), (4), (6), (8), and (10), we ask if the effect of distance is robust to additional socio-geographic variables such as common border, common language, or former colonial relationship, as is standard in the estimation of gravity equations, since these characteristics might be correlated with distance. Comparing Table 8 with Tables 2, 4, and 5, we see that introducing the Gini index does not affect the results. Overall, we find that high-end exporters are more likely to export and they export more to countries with a higher level of income inequality, though the effect is not significant at the product level.[36]

[35] When running a logit estimation to explain the high-end dummy by productivity, the estimated coefficient is positive and significant, but the pseudo R^2 of the regression is only equal to 0.004.

[36] The impact of the Gini index is significant for the value of exports at the firm-level but not at the firm-product level. This suggests that not every product of high-end variety firms is more exported to more unequal

Table 7: High-End Variety Exporters and Productivity

Dep. variable	Exports (log)		Decision to export	
Dimensions	Firm, High-end/Low-end, Destination			
	(1)	(2)	(3)	(4)
GDPc × HighEnd	0.200***	0.187***	0.016***	0.015***
	(6.299)	(5.993)	(8.982)	(9.280)
Dist. × HighEnd	0.093***	0.098***	0.010***	0.010***
	(3.731)	(3.927)	(4.984)	(5.493)
Pop. × HighEnd	0.085***	0.081***	0.010***	0.010***
	(6.049)	(5.816)	(9.931)	(10.429)
GDPc × TFP		0.317***		0.010***
		(5.390)		(4.656)
Dist.× TFP		-0.088*		-0.015***
		(-1.728)		(-5.665)
Pop.× TFP		0.116***		0.005***
		(4.718)		(3.356)
Observations	100,700	100,700	6,104,028	6,104,028
R-squared	0,534	0,534	0,205	0,206
Firm FE	Yes	Yes	Yes	Yes
Country FE	Yes	Yes	Yes	Yes

This table presents the OLS regressions of the log of exports and LPM regressions of a dummy equal to one if there is a positive export flow to a country and zero otherwise at the firm-destination level on the log of GDP per capita, the log of population, and the log of distance. These variables are interacted with a dummy equal to one if exporters are high-end producers (including firms belonging to the Comité Colbert). In columns 2-4, the variables are also interacted with the log of the labor productivity of firms. The data are for the year 2005. T-stat computed from standard errors clustered at the country level are reported between parentheses. *, **, and *** indicate significance at the 10, 5, and 1 percent level.

Turning to other gravity variables, we find that sharing a common border increases less the amount of exports and the probability of exporting for high-end variety exporters. This is consistent with our interpretation that high-end exporters are more geographically diversified, and export more to distant markets. High-end variety exporters also trade relatively less than low-end exporters (the number of firms and the amount of sales per firm) with French-speaking countries. However, they are more likely to enter countries that used to be part of the French colonial empire. Introducing these variables does not change our baseline results. These alternative specifications also confirm that most of the lower sensitivity to distance of high-end varieties is due to the extensive margin.

countries.

Table 8: Other Gravity Determinants, Firm-Level Regressions

Dep. variable	Exports (log)		Exports (log)				Export status			
Dimension	Product-Variety Type-Dest		Firm-Dest		Firm-Prod-Dest		Firm-Dest		Firm-Prod-Dest	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
HighEnd× GDPc	0.214***	0.126**	0.236***	0.177***	0.283***	0.237***	0.018***	0.019***	0.014***	0.015***
	(3.597)	(2.298)	(8.235)	(6.196)	(6.757)	(5.798)	(17.132)	(18.974)	(9.218)	(11.432)
HighEnd× Dist.	0.699***	0.821***	0.079***	0.029	0.022	-0.023	0.019***	0.017***	0.011***	0.008***
	(6.388)	(8.830)	(3.756)	(1.185)	(0.835)	(-0.768)	(15.118)	(18.208)	(5.935)	(5.429)
HighEnd× Pop.	0.038	-0.039	0.065***	0.069***	0.105***	0.107***	0.009***	0.008***	0.007***	0.006***
	(0.811)	(-0.948)	(5.080)	(4.942)	(5.598)	(6.012)	(15.303)	(13.988)	(8.872)	(8.483)
HighEnd× GINI	0.398		0.196**		0.042		0.006**		0.010***	
	(0.909)		(2.054)		(0.372)		(2.118)		(2.942)	
HighEnd× Colony		-0.002		0.064		0.009		0.032***		0.032***
		(-0.009)		(1.098)		(0.130)		(13.380)		(13.220)
HighEnd× Common lang.		-0.102		-0.141**		-0.192**		-0.010***		-0.021***
		(-0.332)		(-2.450)		(-2.358)		(-4.314)		(-9.165)
HighEnd× Contig.		0.446*		-0.169***		-0.069		-0.006*		-0.010**
		(1.857)		(-2.844)		(-0.839)		(-1.952)		(-2.171)
Observations	15,799	17,837	138,538	144,497	329,595	328,926	1,782,264	2,268,336	6,329,268	8,055,432
R-squared	0.651	0.768	0.544	0.539	0.696	0.696	0.265	0.250	0.240	0.228
Firm FE	No	No	Yes	Yes	No	No	Yes	Yes	No	No
Firm-Prod FE	No	No	No	No	Yes	Yes	No	No	Yes	Yes
Destination FE	No	No	Yes	Yes	No	No	Yes	Yes	No	No
Product-Destination FE	Yes	Yes	No	No	Yes	Yes	No	No	Yes	Yes

This table presents product-, firm- and firm-product-level regressions with alternative gravity variables. In columns 1 and 2, the explained variable has a product-country dimension. In columns 3-4-7-8, the explained variables have a firm-country dimension. In columns 4-5-9-10, the explained variables have a firm-product-country dimension. All regressions include individual fixed effects. T-stat computed from standard errors clustered at the country level are reported between parentheses. *, **, and *** indicate significance at the 10, 5, and 1 percent level.

Alternative definition of high-end variety exporters. In the Online Appendix, we compare our baseline results with those obtained with alternative definitions of high-end variety exporters. We propose alternative definitions based on our firm-product fixed effects approach. We also analyse the results when we define high-end exporters based on an arbitrary price threshold applied to all sectors. Finally, we compare our measure of "high-endness" to other measures of quality proposed in Crozet et al. (2012) and Khandelwal et al. (2013). The conclusion is that using Colbert firms as a benchmark to identify high-end exporters is crucial as compared to an arbitrary price threshold applied indifferently to all products. Moreover, our measure of "high-endness" is positively correlated with other measures of quality proposed in the literature. Still, it allows us to identify some specific high-end exporters, smaller than others but also less sensitive to distance.

Alternative sample of destination countries. In the Online Appendix, we present a series of regressions dropping high-income/large countries outside of Europe. We successively remove China, Japan, the US, and then these three countries together. We find that the results are robust to dropping these countries and similar in magnitude to those presented for the full sample in Table 2. The results are reported in Section 3.3 of the Online Appendix.

4.4 Discussion

First, in contrast to the predictions of the workhorse models of international trade, per capita income is an important determinant of trade flows. Demand increases with per capita income, and it increases relatively more for high-end varieties. This is in line with the predictions of models featuring non-homothetic preferences. The intensive margin accounts for most of this difference in sensitivity to per capita income.

High- and low-end varieties also differ in terms of their sensitivity to distance. The impact of distance on high-end exporters is very small. Interestingly enough, most of this lower effect is driven by the extensive margin. High-end variety exporters are more likely to export to more distant markets. This suggests that high-end variety exporters are better able to meet demand in distant markets than low-end ones.

The greater aggregate geographic diversification of high-end variety exports which we have highlighted could be accounted for by the recent literature on international trade and quality. Indeed, Baldwin & Harrigan (2011) propose a framework in which high-quality firms charge higher prices and, thanks to a favorable demand shifter, export more than low-quality firms. They export in particular to a greater number of markets, their demand shifter allowing them to overcome the fixed export cost for more distant countries. The higher price and the bigger size of high-quality producers, both in terms of markets and in terms of exports, is corroborated by Kugler & Verhoogen (2012) and Crozet et al. (2012). Even though the geography of exports is not directly investigated in these papers, one implication of their results is that the geographic distribution of aggregate exports mirrors the distribution

of exports at the individual level: high-quality firms export to more (and more distant) countries, so that both firm-level and aggregate exports are geographically more diversified for high-quality varieties.

The picture that emerges from our analysis is a bit different. Except for a few superstar firms, high-end variety firms do not necessarily have a broader scope of destination countries. Hence, many high-end variety exporters are in reality high-price niche producers that export a limited number of products to a limited number of countries. This is reminiscent of recent works by Hallak & Sivadasan (2012) and Holmes & Stevens (2013), who show that two sources of heterogeneity, the productivity of the firm and the quality/specificity of the product, are necessary to understand specific features in the data, in particular the presence on export markets of small high-priced producers. However, our results show that within the pool of countries they serve, high-end exporters are able to reach more distant countries on average. In other words, while Bollinger exports its champagne all over the world, there are many other high-end champagne producers that are far less ubiquitous but are still able to reach one or two very distant countries such as China, Japan, Brazil, or South Africa. On the contrary, low-end champagne producers remain confined to the European market. These micro features imply that high-end aggregate exports are more ubiquitous and geographically diversified than low-end variety exports. This is due to a higher number of firms present in distant countries as compared to low-end variety firms. However, for a given product, the firms present in these distant countries might not be the same across markets. This observation is compatible with two types of frameworks. In the first one, a significant fraction of rich consumers in every country consume the most famous high-end varieties, i.e. those of the Comité Colbert, and other consumers have a strong taste for very specific varieties which vary from one country to the other. The second framework is one in which most high-end variety firms face capacity constraints, so that they can only serve a reduced number of markets (while Colbert firms are not limited in terms of production scale); this set might vary depending on the entrepreneur's connections, the location of the firm, and so on.

5 Aggregate Implications

In this section, we highlight two aggregate implications of our micro analysis. We show that the lower sensitivity to distance of high-end exports makes them both more geographically diversified and better able to follow demand where it is. We also provide two thought experiments to highlight how the actual geography of demand and the sensitivity to distance interact to determine the distinctive features of high-end aggregate exports as compared to low-end ones.

5.1 Sensitivity to Distance and Geographic Concentration of Aggregate Exports

One striking fact highlighted in Section 3 is that low-end variety aggregate exports are markedly less geographically diversified than high-end ones. Using the same big regions as in Figure 2, we find that the Herfindahl index of the geographic concentration of exports is equal to 0.23 for overall high-end variety exports and to 0.45 for low-end variety exports. Using the product-variety type-destination level estimates from Table 2 (col. 1), we compute the predicted value of high- and low-end exports. The implied Herfindahl indices of geographic concentration are very close to the actual ones: 0.24 for high-end and 0.45 for low-end.

We then ask which of the following determinants better accounts for this: sensitivity to GDP per capita or sensitivity to distance. Assuming that low-end variety exports have the same sensitivity to GDP per capita as high-end variety exports does not affect much the geographic distribution of their sales abroad: if anything, the Herfindahl index increases slightly from 0.45 to 0.48. By contrast, assuming that they have the same distance elasticity as high-end variety exporters generates a tremendous geographic diversification of low-end variety exports: the Herfindahl index decreases in this case from 0.45 to 0.22, and thus becomes very close to the one calculated for high-end variety exports. The sensitivity to distance thus explains the whole difference in the geographic diversification of high-end and low-end variety exports

5.2 Sensitivity to Distance and Geographic Reallocation of Exports

Our analysis has mainly been static so far. However, the important geographic reshuffling observed over the past ten years (see Figure 2), in particular toward Eastern Asia, suggests that high-end variety exporters are better able than low-end ones to follow demand in a globalized world. As shown in Table 9, high-end variety exporters drastically increased their exports toward China and Russia (whose shares in overall high-end variety exports grew respectively from 0.46 to 4.29% and from 0.14 to 1.90%). The evolution is qualitatively similar but less pronounced for low-end exports. By contrast, high-end variety exporters moved away from the American and Japanese markets whose shares collapsed from 18.80 to 13.17% and from 12.08 to 7.06% respectively. Again, the same qualitative evolution is observed for low-end variety exporters, but in a much less spectacular way. These patterns seem to be correlated to the evolution of the geography of demand. While the share of China and Russia in world GDP rose from 0.56 to 1.40% and from 0.12 to 0.35% respectively over the period, the share of the US and Japan decreased from 4.63 to 3.44% and from 2.18 to 1.29%.[37]

[37] Note that the last decade is an ideal period for such a test, since the locus of demand growth changed considerably over this period, with the rise, in particular, of Eastern Asia. This is why the analysis in this section covers the 2000-2010 period; indeed, up to 2005, the geographic distribution of both high- and low-end variety exports was quite stable (see Figure 2).

Table 9: Share of Countries in Overall High- and Low-End Variety Exports (in %)

	High-end	Low-end
	China	
2000	0.46	0.14
2010	4.29	1.90
	Russia	
2000	0.73	1.06
2010	2.69	2.01
	USA	
2000	18.80	8.62
2010	13.17	6.33
	Japan	
2000	12.08	4.18
2010	7.06	2.60

These stylized facts suggest that the composition of a country's production in terms of high- and low-end varieties might have important consequences for the evolution of aggregate exports. To test this idea more formally, we compute each country's annual share in overall high- and low-end variety exports from 2000 to 2010 (the geographic distribution of exports being rather stable for both high- and low-end varieties between 2000 and 2005). We do the same with the predicted values of exports, and with fictitious values of low-end variety exports, assuming that they have the same GDP per capita or distance elasticity as high-end variety exports.[38]

We then investigate how these shares correlate over time with the average GDP per capita growth rate over the previous 5 years in the different destination countries. More precisely, we run the following regression:

$$\text{share}_{hct} = \alpha \text{gdpc\_growth}_{ct-5,t} + \beta \text{gdpc\_growth}_{ct-5,t} \times \textit{HighEnd} + \mu_{hc} + \epsilon_{hct} \qquad (2)$$

where share_{hct} is the share of country c in the overall exports of variety type h at time t, $\text{gdpc\_growth}_{ct-5,t}$ is the annual average growth rate of GDP per capita (expressed in euros) in country c from $t-5$ to t, *HighEnd* is a dummy identifying high-end variety exports and μ_{hc} is a country-variety type fixed effect, ϵ_{hct} being an i.i.d. disturbance terms.

If high-end variety exporters are better able to adapt to changes in the geographic distribution of demand across the world, β should be positive and significant, whether market shares are calculated with observed exports or with predicted exports. In other words, we expect the correlation between country shares and past GDP per capita growth to be stronger

[38] We use the coefficients obtained from a gravity equation on the pooled sample of country-product-variety type-year trade flows for the 2000-2010 period, including product-variety type(-year) fixed effects and country(-year) fixed effects, as in column (4) of Table 2. The coefficients we obtain on the interaction terms between the gravity variables and the dummy identifying high-end variety exports are very close in both regressions: 0.166^{***} vs 0.161^{***} for GDP per capita, -0.003 vs 0.020 for population and 0.715^{***} vs 0.754^{***} for distance. We are thus confident in the fact that extrapolating the analysis to the 2000-2010 period, while high-end variety exporters were identified based on exports from 2000 to 2006 only is not a significant issue.

for high-end varieties (β being estimated thanks to the time variations of the variables, since a country-variety type fixed effect is included in the regression). If sensitivity to distance is the main explanation for this, we expect β to be close to zero and insignificant when the market shares of low-end variety exports are computed assuming the same distance elasticity for both types of varieties.[39]

The results in Table 11 confirm this intuition. Indeed, the share a country represents in the overall exports of high- and low-end varieties at time t tends to increase with annual GDP per capita growth over the previous 5 years. What is more, this positive correlation is stronger for high-end variety exports. Assuming the same GDP per capita elasticity for both types of varieties does not affect the analysis significantly. By contrast, any difference vanishes as soon as low-end variety exports are assumed to have the same sensitivity to distance as high-end variety exports.

Table 10: Share of Countries in Overall Sales and Demand Growth

Dependent variable:	Market share$_{hct}$			
	Observed	Predicted	Same GDP per cap. elast.	Same dist. elast.
Annual GDP per cap. growth$_{ct-5,t}$	0.00721***	0.00462***	0.00560***	0.00838***
	(0.00179)	(0.000838)	(0.00109)	(0.00142)
GDP per cap. growth$_{ct-5,t}$ × High-end variety	0.00894**	0.00536***	0.00438**	0.00160
	(0.00415)	(0.00205)	(0.00217)	(0.00235)
Country-variety type fixed effects	yes			

Robust standard errors are reported between parentheses. *, **, and *** indicate significance at the 10, 5, and 1 percent level.

The emergence of Eastern Asia and the relative decline of the US and Japan in world demand are clearly driving these results: when we exclude these zones from the sample, the correlation between the geographic distribution of sales and the geography of demand growth is not significantly different for high-end and low-end variety exports, whatever the values used to compute country shares (actual or predicted values).

These results thus clearly show that a lower sensitivity to distance makes high-end variety exporters better able to take advantage of new business opportunities across the world. This allowed them to redirect their exports in the past 10 years from the stagnating US and Japan to the emerging Eastern Asian markets.

[39] When we use the predicted values of country shares, we might have measurement errors in the dependent variable. This is problematic if there exists a systematic correlation between the error term and the explanatory variables. We computed the difference between each country's actual share in overall high- and low-end variety exports respectively and their predicted share based on the coefficients of the gravity equation we use. The correlation between this difference and the growth rate of GDP per capita in a given country over the past five years is insignificant and equal to -0.04 for high-end variety exports and to 0.03 for low-end ones. We are thus confident in the results of our regression analysis.

Table 11: Share of Countries in Overall Sales and Demand Growth (w/o North America, Eastern Asia, and Japan)

Dependent variable:	Market share$_{hct}$			
	Observed	Predicted	Same GDP per cap. elast.	Same dist. elast.
Annual GDP per cap. growth$_{ct-5,t}$	0.00425***	0.00340***	0.00380***	0.00443***
	(0.00153)	(0.000814)	(0.00100)	(0.000960)
GDP per cap. growth$_{ct-5,t}$ × High-end variety	0.00266	0.00120	0.000796	0.000171
	(0.00269)	(0.00137)	(0.00149)	(0.00146)
Country-variety type fixed effects	yes			

Robust standard errors are reported between parentheses. *, **, and *** indicate significance at the 10, 5, and 1 percent level.

5.3 Thought Experiments

We have shown that thanks to their low sensitivity to distance, high-end aggregate exports are more geographically diversified and better able to follow the source of demand. We now ask whether and how the relative geographic position of a country with respect to world demand affects these results. We consider two polar cases: a country surrounded by world demand and a country remote from world demand.

First, based on the estimates from Table 2 (col. 1), we compute the predicted values of exports assuming that the distance between France and the US, Japan and Eastern Asia is equal to the average distance between France and EU27 countries. In this case, the share of high-end varieties in overall exports is equal to 22%, while it is equal to 35% when using actual exports and to 26% when using the "correct" predicted values (based on the bilateral distance between France and the destination country). Regarding the geographic diversification of exports, the Herfindahl index is now very similar for both high-end and low-end exports (equal to 0.28 and 0.23 respectively, instead of 0.45 and 0.23 when using actual exports, and 0.45 and 0.25 when using the "correct" predicted values). Hence, making the big American, Japanese and Eastern Asian markets as close to France as our EU27 partners makes the advantage of high-end exporters (much) smaller. Indeed, in this thought experiment, the lion's share of world demand is very close to France, so that the lower sensitivity to distance does not actually translate into any distinctive ability to export for high-end variety exporters. We can conclude from this first exercise that having high-end exporters in an economy does matter for the geographic diversification of exports if and only if there is high demand in very distant countries.

Second, we replace the bilateral distance between France and its destination countries by the distance between Australia and these countries. Based on these new predicted export values, the share of high-end varieties in overall exports jumps to 50%. Regarding the Herfindahl index of geographic diversification, it is now equal to 0.19 for high-end exporters, as compared to 0.15 for low-end variety ones. Contrary to France, Australia is a very remote country, far away from both rich and poor trading partners: it is around 8,000 km away from Japan and

China, 15,000 km from the US, and more than 16,000 km from France. Consequently, in this case, the lower sensitivity to distance of high-end exporters gives them a strong relative advantage as compared to low-end ones in terms of ability to export. This is why the share of high-end varieties increases so much when we use bilateral distances with Australia instead of France to predict exports. However, in the absence of big neighboring markets, the geographic diversification of foreign sales does not differ much between high- and low-end varieties.

We can conclude from these simple exercises that whether the lower sensitivity to distance shapes a specific geography for high-end exports relative to low-end ones depends on the distribution of world demand and the relative position of the exporting country. The economic development of East Asia, South America, and Africa makes the source of demand more dispersed and farther away from developed countries. Differences in sensitivity to distance are going to become increasingly important to understand trade patterns.

6 Conclusion

In this paper, we develop a new methodology to distinguish high- and low-end variety exports in French firm-level data. We find that high-end producers have the same product and country scope as low-end ones. However, conditional on the number of destinations they serve, they export to more distant countries. Consistently with this fact, we show that high-end exporters are characterized by a very low sensitivity to distance. This explains the broader geographic diversification of their exports *in the aggregate*. It also implies that high-end exports are more likely than low-end ones to meet demand growth when it originates from distant countries.

Our results suggest that as long as the new sources of demand emanate from countries that are far away from the EU and the US, developed countries will be all the more able to reap the gains from globalization as they specialize in high-end varieties. Countries and sectors with a large high-end segment are more likely to benefit from growth in East Asia in particular. By changing the geographic diversification of aggregate exports, the specialization in high-end varieties may also end up affecting different outcomes such as the volatility of developed countries' exports.

Our paper is silent on the dynamics of high-end firms. Which firms start producing in high-end segments? In which market do they start? Are network effects important for new high-end firms? We plan to explore these questions in future research.

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Appendix

A-1 Tables

Table A-1: Sectorial Composition of the Final Sample (HS6 Products with High-End Varieties)

Industry	Share (%)
Beverages	23.0
Cosmetics	21.2
Apparel and footwear	16.6
Home art	9.5
Leather goods	8.7
Food	7.8
Paper, books	4.7
Jewels	4.4
Textile	2.3
Miscellaneous	1.2
Clocks	0.6
Total	100

Table A-2: Sectorial Composition of High-End Variety Exports 2000-2011

Industry	All firms
Cosmetics	30.3
Beverages	27.5
Leather goods	19.16
Jewels	8.9
Apparel and footwear	6.9
Home art	3.4
Paper, books	1.9
Food	0.9
Miscellaneous	0.4
Textile	0.4
Clocks	0.3
Total	100

A-2 Figures

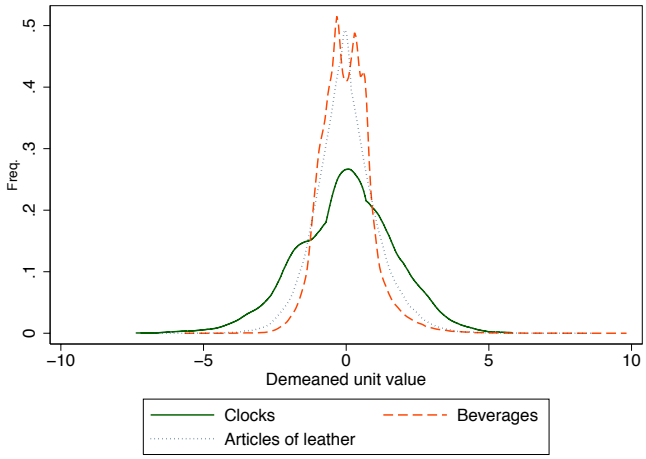

Figure A-1: Distribution of firm-level unit values

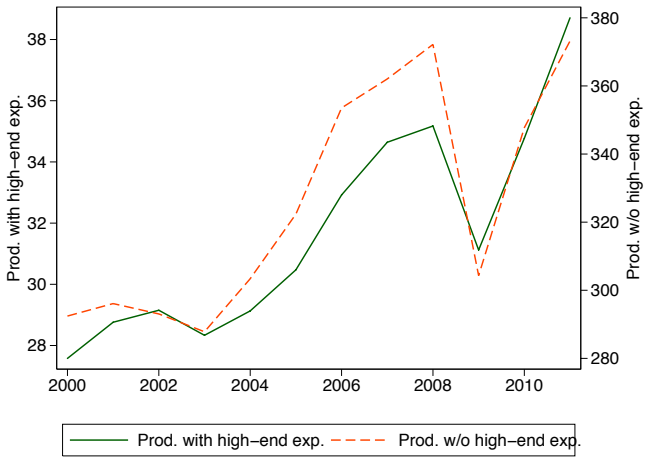

Figure A-2: Evolutions of exports by variety type (billions of euros)

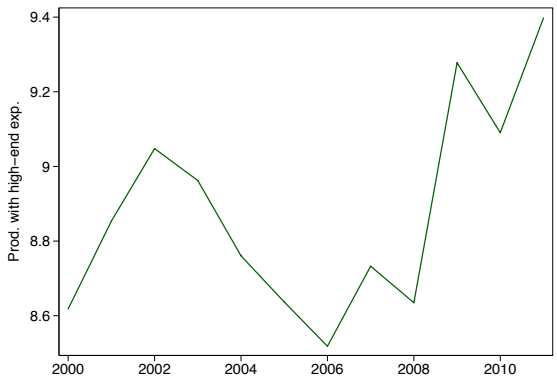

Figure A-3: Value of HS6-products with high-end varieties (% of total French exports)

Table A-3: High- and Low-End Variety Exports at the Firm Level Including Zeros

Dep. variable	Value of Export (in level)			
Dimensions	Firm-(Product), High-/Low-end, Dest.			
	(1)	(2)	(3)	(4)
GDP/cap (log)	0.888***	-	0.887***	-
	(30.190)	-	(32.161)	-
- × HighEnd	0.388***	0.349***	0.388***	0.350***
	(4.249)	(3.936)	(6.382)	(5.845)
POP. (log)	0.690***	-	0.690***	-
	(50.490)	-	(57.459)	-
- × HighEnd	-0.000	0.031	-0.000	0.031
	(-0.012)	(1.143)	(-0.007)	(1.219)
Distance (log)	-0.741***	-	-0.741***	-
	(-16.361)	-	(-17.923)	-
- × HighEnd	0.620***	0.532***	0.620***	0.532***
	(4.802)	(4.914)	(7.230)	(7.344)
Observations	2,266,908	2,266,908	8,051,904	8,051,904
Firm FE	Yes	Yes	No	No
Firm-Product FE	No	No	Yes	Yes
Country FE	No	Yes	No	Yes

This table presents the Poisson Maximum Likelihood regressions of the level of export flows (including zeros) at the firm level (col. 1-2) and at the firm-product level (col. 3-4) on the log of GDP per capita, the log of population, and the log of distance. These variables are interacted with a dummy equal to one if exporters are high-end producers (including firms belonging to the Comité Colbert). The data are for the year 2005. T-stat computed from robust standard errors are reported between parentheses. *, **, and *** indicate significance at the 10, 5, and 1 percent level.