

The role of firm-to-firm relationships in exporter dynamics

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Abstract

This paper investigates the role of firm-to-firm relationships in export market dynamics, documenting the following stylized facts for French exporters. First, exporters grow in a foreign market by expanding their customer base; the average French exporter doubles its number of buyers after 8 years. Second, sales to existing customers remain the predominant source of growth in a foreign market, with long-lasting relationships contributing to most export values. Third, as a mechanism driving firms' growth in a relationship, prices fall as a relationship ages. Fourth, I exploit the Brexit referendum as a quasi-natural experiment to examine how firm-to-firm relationships adjust in response to changes in market access. I find that French exporters with long-lasting relationships in the UK are less affected by the referendum shock and exhibit higher exchange rate pass-through. Overall, these findings indicate that long-lasting relationships represent a crucial margin for export market growth and in shielding exporters from changing market conditions.

1 | INTRODUCTION

Almost all economic transactions require both a supplier and a customer for a good or service. The number of customers that a firm serves—its customer base—is important in explaining many economic phenomena. For example, the customer base is central to explaining why so many exporters remain small, as exporters find it increasingly costly to reach more customers (Arkolakis 2010). International trade is unique in that the barriers of distance, culture and language make it even more difficult to match the two sides of the relationship. Firm-to-firm relationships are also important for understanding movements in international prices as exporters build market share (Drozd and Nosal 2012) and exploit relationship-specific investments (Heise 2021). The role of the customer base also appears central to understanding how firms respond to different shocks with implications for the international elasticity puzzle (Fitzgerald and Haller 2018).

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Despite the growing importance of the customer base in the literature, there is little direct evidence about how firms accumulate customers over their lifecycle, or through which channels exporters grow in a customer relationship. This paper uses rich customs data for France to shed light on the role of firm-to-firm relationships in exporter dynamics. I document several novel stylized facts for French exporters, showing that firm-to-firm relationships affect exporters' growth and their responses to shocks.

This paper's empirical contribution can be divided into four parts. First, I study the dynamics of firm-to-firm relationships in the lifecycle of exporters at a destination. The literature has not yet provided direct evidence concerning the role of the customer base in exporter dynamics. Despite this lack of empirical evidence, Arkolakis (2010) was the first to theorize that exporters reach individual consumers rather than the market in its entirety. In his model, firms invest in marketing to reach more customers, but the cost of attracting each additional customer increases with the number of customers reached. Therefore firms do not serve the market in its entirety, and less-productive exporters can enter a market but reach relatively few customers. Fitzgerald *et al.* (2023) incorporate the customer accumulation mechanism of Arkolakis (2010) in a dynamic setting to explain how exporters grow. In their analysis of quantity and price dynamics, the authors argue that their evidence is consistent with a model where demand shifts due to the accumulation of customers rather than a movement along the demand curve. I extend their work by testing directly the role played by the customer base in firm export dynamics. I find that firms accumulate customers as they grow in the early years, and they lose customers in the final years of an export market spell. The average French exporter doubles its customer base after 8 years. I also find that the more customers an exporter has upon entering a market initially, the more likely the exporter is to survive longer in that market.

Second, I decompose the contribution of the customer base to a firm's total value of exports to a destination market. I find that the customer base can explain up to 28% of the growth. This finding implies that sales to existing customers remain the most important source of growth in a foreign market. Further, I explore the role of old relationships (i.e. firm-to-firm relationships established in the first year of activity in a foreign market) in exporters' growth trajectories. While firm-to-firm relationships have high turnover, with old buyers¹ representing less than one-third of the customer base after 4 years in a foreign market, long-lasting relationships make up a large share of the value of exports throughout exporters' lifecycles. On average, after 9 years of exporting to a foreign market, old relationships still account for more than half of the export value. This novel set of findings implies that successful growth in an export market is explained mostly by exporters' ability to retain and expand key relationships established in the first year of activity in that market.

Third, since the intensive margin represents the most important channel through which exporters can grow in a foreign market, I explore the mechanisms driving firms' growth in a relationship. My analysis shows that French exporters reduce their prices with customers over the tenure of the relationship. After 9 years, the average relationship-specific component of the price declines by more than 2% from its initial value. This pattern in relationship-specific prices sheds light on possible firm pricing strategies. One plausible explanation is that the average decline in prices may be due to improvements in customer-specific marginal costs. Since the production of a customized good entails substantial relationship-specific investments (Antràs and Chor 2013), I would expect to observe larger marginal cost reductions for this type of products (e.g. to satisfy changes in the buyer's needs over time). My analysis confirms this conjecture by showing that price reductions tend to be present only for differentiated and high-quality products. This novel set of evidence suggests that price is a crucial lever that exporters can use to expand existing relationships, and such decline in prices may be driven by the customization of production and related customer-specific productivity improvements.

Lastly, I exploit the Brexit referendum as a quasi-natural experiment to investigate the effect of exchange rate shocks and uncertainty on exporters. Specifically, I use the referendum in a

difference-in-differences strategy to estimate how French exporters' relationships adjust before and after the referendum (first difference) in the UK relative to other EU countries (second difference). Consistent with Fernandes and Winters (2021), I find that the growth of export values, quantities and prices declines relative to other EU countries because of the Brexit shock. However, I go one step further by investigating whether the length of firm-to-firm relationships plays a role in these results. I find that French exporters with long-lasting relationships are less affected by the referendum shock. These results are consistent with the view that long-term relationships are more likely to use either implicit or explicit contracts and are thus more resilient to shocks (Monarch and Schmidt-Eisenlohr 2016; Heise 2021). Finally, I also find that the exchange rate pass-through caused by the Brexit referendum is higher for French exporters with longer relationships. This finding complements Heise (2021) by showing that the length of a firm-to-firm relationship is also crucial in evaluating the pass-through of shocks to export prices (in addition to import prices). To conclude, this novel set of evidence highlights the importance of considering the customer margin in evaluating the impact of shocks on exporters.

1.1 | Contribution to the literature

More generally, this paper contributes to a large body of empirical research on how exporters become large and successful in new markets. These studies document that firms grow through the extensive and intensive margins (for a review, see Alessandria *et al.* 2021), network effects (Buus 2019; Eaton *et al.* 2021) or price dynamics (Bastos *et al.* 2018; Rodrigue and Tan 2019; Berman *et al.* 2019; Piveteau 2021). My findings extend this literature by showing that firms may also grow by adding new customers and reducing their prices in a customer relationship. This latter evidence contrasts with some recent studies (Argente *et al.* 2021; Fitzgerald *et al.* 2023) that conclude that exporter growth relies exclusively on non-price mechanisms, such as advertising and marketing. In this regard, a key novelty of my work is that the granularity of the French customs data allows to improve the estimation of price dynamics.

This paper also adds to the more recent—but rapidly growing—literature on firm-to-firm relationships in domestic and international trade (for a review, see Bernard and Moxnes 2018). The buyer dimension has been established to account for a significant portion of the cross-sectional variation in aggregate trade (Bernard *et al.* 2018; Carballo *et al.* 2018) and firms' size heterogeneity (Bernard *et al.* 2022). Alfaro-Urena *et al.* (2022) also find that adding new domestic buyers accounts for a large share of firms' growth. However, my findings depict a more nuanced picture of the role of the customer base, highlighting that the intensive margin is the predominant source of growth in a foreign market. Over two-thirds of French exporters' growth in a destination market arises from expanding their sales to existing buyers. Furthermore, while relationship dynamics in sizes and prices have been documented previously for importers (Heise 2021) and intra-national trade (Brugues 2022), to my knowledge, this paper is the first documenting such patterns for exporters.

Finally, this paper relates to the recent body of empirical research on the role of firm-to-firm relationships in firms' response to shocks. Monarch and Schmidt-Eisenlohr (2016) highlight the importance of long-lasting relationships for US importers and their suppliers abroad, showing that long-term relationships were more resilient in the 2008–9 financial crisis. In addition, Heise (2021) examines how relationships between firms affect the pass-through of shocks. Using US import data, Heise (2021) shows that prices are more responsive to cost shocks in long-term relationships than in new relationships. While my findings are consistent with the patterns observed by Monarch and Schmidt-Eisenlohr (2016) and Heise (2021), I complement their studies by investigating exporter rather than importer dynamics. Moreover, for the first time, I study the role of firm-to-firm relationships in firms' responses to the Brexit referendum.

This paper is organized as follows. Section 2 describes the data. Section 3 documents the role of firm-to-firm relationships in export market dynamics. Section 4 presents the results of the analysis of exporters' responses to the Brexit referendum. Finally, Section 5 concludes.

2 | DATA AND DESCRIPTIVE STATISTICS

The empirical analysis is conducted using detailed export data covering the universe of French firms.² The working dataset covers all transactions that involve a French exporter and an importing firm located in the European Union (EU) in the 1996–2017 period.³ The data are based on records of cross-border transactions collected by French customs. Each transaction shows the identifier of the exporting firm, the anonymized version of the VAT identifier of the importer, the date of transaction (month and year), the product category (at the 8-digit level of the combined nomenclature), the country of destination, and the value (in euros) and quantity (in kilograms or physical units) of the shipment for firms above the customs reporting threshold. To define exporters at the firm–CN08 product level, I ensure a consistent concordance across CN08 products over the sample period following Behrens *et al.* (2020). Because this methodology may cluster a large number of products in the same product category, I follow Fontaine *et al.* (2020) by replicating the main results for the 2002–6 period, which is not affected by major revisions of the combined nomenclature.

Besides implementing the cleaning suggested in Bergounhon *et al.* (2018), I deal with the cases in which physical trade flow may not be geographically confounded with financial trade flow. For instance, when a French firm ships a good to a plant in Germany owned by a UK VAT-registered firm, the trade flows are dropped to avoid any confounding factors in the analysis. The number of observations excluded is, however, small: 3% of total transactions, representing 5% of the total value of exports in 2017. Furthermore, I follow the literature by measuring prices as the ratio between export value and quantity. Export quantity is measured in either kilograms or physical units, as done in Fontaine *et al.* (2020). When studying price dynamics, I follow once more the work of Fontaine *et al.* (2020) by excluding transactions below 100 euros and removing prices that deviate from the median (in a firm–product–year) by more than 200%.

The main shortcoming of the data is that French firms have a legal obligation to submit a full declaration of their intra-EU exports if their total foreign sales were above 250,000 French francs in 1996–2000, above 100,000 euros in 2001–6, above 150,000 euros in 2007–10, and above 460,000 euros since 2011. Otherwise, they have to submit a simplified declaration, including all the variables listed before, except for the product category. In the analysis, I define an exporter at the firm–CN08 product level. This excludes all exporters not reaching in a year an export value above the reporting threshold. One potential concern is that the exclusion of these below-threshold transactions may create selection bias in the results. I deal with this issue by including below-threshold declarations to make sure that my conclusions are not affected by this selection bias.⁴

The remainder of this section describes some general patterns of the data. In 2017, there were more than 333,000 exporter–products and 582,000 importers, constituting more than 4.4 million exporter–importer–product relationships. [Online Appendix Table A.1](#) shows summary statistics on the number of French exporters, EU importers and exporter–importer relationships across destination countries.⁵ Exporters selling to multiple customers account for a disproportionate share of export sales in a destination. Roughly half of the French export value is accounted for by exporters serving at least two buyers (as shown in [Figure 1](#)), with French exporters selling on average to 2.2 buyers in each destination market in 2017. However, the distribution of the number of buyers is highly skewed. More than 70% of French exporters sold to only one buyer, and 90% of firms connected with fewer than three businesses in a destination,

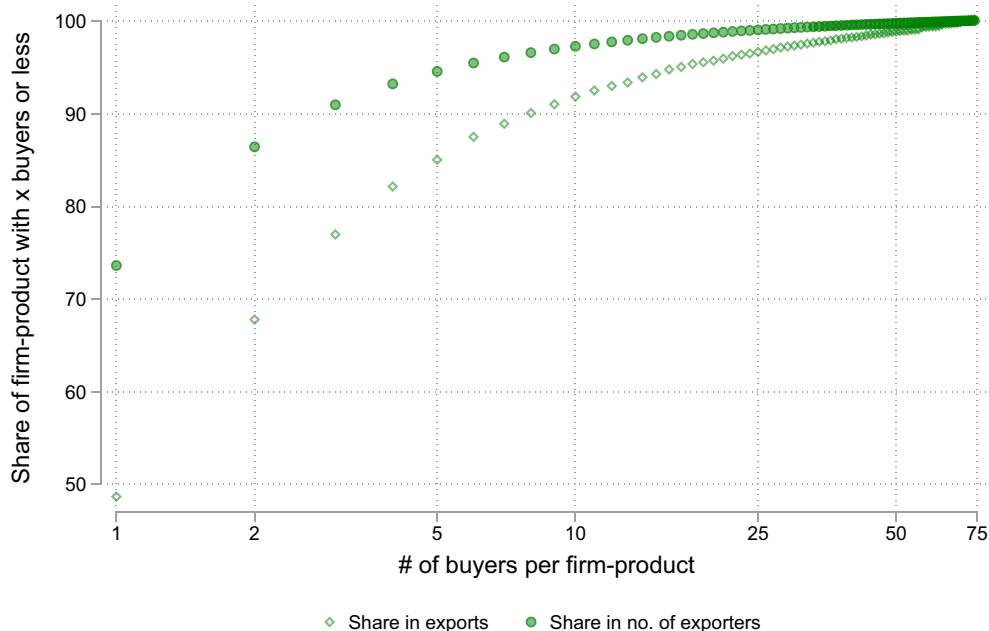


FIGURE 1 Customers cumulative distribution (across destination markets). *Notes:* This analysis is based on the whole sample for the year 2017. The diamonds indicate the average cumulative share of exporters with x buyers in export value. The circles indicate the average cumulative share of exporters with x buyers in the total number of exporters. These shares are averaged across destination markets.

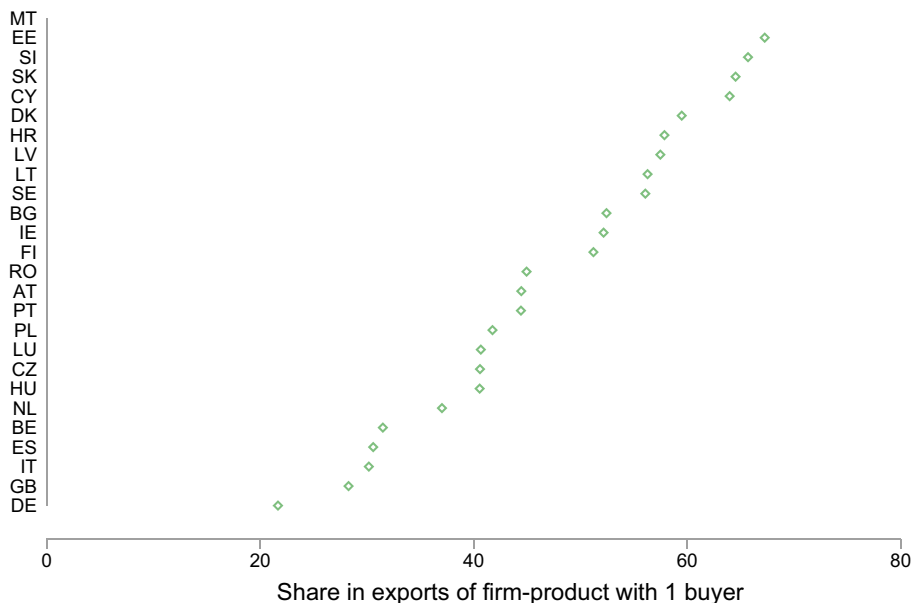


FIGURE 2 Share of exporters with one buyer (for each destination market). *Notes:* This analysis is based on the whole sample for the year 2017. The diamonds indicate, for each European country in the data, the share in export value of exporters with one buyer.

whereas some firms sell to over 100 businesses.⁶ Moreover, there is significant heterogeneity in the average number of customers that each exporter serves across markets. For example, French exporters have an average of 6.3 Italian importers but only 1.3 Latvian buyers (conditionally on exporting to Italy or Latvia separately). Figure 2 shows the share in exports of single-buyer exporters for each European market. Single-buyer exporters account for a small fraction of exports in large and open economies, such as Germany, Belgium, the UK, Italy and Spain.

To investigate further the determinants of the distribution of buyers across destination markets, I estimate a gravity model for the years 1996 to 2015.⁷ Table 1 summarizes the results. Column (1) shows that the number of buyers in a destination market is explained mainly by the size of the bilateral trade relationship between a French exporter and a European country. Market tenure in a destination market also matters in determining the number of buyers, suggesting that French exporters accumulate buyers over time. Columns (2) and (3) show that the number of buyers is also explained by traditional gravity variables. There are more buyers in closer and larger destination markets, and countries using the same language and currency. These findings about GDP and geographical distance are consistent with what Bernard *et al.* (2018) find for Norwegian exporters. Finally, wealthier destination markets (measured by their level of GDP per capita) are associated negatively with the number of buyers, suggesting that trade to richer countries is more concentrated in fewer buyers.

TABLE 1 Gravity model, 1996–2015.

	(1)	(2)	(3)
Export (log)	0.170*** (0.000475)	0.170*** (0.000475)	0.171*** (0.000476)
Market tenure	0.0294*** (0.000313)	0.0292*** (0.000309)	0.0299*** (0.000300)
GDP (log)		0.428*** (0.0118)	0.0931*** (0.000673)
GDP per capita (log)		−0.370*** (0.0130)	−0.124*** (0.00129)
Distance (log)			−0.0465*** (0.00206)
Contiguity			0.0762*** (0.00164)
Common language			0.191*** (0.00241)
Common currency			0.0823*** (0.00126)
Observations	15,313,488	15,313,488	15,313,488
R-squared	0.570	0.570	0.568
Fixed effects	<i>fpt-dt</i>	<i>fpt-d</i>	<i>fpt</i>

Notes: The dependent variable is the log number of buyers in a destination market in a year. Export (log) is the firm–product export value to a destination. Market tenure is the number of years that a firm–product has been continuously exporting to a destination. Distance (log) is the log of the weighted distance between France and the destination market. GDP (log) is the log of the destination’s GDP, and GDP per capita (log) is the log GDP per capita in the destination market. Column (1) includes firm–product–year and market–year fixed effects; column (2) includes firm–product–year and market fixed effects; column (3) includes firm–product–year fixed effects. The Stata command used is *reghdfe*. Robust standard errors are in parentheses.

***, **, * indicate p -values $p < 0.01$, $p < 0.05$, $p < 0.1$, respectively.

3 | ROLE OF THE CUSTOMER BASE IN EXPORT MARKET GROWTH

In this section, I exploit the unique information on the identity of customers in French export data to document the role of the customer base in exporter dynamics. The data highlight three main stylized facts: (i) the customer base contributes to export market growth, accounting for up to 28% of the growth in export value; (ii) throughout the lifecycle in a foreign market, old relationships play a key role, still making up more than half of the export value after 9 years in a destination market; and (iii) prices fall as relationships age.

3.1 | Customer accumulation in export markets

I start by disentangling the role of the accumulation of new customers in the growth of firm exports. The empirical strategy is based on Fitzgerald *et al.* (2023).⁸ In particular, I study the relationship between exporter growth in a market and the number of customers by estimating the specification

$$\log(Y_{ipdt}) = \beta' (Tenure_{ipdt} \otimes Spell\ Length_{ipdt}) + \gamma Cens_{ipdt} + \eta_{ipt} + \delta_{pdt} + \varepsilon_{idt}, \quad (1)$$

where Y_{ipdt} is number of buyers for exporter i and product p in the destination market d in year t , $Tenure_{ipdt}$ is a vector of dummy variables for tenure of seller i and product p in destination market d , $Spell\ Length_{ipdt}$ is the spell length of seller i and product p to destination country d , \otimes denotes the Kronecker product, and $Cens_{ipdt}$ is a dummy variable to account for censored observations.⁹

This specification makes it possible to control for supply-side factors that affect a firm's performance in any given period using firm–product–year fixed effects η_{ipt} , as well as for common demand shocks across French exporters using product–destination–time fixed effects δ_{pdt} .¹⁰ Moreover, I identify separately the dynamic lifecycle contribution of market tenure from selection effects in different spell lengths.¹¹ I address issues of selection by separating the dynamics over the market tenure of an exporter from the performance of firms with different spell lengths. As a result, the vector β includes the coefficients of interest, which capture the effects of selection in each spell length's base values, as well as the lifecycle dynamics in the evolution of each outcome for each spell length.

The estimated coefficients presented in Figure 3 show evidence of selection effects across different spell lengths and lifecycle dynamics. In particular, I find two new results concerning the dynamics of the customer base in export markets: (i) there is a pattern of selection where firms that serve a market for longer have more customers when they first enter the market; (ii) across all spell lengths, French exporters exhibit a lifecycle pattern, accumulating customers at the beginning of an export spell, and losing customers towards the end. The former finding highlights that the customer base plays a key role in stabilizing a firm's activity in an export market, complementing previous studies on exporter survival in foreign markets (Eaton *et al.* 2021; Monarch 2022). The latter finding extends the literature by showing that the accumulation of customers is another channel through which exporters can grow in a foreign market.

3.1.1 | Robustness

The key stylized facts from Figure 3 are robust to alternative specifications and various cuts of the data.¹² I run three main sets of robustness checks.

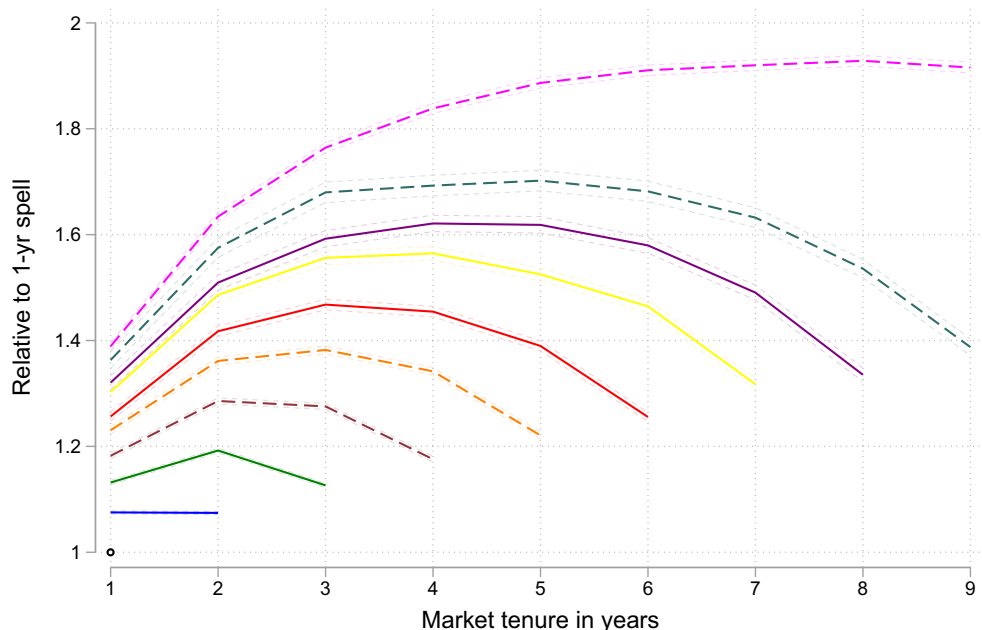


FIGURE 3 Customer accumulation by spell length and tenure. *Notes:* This figure shows the evolution of the number of buyers at the firm–product–market level with market tenure, allowing trajectories to differ by export spell length. Trajectories are conditional on firm–product–year and product–market–year fixed effects. 95% confidence intervals are plotted. For each trajectory, the omitted category is that of spells of exactly one year, where the dependent variable of these one-year spells is normalized to 1, and all other coefficients are relative to the one-year spell.

Alternative specifications. I start by testing whether the facts hold across different specifications. First, I vary the level at which spell lengths and market tenure are top-coded, and the findings remain consistent. Figures B.1–B.3 of the [Online Appendix](#) show the baseline results with market tenure and spell length top-coded at 8, 12 and 14 years. Second, to deal with the clustering of products in the same product category due to product concordance, I run the baseline specification on the 2002–6 period, which is not affected by major revisions of the combined nomenclature (as discussed in Section 2). The results presented in Figure B.4 confirm my findings. Finally, firms may choose to enter more attractive markets earlier than less attractive markets (e.g. due to high demand). To address this, I control for a firm’s export value in a destination market to condition the trajectories for the size of the trade (see Figure B.5). The results are unchanged qualitatively, although the magnitude of the coefficients is roughly halved. In Figure B.6, I also augment the baseline specification with firm–product–cohort fixed effects. The growth in the number of buyers is flatter than the baseline results for the first two years; otherwise, the findings are unchanged both qualitatively and quantitatively.

Data concerns. I deal with several shortcomings in the data that may affect my findings. As a first check, I address the fact that I observe firms exporting above the reporting thresholds (see the discussion in Section 2). To this end, I replicate the analysis using the whole universe of French exporters, including below-threshold transactions. The results reported in Figure B.7 of the [Online Appendix](#) are unchanged qualitatively, and are consistent with my conclusions, suggesting that selection bias has little influence on my results. Another issue in the data is that because of the EU enlargement process, the number of export markets changed during the period considered in the analysis. As a result, the data include 14 countries in 1996, then 10 countries are added in 2004, two more (Bulgaria and Romania) in 2007, and Croatia in 2013. To deal with this heterogeneity in the set of destination markets, which could bias the results, I replicate the

key findings for only the EU founder countries. The results are presented in Figure B.8, which shows that the main conclusions are unchanged. As a final check, I also control for partial-year effects. The fact that firms may enter or exit markets in different months of a calendar year may affect the observed relationship between the number of buyers and tenure (Bernard *et al.* 2017). This would be especially problematic in the present analysis because I examine changes related to the first year of activity. If a firm enters a destination market in December, then its exports will be significantly lower than a twin firm that started exporting in January. I correct this issue by excluding the first year of activity in an export market for each firm–product. The results shown in Figure B.9 are unchanged qualitatively, although, as expected, they show a smaller growth in buyers in the second year of activity.

Exporter heterogeneity. I also account for the fact that export growth may be heterogeneous across different firm types. First, I estimate the lifecycle trajectories across firm sizes, measured by the total value of exports. Figures B.10 and B.11 of the [Online Appendix](#) show that the key findings are unchanged qualitatively. The main difference is that the lifecycle pattern in buyer accumulation is more pronounced for small and medium exporters (below the 75th percentile of the distribution of export values) and less for big exporters (above the 75th percentile). In particular, the comparison of the top trajectories (i.e. spell lengths of 10 or more years) indicates that only big exporters are capable of accumulating buyers continuously over time. The trajectory for small and medium exporters becomes flat after 6 years. This suggests that acquiring new buyers is costly, and firms must be able to invest to grow. Second, an alternative way to characterize firm heterogeneity is to consider the number of foreign markets served by French exporters. When I examine firms serving either up to four or more than four destination markets, the main conclusions are unchanged. The results are reported in Figures B.12 and B.13.

3.2 | Decomposition of the role of the customer base in exporter dynamics

The results presented above show that exporters accumulate buyers in a destination market over the course of their lifecycle. In this subsection, I explore how much of the firm's growth in a destination market is explained by the buyer margin. I decompose the value of exports into the number of buyers and the average value per buyer ([Online Appendix Table A.3](#)).¹³ These results are obtained by taking the ratio of the beta coefficient associated with the number of buyers and the beta associated with the value of exports (estimating equation (1)). The results show that the customer base accounts for an increasing proportion of the export value in longer spell lengths, contributing a maximum of 18% to the export value of two-year spells and 28% of the longest spells. This evidence implies that increasing sales to existing customers remains the most important channel through which exporters grow in a foreign market.

I further decompose the customer base by identifying the role of old relationships in exporters' growth dynamics.¹⁴ Figure 4 shows the average share of old buyers in total exports and in the total number of buyers by relationship length. I find that old buyers are important for French exporters throughout their lifecycle. Indeed, more than half of exports are still created by old buyers after 9 years in a foreign market. This implies that a subset of relationships established at entry in a foreign market plays a crucial role in exporters' growth trajectories. Moreover, firm-to-firm relationships have high turnover, with old buyers representing on average only one-third of the customer base after 4 years in a foreign market.

3.3 | Price dynamics in firm-to-firm relationships

Given that the intensive margin of a customer relationship contributes to at least 72% of the growth in a foreign market (as shown in [Online Appendix Table A.3](#)), it is crucial to shed light on

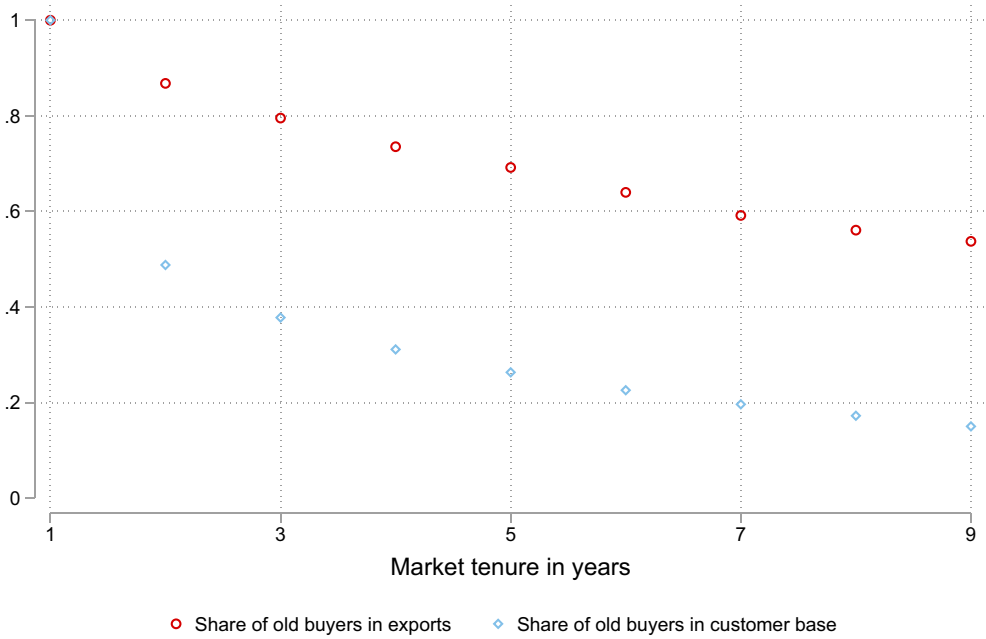


FIGURE 4 Share of old relationships by market tenure. *Notes:* This figure shows the average share of old relationships in total exports and number of buyers by tenure in a foreign market. A firm-to-firm relationship is defined as *old* when it is established in the first year of activity in a foreign market.

the channels through which exporters can grow their sales with a buyer. In this subsection, I turn my attention to the evolution of prices with each customer over the tenure of the relationship by estimating the following regression specification:

$$\log(\text{Price}_{ipjt}) = \beta' \text{Relationship Length}_{ipjt} + \gamma \text{Cens}_{ipjt} + \eta_{ipdt} + \delta_{pjt} + \varepsilon_{ijdt}, \quad (2)$$

where Price_{ipjt} is the price charged by exporter i and product p to customer j in period t , $\text{Relationship Length}_{ipjt}$ is a vector of dummy variables for tenure (in years) of seller i and product p with customer j , and Cens_{ipjt} is a dummy variable accounting for censored observations. The vector β is the set of coefficients of interest, which capture the evolution of prices over the tenure with a customer. Moreover, I use exporter–product–destination–year fixed effects η_{ipdt} to control for supply-side factors that affect a firm's performance within a destination in any given period. As a result, the coefficients of interest are identified by French exporters selling to multiple buyers within a destination country. I also control for customer-specific factors (common to all French exporters) using product–customer–year fixed effects δ_{pjt} . To identify the tenure in exporter–product–buyer relationships, I use the approach detailed in Section C of the [Online Appendix](#). Table C.2 presents summary statistics across censoring types (uncensored, left-censored, right-censored and left–right censored). It is interesting to note that uncensored relationships represent roughly 75% of the sample, accounting for 45% of exports. I also find that shorter relationships (uncensored relationships) trade less and set higher prices compared to long-lasting relationships (left–right censored relationships). These findings are in line with Heise (2021), who uses firm-to-firm import data for the USA.

Figure 5 presents the results from estimating equation (2). I find that relationship-specific prices exhibit significant dynamics in a customer relationship over the course of a firm's tenure. After 9 years, the average relationship-specific component of the price decreases by more than 2% from the initial price. This finding is in line with some recent studies. I complement the

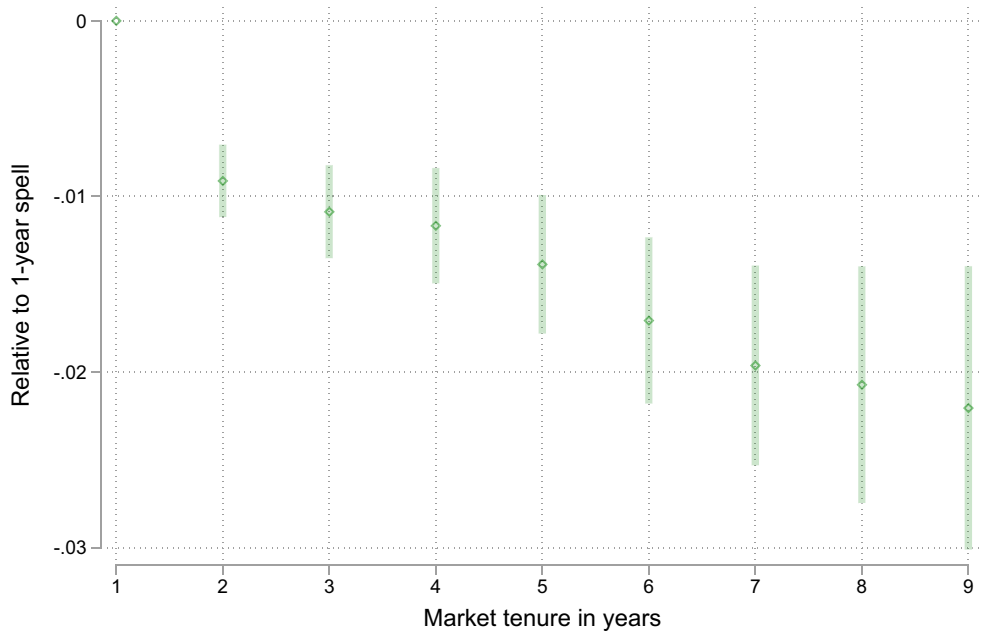


FIGURE 5 Price dynamics by relationship length. *Notes:* This figure shows the evolution of prices at the firm–product–buyer level over relationship length. The trajectory is conditional on firm–product–market–year and product–buyer–year fixed effects. The omitted category is spells that last one year. 95% confidence intervals are plotted.

work of Heise (2021), who finds that US importers' prices decline by roughly 3% after 5 years of activity (using monthly data). Moreover, my result is consistent with Berman *et al.* (2019) and Bastos *et al.* (2018), who use customs data at the destination level for France and Portugal, and find (using different econometric techniques) a decreasing relationship between prices and tenure in an export market. In particular, Berman *et al.* (2019) establish that (on average) a product price is 7% lower than the initial price after 7 years in the market. Using data on consumer food sales from Nielsen, Argente *et al.* (2023) also find that prices decline by an average of 2% per year, with the price at the end of the fourth year of activity almost 8% lower than the price at entry. However, my finding is in contrast with Fitzgerald *et al.* (2023) who, using more aggregated customs data for Ireland, find no dynamics for prices over the tenure in a destination market.

Finally, by estimating equation (2) for export values and quantities, I find that both revenues and quantities show a lifecycle trajectory with tenure in a customer relationship (refer to Figures D.1 and D.2 of the [Online Appendix](#)), increasing in the initial years and decreasing before the termination of the relationship. This novel set of evidence, coupled with the observed price decrease over the course of a relationship, implies that quantities increase more rapidly than sales during the early years of a relationship.

3.3.1 | Robustness

The key result from Figure 5 (i.e. the decline in prices) is robust to alternative specifications and various cuts of the data. The results of these analyses are reported in the [Online Appendix](#). First, I test that my conclusion is robust to alternative specifications. As shown in Figure D.3 of the [Online Appendix](#), prices decline even when controlling for selection in different spell lengths.

Second, the use of product–customer–year fixed effects is highly demanding, excluding many observations from the analysis. In column (2) of [Online Appendix Table A.4](#), I replicate the baseline specification using product–market–year fixed effects to control for demand factors common to all French exporters. While the magnitude of the coefficients is lower, the result confirms the price reduction within a customer relationship. In column (3), I control for the possibility that the fact is driven by the presence of censored observations by dropping them from the analysis. The conclusion is unchanged.

Finally, over a long period, the product concordance groups together an increasing number of product categories, which may undermine the precision of the unit values. I thus examine the dynamics of prices in the 2002–6 period (as discussed in Section 2). As shown in column (4) of [Online Appendix Table A.4](#), the results remain partially consistent in this period. The coefficients show an initial decrease in prices until year 3 of a relationship, and a non-significant difference (relative to the initial year) in year 5.

3.4 | Mechanisms

In this subsection, I explore the potential mechanisms at play behind my findings, providing suggestive evidence to support some mechanisms over others.

3.4.1 | Learning

The literature on exporter dynamics suggests that growth may be driven by firms' learning about idiosyncratic demand in a destination market (Berman *et al.* 2019), which may also determine the accumulation of customers. If this is the case, then exporters re-entering an export market should differ from first-time exporters, as the former have learned previously about the market's demand. Accordingly, in Figures B.14 and B.15 of the [Online Appendix](#), I allow trajectories to differ between *first-timers* (firms entering a market for the first time) and *re-entrants* (firms already exporting at least one product to that market). While first-timers have higher growth rates than re-entrants in the first years, the main conclusions are unchanged qualitatively. Similarly, I allow trajectories to differ between the first time a firm–product enters a market and its re-entry into that market (Figures B.16 and B.17). The key results are replicated qualitatively, while the main difference is that the growth in the number of buyers is slightly steeper for first-timers than for re-entering firm–products.

In addition, I adopt an alternative definition of tenure in a foreign market to test the role of learning. I define market tenure as the number of non-consecutive years for which a firm has been selling to a destination market. This measure avoids resetting the counter to zero every time the firm exits the market, and it accounts for the role of learning in explaining exporter dynamics. Figure B.18 of the [Online Appendix](#) confirms the lifecycle pattern in the accumulation of buyers by market tenure and spell length using this alternative definition of market tenure. However, while the growth in the number of buyers is lower, the lifecycle pattern is more pronounced with this definition. In line with Fitzgerald *et al.* (2023), these findings suggest that learning about idiosyncratic demand seems to be only a minor channel in explaining customer growth dynamics.

3.4.2 | Customer markets model

A plausible alternative explanation is that firms expand their customer base through price dynamics by first charging low markups to shift out demand and then increasing them gradually as

the customer base rises (Fitzgerald *et al.* 2023). While I cannot observe markups directly, the firm-to-firm transaction data allow me to control for a rich set of fixed effects and rule out the role of certain supply-side factors. If I assume that exporters' marginal costs are constant in a destination market, then an increase in prices (when estimating equation (2)) would be equivalent to a rise in markups; this would provide suggestive evidence in support of this model. However, when examining price dynamics (Subsection 3.3), I find that prices decline in a customer relationship, contradicting this conjecture. As a robustness check, this finding holds true when looking only at old relationships (see column (1) of [Online Appendix Table A.5](#)). Finally, this fact remains consistent when examining price dynamics at the firm–product–market level as the unit of observation (see column (5) of [Table A.2](#)). Therefore the customer markets model appears to be inconsistent with this set of evidence.

3.4.3 | Customization

Understanding how exporters reduce their prices over the duration of a customer relationship sheds light on how firms may grow their sales in a new market. One plausible explanation is that the average decline in prices may be due to improvements in customer-specific marginal costs. I test this conjecture by exploiting the different natures of products traded by French exporters. Specifically, I examine whether customized products, which should entail substantial relationship-specific investments, show larger price reductions. First, I use the Rauch (1999) product classification to distinguish between differentiated and homogeneous goods based on whether the goods are traded on organized exchanges (possessing a reference price) or not. As shown in column (2) of [Online Appendix Table A.5](#), prices decline more for differentiated than homogeneous products. Second, I rely on the measure of relationship stickiness developed by Martin *et al.* (2020), as customized relationships should lead *stickier* firm-to-firm relationships. Columns (4) and (5) confirm this prediction, with prices falling only for products with high stickiness.¹⁵

Third, I would also expect high-quality products to require larger customer-specific investments. To test this hypothesis, I build on the approach of Khandelwal *et al.* (2013) and Martin and Mejean (2014) to measure quality at the product level. I adapt their strategy by estimating the quality of a variety, defined as a specific good sold by a firm in a given relationship, as follows:

$$\theta_{ipjt} = \frac{\hat{e}_{ipjt}}{\sigma_p - 1},$$

where \hat{e}_{ipjt} is the residual from regressing the quantity of product p sold by firm i to buyer j in year t to its price, scaled by the elasticity of substitution σ_p , and product and country–year fixed effects. The intuition is that conditional on price and market conditions, a higher demanded quantity reflects higher quality. I then aggregate these estimates at the destination market level; relationships with quality above (below) the median quality value (calculated at the year–product–country level) are considered as high (low) quality. Since the quality estimates are defined in deviation with respect to the mean quality of each year's exports, across French firms serving the same destination market, I identify the quality of a relationship throughout its spell at the year of entry in the destination market.¹⁶ Columns (6) and (7) of [Online Appendix Table A.5](#) show that the reduction in prices occurs only in high-quality relationships. To conclude, this novel set of findings provides suggestive evidence that the observed decline in prices over the tenure of a relationship may be driven by the customization of products and related cost reductions (e.g. through customer-specific productivity improvements).¹⁷

4 | FIRM-TO-FIRM RELATIONSHIPS IN RESPONSE TO SHOCKS

In this section, I explore how French exporters adjust their firm-to-firm relationships in response to shocks that affect their access to export markets. I exploit the natural experiment of the 2016 Brexit referendum to test how firms adjust their patterns of trade to the UK in response to an unexpected increase in trade policy uncertainty and a concurrent depreciation of sterling, reducing both competitiveness and market access for French exporters.

4.1 | Predicted response of French exporters to the Brexit referendum

The UK's decision to leave the EU, based on the Brexit referendum on 23 June 2016, meant that the UK entered into a renegotiation period to determine the new trading relationship with the EU (that ended in January 2020). The renegotiation of a trade agreement introduces the uncertainty that future tariff rates or barriers could increase. This was the case for the trading environment between the UK and all the EU trading partners. It became possible that the trading relationship could include tariff barriers (if, for example, no free trade agreement was agreed between the UK and EU), as well as non-tariff barriers such as changes in regulations and increased delays from customs procedures.¹⁸ The Brexit referendum also initiated a significant depreciation of sterling, which made French exports less competitive in the UK market.¹⁹ The combination of trade policy uncertainty and currency movements equated to a loss of competitiveness and a reduction in market access for French exporters to the UK. In the next subsection, I explore how they respond to these shocks.

4.2 | Intensive margin of firm-to-firm relationships

The result of the Brexit referendum on 23 June 2016 was unexpected by forecasters and the markets. Betting markets predicted only a 30% chance of a leave vote over the year running up to the referendum, a probability that had dropped to just 12% on the day of the referendum itself. I exploit this unexpected change in market access for French exporters in a difference-in-differences strategy to investigate how French firms adjust their firm-to-firm relationships in response to changing demand conditions. I estimate the impact of this reduction in access to the UK market before and after the referendum result (first difference) and relative to other EU markets (second difference). I build on the empirical strategy of Fernandes and Winters (2021), and estimate the specification

$$\Delta \ln Y_{ipbt} = \beta_1 \text{Brexit}_{dt} + \gamma \pi_{dt} + \delta \Delta \ln \text{RGDP}_{dt} + \delta_{ipd} + \alpha_t + \varepsilon_{ipbt}, \quad (3)$$

where $\Delta \ln Y_{ipbt}$ is defined as the year-over-year growth (log difference from the same month in the previous year) in export value, quantity and price for firm i and product p with buyer b in destination market d at time t . I define an indicator for the Brexit referendum Brexit_{dt} that takes value 1 for French exporters who sell to the UK in the period after the Brexit Referendum (June 2016), and value 0 for all other destinations and periods. This analysis is based on the monthly export data to measure the pre- and post-referendum periods correctly. I also include a full set of time α_t and firm-product-destination δ_{ipd} fixed effects. The former set of fixed effects controls the general economic conditions facing French exporters in a particular month, while the latter absorbs any time-invariant unobservable characteristics specific to a firm, product and destination. Here, $\Delta \ln \text{RGDP}_{dt}$ is the log difference in the quarterly real GDP of the importer, from the same quarter in the previous year, and π_{dt} is the year-over-year monthly inflation of the

TABLE 2 Intensive margin responses to Brexit.

Variables	$\Delta \ln(\text{exp})$ (1)	$\Delta \ln(\text{quantity})$ (2)	$\Delta \ln(\text{price})$ (3)	$\Delta \ln(\text{exp})$ (4)	$\Delta \ln(\text{quantity})$ (5)	$\Delta \ln(\text{price})$ (6)
Brexit	−0.0473*** (0.00680)	−0.0122** (0.00582)	−0.0350*** (0.00129)	−0.0481*** (0.00686)	−0.0133** (0.00584)	−0.0349*** (0.00128)
Observations	9,620,724	9,617,463	9,617,463	9,620,128	9,616,685	9,616,685
R-squared	0.058	0.061	0.051	0.089	0.090	0.079
Fixed effects	<i>fpd-t</i>	<i>fpd-t</i>	<i>fpd-t</i>	<i>fpb-t</i>	<i>fpb-t</i>	<i>fpb-t</i>

Notes: Observations are by firm–product–buyer–month. Foreign country inflation, using the consumer price index, and real GDP growth rates are always included. The Stata command used is *reghdfe*. Robust standard errors, clustered by country, are reported in parentheses. ***, **, * indicate p -values $p < 0.01$, $p < 0.05$, $p < 0.1$, respectively.

destination country, using the consumer price index. Standard errors are clustered by country to account for the correlation of observations in a country.

Table 2 reports the results from estimating equation (3). I find that the coefficient of interest is negative and statistically significant for export value, quantity and price. This suggests that because of the Brexit shock, export values, quantity and price growth rates fell, relative to other countries, in an exporter–product–importer relationship. The export value and quantity response estimate in columns (1) and (2) imply 4.7% and 1.2% reductions in export and quantity growth after the shock, relative to other markets, whereas the coefficient in column (3) indicates a 3.5% decrease in prices. These conclusions hold true in columns (4)–(6), which control for exporter–product–importer and time fixed effects, thus identifying the effect from the variation within a customer relationship. My estimates are in line with the results of Fernandes and Winters (2021), using customs data for Portugal.²⁰ My analysis extends their work by looking at the effect of Brexit on firm-to-firm dynamics.

4.3 | The role of the length of a relationship

In the previous subsection, I showed that, following the referendum shock, on average, French firms reduced export volume and export price growth to the UK market. However, that does not imply that all exporters adjust their prices. Some firms may have more pricing power, so in this subsection, I test whether that pricing power is related to the length of their relationships with UK importers. As shown by Heise (2021), long-term relationships are more likely to use either implicit or explicit contracts, so they might exhibit higher pass-through of shocks. To test this hypothesis, I estimate the specification

$$\begin{aligned} \Delta \ln Y_{ipbt} = & \beta_1 \text{Brexit}_{ct} + \beta_2 \text{Relationship Length}_{ipbt} \\ & + \beta_3 (\text{Brexit}_{ct} \times \text{Relationship Length}_{ipbt}) \\ & + \gamma \pi_{dt} + \delta \Delta \ln \text{RGDP}_{dt} + \alpha_{pd} + \alpha_t + \varepsilon_{ipbt}. \end{aligned} \quad (4)$$

I augment the previous specification with an interaction term between the dummy accounting for the Brexit shock and the length of the relationship (measured in years) between exporter i and importer b for product p . The results from estimating equation (4) are presented in Table 3. I find a positive coefficient on the interaction term of interest for all the dependent variables (significant at the 1% level). This confirms that export value, quantity and price growth to the UK were higher for longer relationships. This implies that long-lasting relationships are less responsive to negative shocks and that the exchange rate pass-through is higher when the relationship is longer.

TABLE 3 Heterogeneous responses across relationship length.

Variables	$\Delta \ln(\text{exp})$ (1)	$\Delta \ln(\text{quantity})$ (2)	$\Delta \ln(\text{price})$ (3)
Relationship Length	-0.0220*** (0.00286)	-0.0211*** (0.00262)	-0.000902 (0.000551)
Brexit	-0.137*** (0.0112)	-0.0639*** (0.0115)	-0.0733*** (0.00358)
Brexit \times Relationship Length	0.0155*** (0.00212)	0.00890*** (0.00202)	0.00662*** (0.000578)
Observations	9,620,724	9,617,463	9,617,463
R-squared	0.058	0.061	0.051

Notes: Observations are by firm–product–buyer–month. All specifications include firm–product–market and year fixed effects. Foreign country inflation, using the consumer price index, and real GDP growth rates are always included. The Stata command used is *reghdfe*. Robust standard errors, clustered by country, are reported in parentheses.

***, **, * indicate p -values $p < 0.01$, $p < 0.05$, $p < 0.1$, respectively.

This evidence highlights the importance of considering the customer margin in evaluating the impact of shocks on exporters. It also confirms the conclusion of Heise (2021) that the length of a firm-to-firm relationship is a crucial factor when studying the effect of shocks on the pass-through of prices.

4.3.1 | Robustness

I now assess the robustness of the facts described in Subsection 4.3. These analyses are shown in Section E of the [Online Appendix](#). I start by investigating the sensitivity of the results using different control groups. In Table E.1, I estimate the same specifications as those reported in Table 3, but in columns (1)–(3), the sample is restricted to non-eurozone countries. This analysis compares French exporter dynamics in the UK market with those in countries not part of the euro area. The sample considers only eurozone countries in columns (4)–(6). The coefficients of the interaction term remain positive and statistically significant at the 1% level, and they are of similar magnitude. In Table E.2, I restrict the sample to include only Belgium, Germany, Italy, Spain and the UK (as done in Martin *et al.* 2019) to compare the changes in firm-to-firm relationships in the UK with EU countries with similar trade patterns and levels of economic development. My conclusions also hold for this subset of countries.

Finally, I verify that my findings hold for an alternative measure of the strength of a relationship. Following Heise (2021), I use the cumulated number of transactions in an importer–exporter relationship as a measure of the intensity of that relationship. As for relationship length, the higher the number of transactions, the more likely that the relationship presents either an implicit or an explicit contract. [Online Appendix](#) Table E.3 confirms my conclusions.

5 | CONCLUSIONS

This paper provides novel evidence of the importance of firm-to-firm relationships in evaluating firm dynamics in new markets. In particular, I present four main empirical facts. (i) The customer base contributes to exporters' post-entry dynamics, accounting for up to 28% of the growth in export value. (ii) Long-lasting relationships are predominant in French exporters' growth

trajectories, still accounting for more than 50% of the average export value in a foreign market after 9 years of activity. (iii) Exporters may expand their sales to existing customers by reducing their prices over the course of a relationship, with larger reductions for customized products. (iv) Long-lasting relationships reduce the responsiveness of exporters to cost shocks and increase exchange rate pass-through.

This novel set of findings sheds light on the mechanisms through which exporters may grow in a new market. I provide the first direct evidence that firms expand by accumulating customers over their tenure, although successful growth is attributed largely to the capacity to retain and increase sales to a subset of relationships established in the year of entry into a new market. Furthermore, the observed price reductions dismiss the possibility that firms might decrease their markups to attract new customers. Instead, the results lend support to a model where firms continuously add new customers (e.g. through investing in marketing and advertising) while expanding their sales to long-lasting relationships through price reductions. These facts should be considered when modelling market penetration and market growth dynamics.

My results also have important policy implications. I show that firm-to-firm relationships play a crucial role in informing policymakers about how firms may respond to shocks. My analysis complements previous studies by highlighting how the length of a relationship is a crucial margin of adjustment that should be considered when evaluating firms' responses to cost shocks. This is especially true in the context of Brexit, as the discussion of the UK–EU trading relationship remains unresolved.

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ENDNOTES

- ¹ Throughout the text, old buyers and old relationships are used interchangeably.
- ² For more information on the data, see Bergounhon *et al.* (2018).
- ³ In 2017, 60% of French exports were to the EU.
- ⁴ Since below-threshold transactions miss the product dimension, for this analysis, I aggregate the data at the firm level.
- ⁵ Hereafter, the term exporter will be used to refer to an exporter–product combination.
- ⁶ There is also heterogeneity in the number of customers that French exporters serve in each destination, even in narrowly defined product categories.
- ⁷ The gravity variables are taken from the CEPII database, and they are available until 2015.
- ⁸ This approach was introduced by Fitzgerald *et al.* (2023) to study Irish exporters' growth trajectories in a destination market. I build on this method to examine customer accumulation in a market.
- ⁹ A detailed explanation of how these variables are constructed is available in Section C of the [Online Appendix](#).
- ¹⁰ The empirical strategy is identified by French exporters selling to multiple countries. As a result, exporters selling to only one country are removed from the analysis. These exporters represent a minority; French exporters selling to multiple countries accounted for 95% of export value in 2017.
- ¹¹ If I do not condition on the spell length of an exporter, then I might incorrectly capture dynamics over the time an exporter operates in a market. For example, exporters might be more likely to exit from markets where there is low demand. Then, by pooling across all export episodes, I might observe that the number of buyers increases over the duration in a market, even if there are no dynamics in each export episode. Estimating the dynamics of each export episode separately by its spell length allows the identification of the effects of selection, as well as different dynamics across export episodes of different spell lengths.
- ¹² Results are presented graphically for brevity in Section B of the [Online Appendix](#). However, full regression output tables are available upon request.
- ¹³ Value_{it} = number of buyers \times average value per buyer.
- ¹⁴ An exporter–importer relationship is defined as *old* when it is established in the first year of activity in a foreign market.

- ¹⁵ High (low) stickiness products are defined as having a value of relationship stickiness above (below) the median value. The conclusion stays consistent when defining high (low) stickiness as having a value above the 75th percentiles (below the 25th percentiles).
- ¹⁶ I thus assume that each relationship's relative position in the distribution of qualities is constant over time.
- ¹⁷ An alternative plausible mechanism explaining the decline in prices could be related to changes in relationship-specific markups. Assuming that exporters' marginal costs are constant (even within a customer relationship), I can conclude that the reduction in prices may also reflect changes in relationship-specific markups. However, while assuming constant customer-specific marginal costs is a strong assumption, I cannot rule out that this channel may be playing a role in my results.
- ¹⁸ Immediately following the referendum, the UK government announced that it intended to leave the EU Customs Union and renegotiate a new trade agreement with the EU. The outside option, or threat point, was that tariffs for UK exporters to the EU were defined clearly by the EU's World Trade Organization (WTO) commitments. If negotiations were to break down and the UK were to leave with no trade agreement in place, then the UK would revert to trading with the EU as a WTO member. However, the threat point tariffs for EU (including French) exporters to the UK in such a scenario were defined less clearly. The UK would have the option of creating its own WTO tariff commitments as a member of the WTO. Indeed, in March 2019, the UK published its *No deal* tariff schedule, which departed significantly from the EU's applied most favoured nations tariffs.
- ¹⁹ Sterling fell by 10% against the euro on 24 June 2016 when the result of the Brexit referendum was announced. This affected French exporters by increasing UK inflation and making French exports less competitive in the UK market (by either mechanically increasing the sterling cost of euro-denominated exports or lowering the euro value of sterling-denominated exports).
- ²⁰ For example, Fernandes and Winters (2021) find a coefficient of 0.25 when looking at the effect of Brexit on Portuguese exporters' prices to the UK, relative to other markets.

REFERENCES

- Alessandria, G., Arkolakis, C. and Ruhl, K. J. (2021). Firm dynamics and trade. *Annual Review of Economics*, **13**, 253–80.
- Alfaro-Urena, A., Manelici, I. and Vasquez, J. P. (2022). The effects of joining multinational supply chains: new evidence from firm-to-firm linkages. *Quarterly Journal of Economics*, **137**(3), 1495–552.
- Antràs, P. and Chor, D. (2013). Organizing the global value chain. *Econometrica*, **81**(6), 2127–204.
- Argente, D., Fitzgerald, D., Moreira, S. and Priolo, A. (2021). How do firms build market share? Available online at https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3831706 (accessed 29 December 2023).
- , Lee, M. and ——— (2023). The life cycle of products: evidence and implications. *Journal of Political Economy*. <https://doi.org/10.1086/726704>.
- Arkolakis, C. (2010). Market penetration costs and the new consumers margin in international trade. *Journal of Political Economy*, **118**(6), 1151–99.
- Bastos, P., Dias, D. A. and Timoshenko, O. A. (2018). Learning, prices and firm dynamics. *Canadian Journal of Economics*, **51**(4), 1257–311.
- Behrens, K., Boualam, B. and Martin, J. (2020). Are clusters resilient? Evidence from Canadian textile industries. *Journal of Economic Geography*, **20**(1), 1–36.
- Bergounhon, F., Lenoir, C. and Mejean, I. (2018). A guideline to French firm-level trade data. Unpublished manuscript.
- Berman, N., Rebeyrol, V. and Vicard, V. (2019). Demand learning and firm dynamics: evidence from exporters. *Review of Economics and Statistics*, **101**(1), 91–106.
- Bernard, A. B., Bøler, E. A., Massari, R., Reyes, J.-D. and Taglioni, D. (2017). Exporter dynamics and partial-year effects. *American Economic Review*, **107**(10), 3211–28.
- , Dhyne, E., Magerman, G., Manova, K. and Moxnes, A. (2022). The origins of firm heterogeneity: a production network approach. *Journal of Political Economy*, **130**(7), 1765–804.
- and Moxnes, A. (2018). Networks and trade. *Annual Review of Economics*, **10**(1), 65–85.
- , ——— and Ulltveit-Moe, K. H. (2018). Two-sided heterogeneity and trade. *Review of Economics and Statistics*, **100**(3), 424–39.
- Brugues, F. (2022). Take the goods and run: contracting frictions and market power in supply chains. Unpublished manuscript.
- Buus, M. T. (2019). Network effects and dynamic pricing in export markets. Unpublished manuscript.
- Carballo, J., Ottaviano, G. I. and Martincus, C. V. (2018). The buyer margins of firms' exports. *Journal of International Economics*, **112**, 33–49.
- Drozdz, L. A. and Nosal, J. B. (2012). Understanding international prices: customers as capital. *American Economic Review*, **102**(1), 364–95.
- Eaton, J., Eslava, M., Jinkins, D., Krizan, C. J. and Tybout, J. R. (2021). A search and learning model of export dynamics. NBER Working Paper no. 29100.

- Fernandes, A. P. and Winters, L. A. (2021). Exporters and shocks: the impact of the Brexit vote shock on bilateral exports to the UK. *Journal of International Economics*, **131**, 103489.
- Fitzgerald, D. and Haller, S. (2018). Exporters and shocks. *Journal of International Economics*, **113**, 154–71.
- , ——— and Yedid-Levi, Y. (2023). How exporters grow. *Review of Economic Studies*. <https://doi.org/10.1093/restud/rdad070>.
- Fontaine, F., Martin, J. and Mejean, I. (2020). Price discrimination within and across EMU markets: evidence from French exporters. *Journal of International Economics*, **124**, 103300.
- Heise, S. (2021). Firm-to-firm relationships and the pass-through of shocks: theory and evidence. Working Paper no. 896, Federal Reserve Bank of New York.
- Khandelwal, A. K., Schott, P. K. and Wei, S.-J. (2013). Trade liberalization and embedded institutional reform: evidence from Chinese exporters. *American Economic Review*, **103**(6), 2169–95.
- Martin, J., Martinez, A. and Mejean, I. (2019). The cost of Brexit uncertainty: missing partners for French exporters. Working Paper no. 48, Institut des Politiques Publiques.
- and Mejean, I. (2014). Low-wage country competition and the quality content of high-wage country exports. *Journal of International Economics*, **93**(1), 140–52.
- , ——— and Parenti, M. (2020). Relationship stickiness and economic uncertainty. Unpublished manuscript.
- Monarch, R. (2022). ‘It’s not you, it’s me’: prices, quality, and switching in US–China trade relationships. *Review of Economics and Statistics*, **104**(5), 909–28.
- and Schmidt-Eisenlohr, T. (2016). Learning and the value of relationships in international trade. Working Paper no. 5724, Center for Economic Studies and ifo Institute (CESifo).
- Piveteau, P. (2021). An empirical dynamic model of trade with consumer accumulation. *American Economic Journal: Microeconomics*, **13**(4), 23–63.
- Rauch, J. (1999). Networks versus markets in international trade. *Journal of International Economics*, **48**(1), 7–35.
- Rodrigue, J. and Tan, Y. (2019). Price, product quality, and exporter dynamics: evidence from China. *International Economic Review*, **60**(4), 1911–55.

SUPPORTING INFORMATION

Additional supporting information can be found online in the Supporting Information section at the end of this article.

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