Labor Share, Foreign Demand and Superstar Exporters

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Abstract

This paper uses French micro-data on the universe of exporters over 1994-2001 to shed light on a new determinant of labor share changes in the manufacturing sector: foreign demand changes. Using an exogenous measure of changes in demand conditions abroad, I document two channels through which foreign demand growth contributes to driving down the labor share. First, I find evidence of a *between*-exporter effect: low-labor share, highly internationalized "superstar" exporters grow disproportionately more when their foreign demand increases. Second, foreign demand growth also decreases the labor share *within* exporters and the effect is *exacerbated* for superstar exporters. Changes in demand conditions abroad explain 4% of the observed reallocation effect towards superstar exporters. Both between and within-between firm effects generated by changes in demand conditions on foreign markets account for 14% of the labor share decline. These findings suggest that foreign demand growth unambiguously pulls down the labor share and that international trade affects the labor share through channels other than changes in import exposure.

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1 Introduction

The manufacturing value-added labor share has experienced changes in several OECD countries in recent decades.[1] This phenomenon casts doubt on both the future of work and its value.[2] The causes of its evolution, however, remain uncertain and international trade has been put forward as a cause of labor share changes.[3] The trade-related mechanism highlighted in the literature is increased *import* exposure (Elsby et al., 2013). It is likely, however, that the *export* side of trade, which refers to changes in demand conditions on foreign markets, also causes changes in the manufacturing labor share.[4] Trade integration has increased in the past few decades and up until the Great Recession at least. As a consequence, it has been made easier to serve and access foreign markets. For these reasons, it is important to understand the various ways in which international trade may shape the share of the value-added pie going back to workers. In this article, I use detailed micro-data on the universe of French exporters over 1994-2001 to highlight a new determinant of changes in the manufacturing labor share: foreign demand changes. I further study the quantitative relevance of this trade-induced mechanism.

The contribution of the article is twofold. First, I provide causal empirical evidence that an increase in foreign demand decreases the labor share at home through two channels. Foreign demand growth generates intensive margin reallocations towards low-labor share, more internationalized "superstar" exporters (*between*-exporter effect). Foreign de-

[1]The value-added labor share or labor share is the ratio of total labor compensation to total value-added. It represents the share of value-added that goes back to workers in the form of wages and social contributions. The decline over the period 1994-2007 for most OECD countries in the EU KLEMS sample is documented in Figure G.1.

[2]The labor share decrease also invalidates the well-known stability of factor shares observed by Kaldor (1957) and has important implications for macroeconomic modeling.

[3]A vast literature has highlighted the labor share decline across several different developed economies. Karabarbounis and Neiman (2013) show that it can be caused by a decrease in the relative price of investment goods and a more intensive use of capital. While appealing, this is theoretically hard to reconcile with micro-evidence that the elasticity of substitution between capital and labor is less than unity (Oberfield and Raval, 2014; Moreau, 2019). Other studies highlight the role of a global productivity slowdown (Grossman et al., 2017), privatization (Azmat et al., 2012), automation (Acemoglu and Restrepo, 2018; Bergholt et al., 2019), labor market deregulation (Blanchard and Giavazzi, 2003), plant restructuring (Böckerman and Maliranta, 2011), openness to trade (Guscina, 2006; Harrison, 2005; Jaumotte and Tytell, 2007), global value chains (Reshef and Santoni, 2019), expenditures on intangible capital (Koh et al., 2016), Information and Communication Technology (Lashkari et al., 2019; Aghion et al., 2019), compositional changes driven by the rise of the housing sector (Gutiérrez and Piton, 2019), market concentration (Barkai, 2016), granular market power (Jarosch et al., 2019), common ownership (Azar and Vives, 2018) and rising firms' labor market power and changing production processes (Mertens, 2020) in driving down the labor share.

[4]On the one hand, an increase in foreign demand could increase the labor share of firms as the boost in foreign demand would drive up wages through an increase in labor demand. The increase in wages would lead to an increase in labor compensation, leading to an increase in the labor share of individual firms, *everything else equal*. On the other hand, it is possible that an increase in foreign demand could favor firms with a low labor share, decreasing the aggregate labor share through compositional changes.

mand growth also drives down exporters' labor share and the effect is *stronger* for superstar exporters (*within-between* exporter effect). Importantly, my framework makes it possible to disentangle the effect of foreign demand shocks from other firm-level changes affecting a firm's growth rate and its labor share, such as automation, outsourcing and offshoring. Second, I provide some back-of-the-envelope calculation to assess the magnitude of both between and within-between firm effects. This exercise sheds quantitative light on the effect of export demand on the labor share.

Using French balance-sheet and customs data over 1994-2001,[5] I document three facts for the manufacturing sector. The labor share decline over that period is driven by exporting firms. Focusing on manufacturing exporters is sufficient to understand the labor share decline in that sector as these are the largest firms, a fact well-established in the trade literature (Bernard et al., 2007). In addition, the labor share decline is accompanied by a strong rise in exports, arguably caused by a rise in foreign demand. Second, decomposing the change in the labor share into a within-firm, between-firm and entry-exit margin,[6] I find that the reallocation of output towards low labor share firms is the key driver of the decline, consistent with recent evidence for the US (Autor et al., 2017; Kehrig and Vincent, 2017). Third, I show that more internationalized firms have a lower labor share. Taken jointly, these facts suggest that a reallocation of value-added towards superstar exporters generated by foreign demand has the potential to partly rationalize the drop in the labor share. Moreover, the use of good-quality micro data for France provides additional external validity to the existence of a reallocation effect towards low-labor share firms.

Empirically, I study whether foreign demand growth impacts the value-added growth rate of firms and their labor share differently depending on their degree of internationalization.[7] To do so, I rely on a shift-share identification strategy. The foreign demand measure uses the fact that firms initially have a different export basket and export different goods to different countries. Changes in imports from the rest of the world *excluding* France affect firms differently, depending on their initial exposure to foreign markets.

[5] My results are unchanged when focusing on the whole 1994-2007 period and 2001-2007 period. I focus on the 1994-2001 period of time to circumvent several data issues. Most important are changes in the number and identity of firms arising from the decision to consolidate the financial statements of firms, thereby mechanically affecting the calculation of labor shares. Other data issues include changes in product classifications and in reporting thresholds from the customs. Focusing on this period allows me to keep a highly consistent sample of firms over time.

[6] The within-firm effect refers to a shift in the distribution of firm-level labor shares while the between-firm, or reallocation effect is caused by a reallocation of value-added shares towards low-(or high) labor share firms.

[7] The labor share can be expressed as a *value-added* weighted average of individual firms' labor share. Studying how foreign demand shapes the labor share entails looking at its impact on the value-added growth rate of firms and their labor share.

This firm-level foreign demand measure is plausibly exogenous to firm-level decisions that could impact their growth rate or labor share, such as the decision to offshore, outsource or automate. The most important empirical finding is that the effect of foreign demand growth on firms' value-added growth rate and labor share is heterogeneous across firms. More specifically, I find that more internationalized exporters grow more and that less internationalized exporters shrink, following an increase in foreign demand. I also find that exporters experience a decrease in their labor share following an increase in their foreign demand, and this negative effect is magnified for top exporters. Although labor compensation increases through an increase in average wages, the labor share goes down because of the disproportionate rise of value-added triggered by foreign demand growth. These results highlight the existence of intensive margin reallocations towards superstar exporters. The results do not appear to be driven by confounding factors such as automation, offshoring, outsourcing, by the choice of sample and specification, or by the existence of pre-trends.

I make use of my estimates to quantify the importance of foreign demand growth in explaining both the observed reallocation effect towards low-labor share firms and the overall change in the manufacturing labor share. I estimate that about 4% of the observed reallocation effect is driven by foreign demand growth over 1994-2001. Jointly taking into account both predicted between and within-between firm effects, I find that 14% of the manufacturing labor share decline is accounted for by foreign demand growth over that time period. In further sensitivity tests, I show that superstar exporters drive the results and that intensive margin reallocations towards large players are key to understanding the role played by foreign demand in shaping the labor share, both through its impact on the growth rate of firms and their labor share.

Finally, I rely on a monopolistic competition model with additively separable preferences to provide an explanation for the existence of such reallocations towards low-labor share firms. Intensive margin reallocations hinge on the price elasticity of demand decreasing with consumption, a case long recognized to be the most plausible by Marshall (1890) and Krugman (1979). This case is commonly referred to as Marshall's Second Law of Demand (MSLD). This condition is important as it generates a positive relationship between firm size and markups. More productive firms produce more, face a lower demand elasticity and are able to charge higher markups. In the cross-section, this leads to highly productive firms having a low labor share resulting from high markups. A foreign demand increase generates two counteracting forces on firms' profits: the positive effect arising from the increase in market size is counterbalanced by a negative effect caused by the concomitant increase in competition on the foreign market. When preferences are additively separable, this indeterminacy breaks down and the market size effect dominates for firms with a lower than average demand elasticity. This favors the largest firms if MSLD holds. This is due to the fact that firms with a low(er than average) demand elasticity will not be too penalized by the increase in competition on the foreign market and will mostly benefit from the increase in market size brought about by the increase in foreign demand. In return, larger firms expand with respect to smaller firms that squeeze, consistent with my empirical findings. This result cannot be obtained with constant elasticity of substitution (CES) preferences in monopolistic competition models, as the two effects cancel each other out.

Related Literature. My paper relates to a recent literature that identifies different causes for the labor share decline. Autor et al. (2017) attribute most of the decline in the labor share to the rise of low-labor share superstar firms and emphasize the role of market concentration in driving down the labor share in several US sectors. My paper instead highlights the empirical role of foreign demand growth in affecting the labor share through reallocations towards low-labor share firms using firm-level data for the French manufacturing sector. For these reasons, I view my findings as complementary to theirs to the extent that I show that part of the rise of superstar firms is caused by foreign demand growth. My identification strategy also allows me to circumvent the issue of using market concentration measures to proxy for changes in competition (Bresnahan, 1989; Berry et al., 2019). Lashkari et al. (2019) show that the fall in the price of IT can explain roughly 50% of both the increase in the labor share of individual firms and the reallocation effect towards low-labor share firms. Their quantification exercise helps to understand the evolution of the French aggregate labor share. Indeed, their model can quantitatively explain the positive within-firm component, which could help explain the rising labor share in French manufacturing post-2000 (see Figure G.1). While my findings cannot rationalize the observed positive within-firm effect, my paper does not aim to explain the aggregate trend in the manufacturing labor share. Instead, I show that regardless of the time period considered, foreign demand growth unambiguously decreases the manufacturing labor share both through changes across and within firms.[8] Elsby et al. (2013) find that offshoring the labor-intensive part of production is a good candidate explanation for the labor share decline in the US. My paper differs from theirs in that I instead focus on the role of export demand and emphasize the importance of the reallocation effect in driving down the manufacturing labor share using micro-data. Furthermore, my empirical framework allows me to disentangle the effect of export demand from that of technol-

[8]The results carry to the 2001-2007 period and to the whole 1994-2007 period.

ogy. Finally, in a series of papers, De Loecker and Eeckhout (2017) and De Loecker and Eeckhout (2018) show that rising aggregate markups help account for the decrease in the labor share. My findings are consistent with this interpretation as superstar exporters have higher markups and grow more.

Recent papers have revived the idea that the demand elasticity is not constant across firms and more specifically, that it decreases with consumption, a case deemed "plausible" by Krugman (1979). This has important consequences as an increase in market size generates intensive margin reallocation effects favoring larger firms (Zhelobodko et al., 2012; Mrázová and Neary, 2017). I build on these papers for the theoretical framework. My paper is closely related to Mayer et al. (2016). They find evidence of reallocations of export sales towards the best products produced by French exporters following an increase in foreign demand, fact they also attribute to MSLD. Their focus, however, is on how reallocations of export sales across *products* within multi-product firms generate aggregate productivity growth. I am instead interested in how foreign demand shocks generate reallocations across *firms* and highlight the heterogeneous response of firms' growth rate and labor share to foreign demand changes. I further quantify the importance of both effects in generating aggregate labor share changes. My results are also consistent with aggregate productivity gains, as superstar exporters are larger and more productive.

In a recent work, Parenti et al. (2017) argue that "it is time to pay more attention to the demand side". Recent evidence by Hottman et al. (2016) stress the importance of demand in determining firm size. They find that 80% of firm growth is caused by firm "appeal" which loosely refers to demand (differences in tastes or quality). My paper also highlights the importance of foreign demand growth in generating value-added growth favoring more internationalized firms. Aghion et al. (2018) document the role of foreign demand growth on patenting at the firm level and show that initially more productive firms patent more. My paper differs from theirs is that my focus is on providing an alternative mechanism for the labor share decline through between-firm and within-firm changes. My results, if anything, are short-term effects while innovation is a longer-run phenomenon. Their findings, however, could reinforce my key finding. Foreign demand growth might also contribute to reallocating value-added shares towards low-labor share firms through innovation, as superstar exporters might be more likely to innovate.

The rest of the article is organized as follows. Section 2 describes the data sources and the stylized facts. Section 3 describes the empirical framework and identification strategy. Section 4 presents the results and robustness tests. Section 5 lays out the theoretical framework and Section 6 concludes.

2 Data and Stylized Facts

2.1 Data Sources and Sample

I use two main sources of micro data: balance-sheet and customs data. Each firm in France is assigned a unique identifier ("SIREN" code) which facilitates keeping track of them over time and matching firm-level datasets.

The balance-sheet data contain the universe of French firms. I keep both large and small firms. This classification is based on a firm's tax regime: the Regime of Normal Real Profits (BRN) applies to large firms while the Simplified Regime for the Self-Employed (RSI) applies to smaller companies. BRN contains firms with annual sales above 763K euros (230K euros for services) whereas smaller firms included in RSI sell at least 76.3K euros (but less than 763K euros) a year and more than 27K euros for services. This dataset has been used in previous studies, for instance in Di Giovanni et al. (2014) and I refer to their paper for more details. Given the focus of the paper, I only keep firms that operate in the manufacturing sector (sector 15 to 37 in NAF Rev. 1). This exhaustive database allow me to build a firm's labor share and all other relevant variables that will be used in the empirical framework. More information on the way I treat my dataset and on the variables I use is provided in Appendix A. I also rely on customs data. They contain information on a firm's export sales and export quantities of each product defined at the 8-digit level towards each destination country in a given year. I use this additional data source to recover information on the number of products exported by each firm in a given year, the number of foreign countries served, the total amount of expenditures spent on imports and total export sales.

My sample of French manufacturing exporters spans the period 1994-2001. The period of analysis is shorter than usual in the literature that aims to identify a cause for labor share changes. For example, the sample of Elsby et al. (2013) roughly covers twenty years of (macro) data, while that of Autor et al. (2017) spans thirty years. The reason for focusing on this period of time is data-driven. First, I do not have access to both datasets before 1994. Second, the definition of a firm according to the French National Institute of Statistics changes in 2001. As of that date, a firm is no longer defined as a statistical unit but as an economic unit that can make relevant economic decisions. Companies belonging to and depending on a parent company are not considered as firms anymore. The value of their sales, labor expenditures etc. is consolidated at the level of the unit capable of making independent decisions. This can also mechanically generate exit as a firm owned by another company might exit the sample for purely statistical reasons. Ending my sample in 2001 allows me to keep a sample of firms that do not experience drastic changes in terms of their growth rate or labor share due to exogenous statistical changes. Finally, focusing on this period of time allows me to circumvent regulatory changes that affect the reporting thresholds of French exporters after the ending date of my sample, as well as changes in the product nomenclature.[9] I provide a robustness check where I extend the sample to the whole 1994-2007 period and to the 2001-2007 period and show that the results are robust to considering these alternative time periods.

Focusing on the 1994-2001 period is particularly well-suited to highlight the role of the *export-side* of trade on reallocation towards international firms while abstracting from import competition. The sample period ends in 2001, year when China joins the World Trade Organization (WTO) allowing it to considerably increase its exports abroad.[10] Moreover, the rise of imports from low-wage countries (Auer et al., 2013) and Eastern-Europe following the 2004 European enlargement are also unlikely to have strong reallocation effects given that their import shares are relatively stable over the period of time considered (Figure G.2) compared to the whole 1994-2007 period.[11]

2.2 Stylized Facts

Using the data described in the previous subsection, I provide evidence that the labor share in French manufacturing declines over the mid-1990s up to 2001. I then decompose this change into different margins and document the fact that larger exporters and more internationalized firms have a lower labor share.

Labor share and trade flows. The labor share is defined as the ratio of total labor compensation to gross value-added. Figure 1 highlights the evolution of the labor share in the French manufacturing sector over 1994-2001 for the sample of exporting firms. It experiences a four percentage point decline.[12] [13] The pattern is very similar using macro data from EU KLEMS, as displayed in Figure G.3.[14] 11 out of 12 OECD countries experience

[9]More details can be found in Bergounhon et al. (2018).

[10]The seminal paper by Autor et al. (2013) studies the effect of Chinese import competition on employment and finds large, negative effects on manufacturing employment in the US. Malgouyres (2017) studies the effect of import competition in both manufacturing and non-manufacturing employment in France and also finds sizable negative effects.

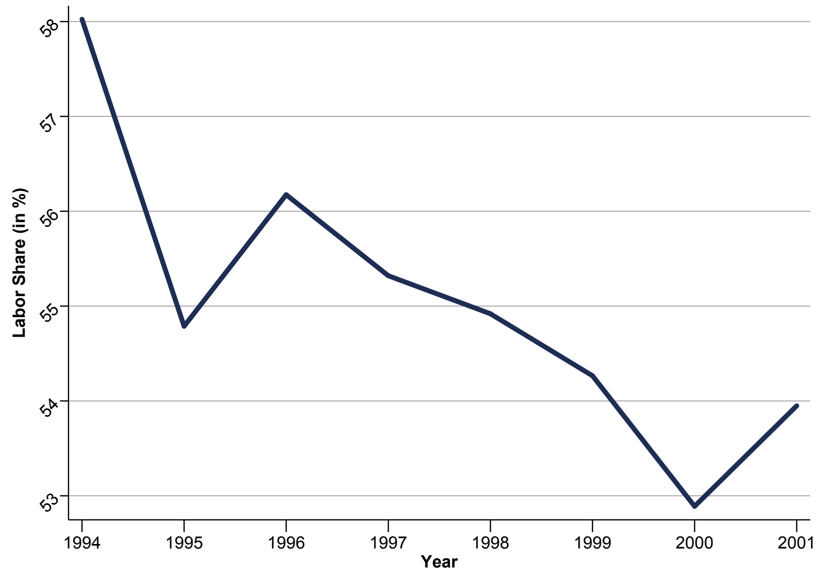
[11]Dauth et al. (2014) highlight the importance of Eastern-European countries' exports to Germany for changes in employment.

[12]The labor share decline has been widely documented in the Macroeconomic literature for a wide range of developed countries, for instance in Karabarbounis and Neiman (2013) or Elsby et al. (2013) for the US.

[13]Defining labor as "equipped labor" and therefore the labor share as the ratio of total value-added to total sales as in Alvarez and Lucas Jr (2007), I also find that this alternative measure exhibits a strong and significant decline. The figure is available upon request.

[14]The numbers in the macro data are higher as self-employment is accounted for.

Figure (1) Manufacturing Labor Share



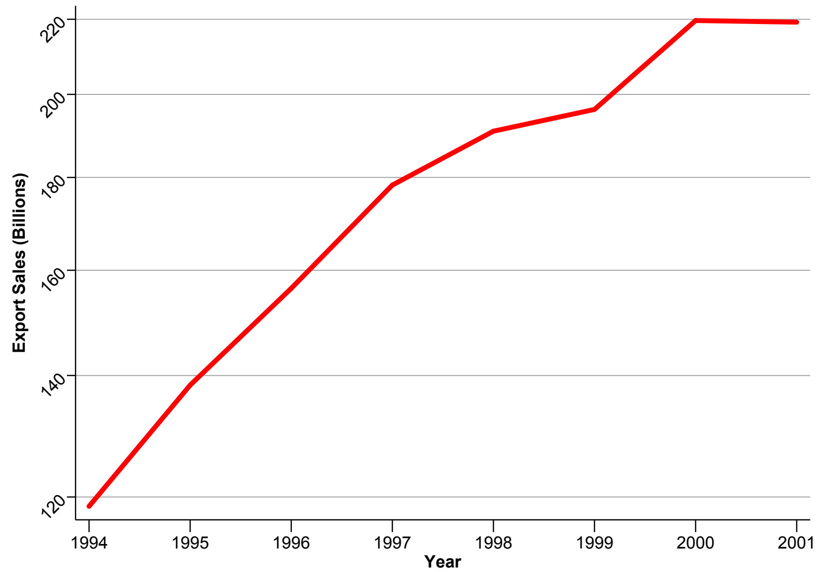
a slight or drastic decrease in their manufacturing labor share over the whole 1994-2007 period with the exception of the UK (Figure G.1). Interestingly, the French manufacturing labor share experiences an *increase* after 2001. It is important to note that the objective of the paper is to study how foreign demand shapes the aggregate labor share. I will show that my results are not affected by including the post-2001 period when the French manufacturing labor share increases: foreign demand growth also drives the labor share down after 2001. Figure G.4 shows that the labor share of domestic firms (firms that do not export at a given point in time) is constant over the period and experiences a decrease after 2000, likely caused by the statistical change that took place in 2001 and mentioned in the previous subsection. I will therefore restrict my attention to the sample of French exporters. This is because exporting firms are the largest ones and represent 74% of the sector's total value-added.[15] Exporters are representative of overall changes in manufacturing. Finally, I note that the drop in the manufacturing labor share is a within-industry phenomenon. As shown in Figure G.5 in the Appendix, the decline occurs in all industries within manufacturing and is not due to a reallocation towards low labor share industries.

On the trade side, Figure 2 displays the evolution of export sales over the period 1994-2001.[16] Exports have considerably increased over the period averaging 8% annually over 1994-2001. This sharp increase in exports is plausibly caused by an increase in foreign

[15] I will therefore use the term "firm" or "exporter" interchangeably, unless explicitly stated.

[16] The pattern is virtually the same when considering export sales from the customs data instead. The figure is available upon request.

Figure (2) Evolution of Exports



demand and I will later use a direct measure of foreign demand to study how foreign demand growth affects the aggregate labor share. Figure G.6 shows the exports of goods and services in percentage of GDP. This ratio steadily increases up to 2001.[17] These trade patterns make clear that focusing on the 1994-2001 period is ideal to study the role of the export side of trade on the labor share decline.

Fact 1: *The manufacturing labor share has declined by 4 percentage points over 1994-2001.*

Decomposition of labor share changes. I now provide evidence that a reallocation towards firms with a low labor share can explain most of the decrease in the French manufacturing labor share.

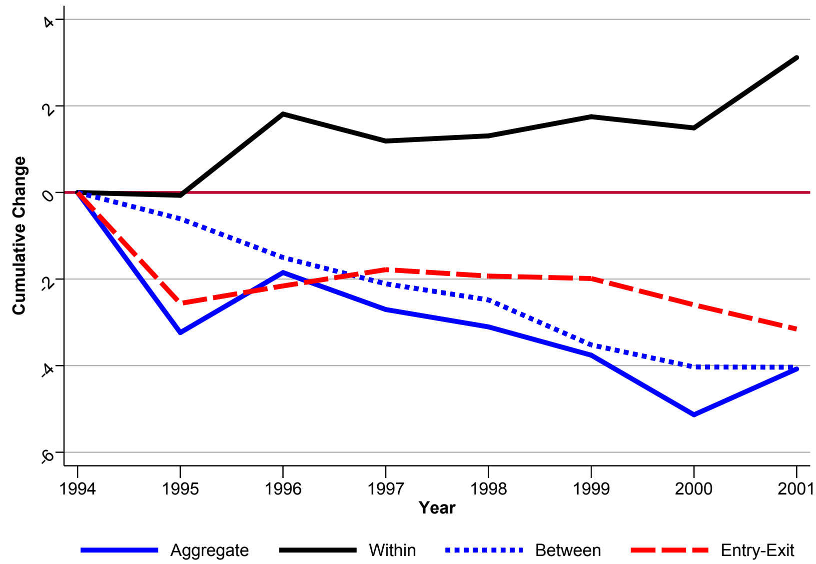
The labor share LS is the ratio of total labor compensation (including employers' contributions to social security etc.) to total value-added. Denoting the numerator by wL and value-added by VA, the labor share also writes as a weighted average of firms' labor share, weighted by their share in total value-added

$$\mathrm{LS}_t = \frac{\sum_i wL_{it}}{\mathrm{VA}_t} = \sum_i \omega_{it}\mathrm{LS}_{it} \tag{1}$$

where ω_{it} is firm i's value-added share in total manufacturing value-added at time t.

[17] The patterns almost match perfectly when considering merchandise trade only.

Figure (3) Cumulative Change in Labor Share Components



I decompose the change in the labor share from one year to the next into the contribution of surviving firms, new entrants and exiters. To do so, I use a decomposition method initially developed by Baily et al. (1992) and refined in Foster et al. (2001) (FHK). For sake of simplicity, the labor share or aggregate labor share will refer to the *manufacturing* labor share, not the economy-wide labor share. The manufacturing labor share change between any two time periods is given by:

$$\begin{aligned}\Delta \mathrm{LS}_t = & \sum_{i \in S} \omega_{it-1} \left(\mathrm{LS}_{it} - \mathrm{LS}_{it-1}\right) + \sum_{i \in S} \left(\omega_{it} - \omega_{it-1}\right) \left(\mathrm{LS}_{it-1} - \mathrm{LS}_{t-1}\right) \\ & + \sum_{i \in S} \left(\omega_{it} - \omega_{it-1}\right) \left(\mathrm{LS}_{it} - \mathrm{LS}_{it-1}\right) + \sum_{i \in \mathrm{ENT}} \omega_{it} \left(\mathrm{LS}_{it} - \mathrm{LS}_{t-1}\right) \\ & - \sum_{i \in \mathrm{EXT}} \omega_{it-1} \left(\mathrm{LS}_{it-1} - \mathrm{LS}_{t-1}\right)\end{aligned} \tag{2}$$

where LS_{t-1} is the aggregate labor share in the previous year, also called the reference labor share level. The first term of (2) is the within-firm effect, the second and third terms are the between-firm (reallocation) component while the last two terms are the contribution of entry and exit, respectively.[18] Equation (2) states that the manufacturing labor share can decrease for several reasons. A negative within-firm effect means that surviving firms experience a decrease in their labor share. A negative between-firm effect means that output is reallocated towards low-labor share survivors so that these firms

[18] The third term is the cross effect. The whole reallocation term effect is the sum of the second component and the cross effect.

Table (1) FHK Decomposition of Labor Share Changes (Exporters)

	Total Change (1)	Within (2)	Between (3)	Entry-Exit (4)
1994-1995	-3.24	-0.07	-0.61	-2.56
1995-1996	1.39	1.88	-0.9	0.40
1996-1997	-0.85	-0.62	-0.61	0.38
1997-1998	-0.40	0.12	-0.37	-0.15
1998-1999	-0.65	0.44	-1.04	-0.06
1999-2000	-1.38	-0.26	-0.51	-0.61
2000-2001	1.06	1.63	-0.007	-0.56
1994-2001	-4.08	3.12	-4.04	-3.15
1994-2000	-5.14	1.49	-4.03	-2.60

Notes: This decomposition is done for the sample of manufacturing exporters using the Foster et al. (2001) decomposition. Column 1 is the change in the aggregate labor share for the sample of exporting firms. Column 2 is the within-firm margin. Column 3 is the sum of the between and the cross effect. Column 4 is the sum of the entry and exit components and refers to entry and exit into exporting.

become larger. Crucially, output corresponds to value-added from the definition of the labor share given in (1) so that the value-added growth of low-labor share firms can drive down the labor share. The contribution of entrants and exiters is allowed to be positive or negative. This depends on whether their labor share is higher than the reference labor share level.

I make use of the FHK decomposition to study which margin drives the change in the labor share over the period of interest. To do so, I apply (2) to each year interval, namely 1994-1995, 1995-1996 etc. Figure 3 presents the result of this decomposition and shows the cumulative change in each component over time. The blue line represents the aggregate change while the blue dotted line represents the contribution of the between-firm component. The black full line and the red dashed line represent the contribution of the within-firm component and entry-exit, respectively. The blue dotted line is always negative and keeps decreasing over time with the exception of the period 2000-2001 when it is flat. It closely tracks the aggregate change line. The contribution of entry and exit is aggregated and is quite stable over the period. The within firm effect is positive and contributes to *increasing* the manufacturing labor share. This is consistent with Table 8 that shows that firms, on average, experience an increase in their labor share. Interestingly, in the US over 1982-2012, Autor et al. (2017) document that the within-firm component is

Table (2) Statistics on Internationalization and Labor Shares

Statistic	Labor Share			
Internationalization Measure	Above Median	Top 25 %	Top 10 %	Top 1 %
	(1)	(2)	(3)	(4)
Export intensity	70.7	69.4	67.4	63.9
ln Export sales	70	67.8	64.8	58.7
ln # Products exported	70.4	69.5	68.5	65.5
ln # Destinations served	70	69	67.5	63.4
# Firms	29,687	14,844	5,938	594

Notes: The results are obtained by taking the mean of each variable (labor share, export intensity, export sales, number of products exported and number of countries served) over time for each firm and calculating the labor share of firms that belong to the top 50, 25, 10 and 1% in terms of export intensity, number of products exported and number of countries served.

negative and that the reallocation term is larger in magnitude than the within-firm one.

The results for each year interval are displayed in Table 1. The four percentage point decrease in the labor share is explained by a reallocation towards low labor share firms, suggesting that the key message of Autor et al. (2017) also holds for French manufacturing over 1994-2001. More generally, this finding is confirmed when focusing on the whole sample of manufacturing firms that includes domestic and exporting firms. Table 10 shows that the entry-exit component is less important in the whole manufacturing sample. This is due to the fact that Table 1 only includes exporting firms. Entry and exit do not capture the entry and the death of a firm but rather, whether it starts or stops exporting from one year to the next. The qualitative result of this decomposition is unaltered when considering the Melitz and Polanec (2015) decomposition method as shown in Table 11 and Table 12. The description of that method is relegated to Appendix B.

Fact 2: *The manufacturing labor share decline is caused by a reallocation of value-added shares towards low-labor share firms.*

Internationalization and labor share. I now document that more internationalized, "superstar" exporting firms have a lower labor share.

Table 2 displays the labor share of firms whose export intensity, log export sales, log number of products exported and log number of destinations served is above the median, in the top 25%, 10% and 1% of each corresponding distribution. The figures in the table show that more internationalized exporters have a lower labor share. For example, firms in the top 1% of the export intensity distribution have a labor share that is almost

7 percentage points lower than firms in the top 50%. This pattern is true regardless the measure of internationalization used,[19] but is particularly exacerbated for firms in the top of the export sales distribution. I will therefore use this measure as the key measure of internationalization for my baseline results and will show that the results are qualitatively unchanged when considering other internationalization measures. I also show in Table 13 that defining labor as "labor-plus-capital" (Alvarez and Lucas Jr, 2007; di Giovanni et al., 2018) and computing the labor share as the ratio of value-added to total sales yields very similar results. This alternative measure, which reflects all primary factors of production, also decreases with the degree of internationalization of firms. Table 14 tests the difference in mean between the labor share of firms with an internationalization measure above and below a certain threshold and confirms the finding that more internationalized exporters have a lower labor share. Finally, in columns 1 to 4 of Table 15, I regress a firm's labor share on the four internationalization measures, controlling for the industry composition and supply and demand shocks occurring at the 2-digit industry level. I further control for firm-specific, time-invariant characteristics. This shows that an increase in openness compared to the firm mean leads to a lower labor share. Column 5 shows that export intensity and log export sales remain negatively correlated with the labor share at the firm-level when including all these predictors. Column 6 shows that this result survives the inclusion of total firm sales.

These pieces of evidence lead to the same conclusion. There exists a strong negative relationship between a firm's degree of internationalization and its labor share, and this is particularly true for firms at the top of the export sales distribution.

Fact 3: *More internationalized exporters have a lower labor share.*

3 Empirical Framework

This section presents the empirical framework and identification strategy I rely on to study the effect of foreign demand changes on the manufacturing labor share.

3.1 Econometric Specifications

To study how foreign demand affects the manufacturing labor share, I make use of the fact that the labor share can be rewritten as a *value-added* weighted average of individual firms' labor shares from Equation (1). I will therefore study how foreign demand affects the

[19] These four internationalization measures are all positively correlated with each other.

value-added growth rate of firms and their labor share. The analysis is restricted to firms that survive over at least two periods of time and I do not study how foreign demand shapes the decision of firms to enter or exit the export market, *i.e.* the entry-exit margin highlighted in Section 2.2.

Section 2.2 shows that a reallocation of value-added shares towards low-labor share firms is the main driver of the labor share decline in French manufacturing over 1994-2001 and that low-labor share firms are highly internationalized, superstar exporters. To determine whether foreign demand changes can empirically generate this between-firm effect and contribute to decreasing the aggregate labor share, I test whether these changes benefit disproportionately more to superstar exporters (between-exporter specification). To do so, I estimate the following specification where i is an exporter and t is a year:

$$\begin{aligned}\Delta \ln \mathrm{VA}_{it} = \alpha^{\mathrm{Rank}} \tilde{\Delta} \mathrm{ForeignDemand}_{it} + \beta^{\mathrm{Rank}} \tilde{\Delta} \mathrm{ForeignDemand}_{it} \times \mathrm{Superstar}_{it_0} \\ + \gamma^{\mathrm{Rank}} \mathrm{Superstar}_{it_0} + \Delta \delta_{kt} + \Delta \psi_{it}\end{aligned} \tag{3}$$

The dependent variable is the growth rate of value-added between $t-1$ and t. The growth rate of foreign demand from one year to the next is explained in detail below and is denoted by $\tilde{\Delta}\mathrm{ForeignDemand}_{it}$. The important term is the interaction term that interacts a firm's measure of foreign demand with its degree of internationalization, $\mathrm{Superstar}_{it_0}$, which is defined in the first year in which that firm appears in the sample to avoid endogeneity issues. Finally, $\Delta\delta_{kt}$ are 2-digit industry by year fixed effects and will absorb changes in business cycles conditions or competition shocks occurring at the industry level. Because the specification is expressed in first-differences, all unobserved drivers of a firm's value-added that are time invariant and that are correlated with that firm's foreign demand (high-quality firm, good management practices etc.) will be wiped out. Other identification threats are discussed in Section 3.2.

The total effect of changes in foreign demand on firm growth is $\frac{\partial \Delta \ln \mathrm{VA}_{it}}{\partial \tilde{\Delta} \mathrm{ForeignDemand}_{it}} = \alpha^{\mathrm{Rank}} + \beta^{\mathrm{Rank}} \times \mathrm{Superstar}_{it_0}$. Absent the interaction term, one can expect $\alpha^{\mathrm{Rank}} > 0$ as an increase in foreign demand should increase a firm's value-added. The main test is whether $\beta^{\mathrm{Rank}} > 0$. If this is the case, highly internationalized exporters grow relatively more when hit by foreign demand shocks. This reallocates value-added shares towards these low labor share firms (Fact 3), thereby contributing to the observed labor share decline. Note that this elasticity varies across firms, depending on the rank of the firm in the initial superstar distribution ($\mathrm{Superstar}_{it_0}$).[20]

[20] The main measure of internationalization used is the log of the export sales distribution for the reason mentioned in the previous section. Results using alternative and time varying (lagged) measures are

Given Equation (1), I also study how an increase in foreign demand at the firm level impacts the labor share of exporters and how the effect might vary depending on their degree of internationalization (within-between exporter specification). The dependent variable is the labor share change in percentage points of each firm i in between two time periods, where the independent variables are the same as in Equation (3):

$$\begin{aligned}\Delta \mathrm{LS}_{it} = {} & \zeta^{\mathrm{Rank}} \tilde{\Delta}\mathrm{ForeignDemand}_{it} + \chi^{\mathrm{Rank}} \tilde{\Delta}\mathrm{ForeignDemand}_{it} \times \mathrm{Superstar}_{it_0} \\ & + \rho^{\mathrm{Rank}} \mathrm{Superstar}_{it_0} + \Delta\delta_{kt} + \Delta v_{it}\end{aligned} \tag{4}$$

The effect of foreign demand growth on the firms' labor share is allowed to vary across firms, depending on their degree of internationalization, as in the between-exporter specification described in Equation (3). Given that the labor share is the ratio of total labor compensation to value-added, an increase in foreign demand can increase or decrease this ratio, depending on which effect is strongest. On the one hand, we can expect a rise in foreign demand to increase labor compensation through an increase in the number of workers or in wages. To meet the increase in foreign demand, firms might need to hire more workers. Similarly, an increase in foreign demand might lead firms to raise wages in order to incentivize workers to meet the increase in demand. On the other hand, given that the firm might also sell more and experience an increase in its value-added as argued above, its labor share could go down if this effect dominates the increase in labor compensation. It is therefore not clear how foreign demand can impact a firm's labor share and what the effect might be for superstar exporters.

3.2 Identification Strategy

In order to identify the coefficients of interest α^{Rank}, β^{Rank}, ζ^{Rank} and χ^{Rank}, Equations (3) and (4) are estimated using OLS. Several concerns must be addressed regarding the identification of these parameters. The variable $\tilde{\Delta}\mathrm{ForeignDemand}_{it}$ reflects changes in demand abroad. One could consider export sales as a proxy for foreign demand. The issue with the use of export sales as a proxy variable is that the estimation would likely be plagued by simultaneity bias. I show in Appendix C that, under some plausible assumptions, the coefficients of interest will be upward biased.

An alternative to using export sales as a measure of foreign demand consists of using world import demand shocks as a source of exogenous changes to a firm's foreign demand as in Hummels et al. (2014) and Mayer et al. (2016).[21] This measure will be ex-

provided in the Appendix and yield very similar results.

[21] Hummels et al. (2014) use world import demand and world export supply changes as exogenous

ogenous to other firm-level determinants of a firm's growth rate and labor share, such as outsourcing, automation, offshoring. More specifically, I interact a foreign country's imports of a particular product with each firm's export share of that product to that country in its total export sales. Averaging across products and countries gives a firm-level measure of changes in demand conditions on foreign markets. More specifically, the intuition of the measure is the following. Imagine a French firm i exporting a single product, "grape wines, sparkling" (code 220410 in the 1992 HS6 classification), to a single destination country, Brazil, in 1996. Demand changes for that firm in that market are measured by Brazil's change in total imports of "grape wines, sparkling" from the rest of the world *excluding* France in between 1996 and 1997. Indeed, the fact that the value of total imports (excluding France) of Brazil varies is likely to affect that French exporter's demand and the degree of competition it faces in that market. For a multi-product firm serving several markets, the growth rate of each country's imports of each product is weighted by that firm's share of exports of each product towards each destination country in its total export sales.

More formally, let us denote by X_{ljpt} the value of exports of a particular product p from country l to country j at time t. The total value of imports of product p by country j in t is defined as

$$M_{jpt} = \sum_{l \in L \setminus \{\text{France}\}} X_{ljpt} \tag{5}$$

where M_{jpt} are destination country j's total imports of product p from the rest of the world excluding France. The firm-level foreign demand shock in first-differences is given by:[22]

$$\tilde{\Delta}\text{ForeignDemand}_{it} = \sum_{j,p} \frac{X_{ijpt_0}}{X_{it_0}} \frac{M_{jpt} - M_{jpt-1}}{\frac{1}{2}(M_{jpt} + M_{jpt-1})} \tag{6}$$

Changes in j's imports of p (the second component of the sum) are weighted by the relative importance of firm i's exports of that product in the initial year, $\frac{X_{ijpt_0}}{X_{it_0}}$.[23]

sources of variation for exports and imports, respectively. I focus on the effect of foreign demand on firms' growth and on their labor share, and instead use this measure in reduced-form. Mayer et al. (2016) study how foreign foreign demand shocks lead to reallocations of export sales across products within French multi-product firms and affect aggregate productivity in manufacturing.

[22] The growth rate of imports is expressed in this manner so that it is well defined even if countries stop importing a particular product in a given year. If imports switch from zero to a positive value, this growth rate equals the value 2 while the growth rate will equal -2 if imports go from a positive number to zero. One could also use the alternative specification of the shock in first-differences: $\Delta\text{ForeignDemand}_{it} = \sum_{j,p} \frac{X_{ijpt_0}}{X_{it_0}} \ln \frac{M_{jpt}}{M_{jpt-1}}$. The results are robust to using this functional form and are available upon request.

[23] In order to build these firm-level demand shocks, I use French customs data and the BACI database (Gaulier and Zignago, 2010). A product is defined at the HS6 level as this is the lowest level of disaggregation in BACI. The customs data allow me to map each firm's exports into this product classification as

The exogeneity of the measure hinges on the fact that $\tilde{\Delta}\text{ForeignDemand}_{it}$ is uncorrelated with $\Delta\psi_{it}$ and Δv_{it} in Equations (3) and (4), conditional on the set of fixed effects and potential firm-specific controls. This in turn hinges on two conditions. First, it must be the case that the growth rate of M_{jpt} does not reflect any supply-side shocks arising in France, which would lead to a rise of French exports to foreign countries and would boost their imports. The fact that aggregate imports of country j have been purged from French exports in (5) arguably rules out this channel. The only source of time series variation I exploit comes from this purged growth rate of imports.[24]

The second important condition is that the firm-level weights are exogenous. A recent literature aims to identify the conditions under which a shift-share instrument such as the one described in (6) is exogenous. Goldsmith-Pinkham et al. (2018) show that the exogeneity of the shift-share hinges on the exogeneity of the weights. The idea is that a firm's initial composition of export sales across products and destinations could have a direct effect on its growth rate or on the evolution of its labor share. In order for the shock not to reflect self-selection of French firms into exporting to booming markets (or conversely, exporting less or not exporting at all to markets experiencing a bust in demand), the weights are defined in the initial year the firm appears in the customs data so that this concern is less likely than the case where they would be defined in the previous period. Second, I show that the results are robust to including firm fixed effects in the first-differences specification. These firm trends plausibly absorb the variation in the growth rate of value-added or labor share caused by the initial export structure of the firms. Third, I show that *future* demand shocks do not predict contemporaneous outcomes, which provides reassuring evidence that the measure is not picking up pre-trends affecting the dependent variables of interest.

Although it is unlikely given the structure of the firm's foreign demand shock detailed above, I will also provide robustness checks to control for the possibility that other time-varying and firm-specific determinants of a firm's growth rate and its labor share might be correlated with changes in that firm's measure of foreign demand. First, changes in a foreign country's demand are associated with changes in wages or quality improvements. These changes might incentivize firms to offshore more, thereby affecting their growth rate and their labor share. I will control for this possibility by including total firm-level

the NC8 category's six first digits exactly correspond to the HS6 classification. Therefore, the world import demand component comes from BACI while the weights are built using the customs data.

[24]Another potential confounding factor is that of French firms that have a large market share in the foreign markets they serve. Their market power abroad might impact foreign firms serving these markets and could affect aggregate imports from the rest of the world excluding France. To address this concern, I have experienced by dropping all the firms that have a market share higher than 10% for a given product p in a given destination country t at time t. The results are robust to this test and are available upon request.

Table (3) Baseline Results

Internationalization Measure (Superstar$_{it_0}$)	ln Export Sales				
Dependent variable	Δ ln VA$_{it}$	ΔLabor Share$_{it}$	Δ ln Labor Compensation$_{it}$	Δ ln Wages$_{it}$	Δ ln Workers$_{it}$
	(1)	(2)	(3)	(4)	(5)
$\tilde{\Delta}$ForeignDemand$_{it}$	-0.0161***	0.1935	-0.0123***	-0.0116***	-0.0007
	(0.0041)	(0.1784)	(0.0037)	(0.0039)	(0.0042)
$\tilde{\Delta}$ForeignDemand$_{it}$ $\times$ Superstar$_{it_0}$	0.0067***	-0.1439***	0.0039***	0.0033***	0.0006
	(0.0010)	(0.0459)	(0.0008)	(0.0008)	(0.0009)
Superstar$_{it_0}$	-0.0062***	0.0217***	-0.0062***	-0.0016***	-0.0046***
	(0.0002)	(0.0080)	(0.0002)	(0.0002)	(0.0002)
Two-digit Sector $\times$ Year FE	✓	✓	✓	✓	✓
# Observations	166,323	166,323	166,323	166,323	166,323

Notes: Standard errors clustered at the firm level. *** p<0.01, ** p<0.05, * p<0.1. The coefficients from the regression models are estimated over 1994-2001 using OLS. All columns include industry by year fixed effects. Δ ln VA$_{it}$ is the change in a firm's value-added. $\tilde{\Delta}$ForeignDemand$_{it}$ is the change in a firm's foreign demand. Superstar$_{it_0}$ is a measure of the degree of internationalization of the firm and is the log of the export sales of the firm in the first year in which it appears in the sample.

imports to control for offshoring.[25] Second, foreign demand changes could be correlated with technological improvements occurring at the firm-level. I will control for the growth rate of capital intensity of firms to control for the fact that firms might automate part of their activity in response to changes in foreign demand, which could affect their growth rate and labor share. I will therefore add a vector of controls $\mathbf{X}_{it}$, which includes the firm's growth rate of imports, growth rate of capital intensity and firm-specific fixed effects, to Equations (3) and (4). These additional results along with alternative robustness checks are provided in Section 4.3.

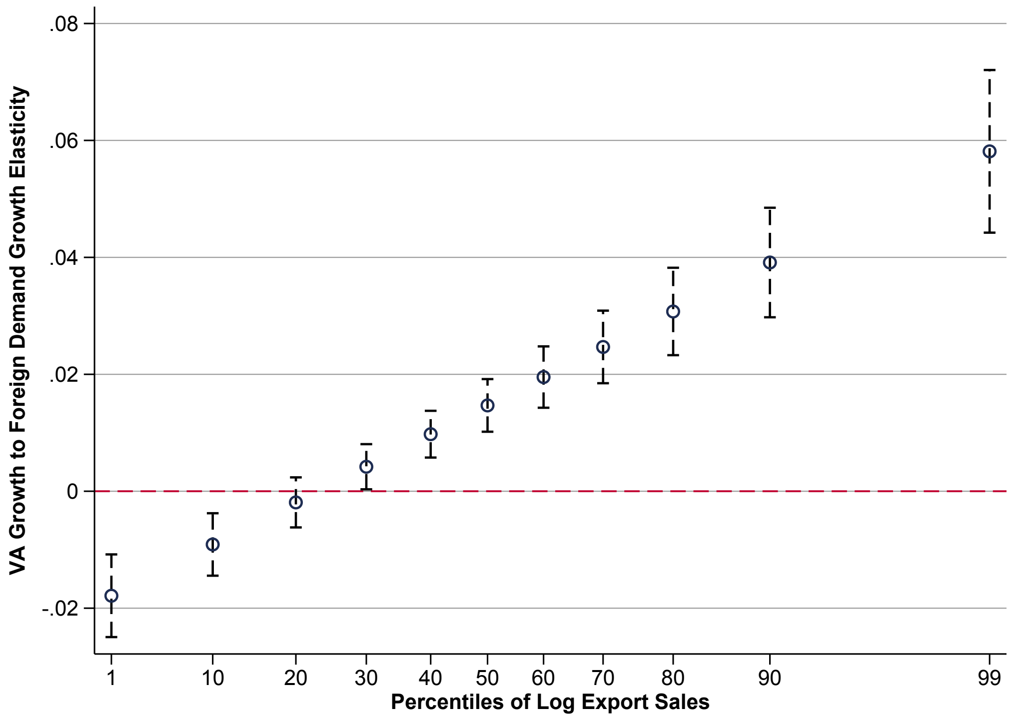
4 Results

4.1 Foreign Demand Growth and Reallocation

How does a foreign demand increase affect the value-added growth rate of heterogeneous exporters? Figure 4 highlights the first main empirical result. The coefficients used are reported in the first column of Table 3. A clear picture emerges: foreign demand growth allows some firms to grow while others shrink. More specifically, highly internationalized exporters grow following an increase in foreign demand while firms in the bottom 1% to 20% of the initial export sales distribution distribution squeeze. Figure 4 points to the existence of intensive margin reallocations favoring more internationalized exporters. Indeed, the elasticity of value-added growth to foreign demand growth displayed in the

[25] Biscourp and Kramarz (2007), Mion and Zhu (2013), Hummels et al. (2014) distinguish between broad and narrow offshoring by using firm-level imports that correspond or not to the main activity of the firm as indicated in the balance sheet data. Because I am not interested in separating the effect of broad versus narrow offshoring, I include *total* firm-level imports.

Figure (4) Between-Exporter Effect



Notes: This Figure is obtained by estimating Equation (3). This Figure reports the elasticity of value-added growth to foreign demand growth evaluated at different percentiles of the (log) export sales distribution (at time t_0). The coefficients used to compute these elasticities are reported in column 1 of Table 3. The percentiles of the initial export sales distribution are reported in Table 9.

Figure means that firms that are in the top 1% of the initial export sales distribution are going to experience a 0.6% increase in their value-added following a 10% increase in their foreign demand. This elasticity goes down to -0.2% for firms in the bottom 1% of the export sales distribution. Changes in value-added are driven by changes in total sales as shown in Figure G.9a. As shown below, the results are robust to using alternative internationalization measures, alternative firm size measures, controlling for offshoring and other determinants of a firm's growth rate and the results are not driven by firm specific pre-trends. All the robustness tests are reported in Section 4.3. The magnitude of the effect is relegated to Section 4.4.

As a case study, Figure G.7 provides illustrative evidence that the effect of a negative demand shock such as a financial crisis has a heterogeneous impact on firms' value-added growth.[26] Two quasi-experiments occurred in the 1990s. The first one is the Asian finan-

[26]This exercise is similar to that carried out in Berman et al. (2015) who provide evidence that the Asian financial crisis had a negative effect on the domestic sales of French exporters serving the Asian market

cial crisis that occurred in 1997 and 1998 and the second one is the Russian financial crisis that took place in 1998. These two crises are exogenous from the perspective of French exporters. I assign French exporters surviving over the whole 1994-2001 period into three groups. The first group consists of firms that never exported to the relevant market prior to the crisis.[27] The second group consists of firms whose ratio of export sales to the affected countries to total exports is larger than 10% prior to the crisis.[28] These should be the firms affected by the crisis. The third group is made out of firms with a larger degree of exposure to the relevant market pre-crisis (ratio of export sales to Asian countries or Russia to total exports larger than 20%). I then aggregate the value-added of firms belonging to each group and show the evolution of value-added compared to the pre-crisis level. Panel G.7a and G.7b of Figure G.7 show that firms with a higher degree of exposure to these foreign markets were the most penalized by the financial disruption. While firms not exposed to the crisis keep growing over the period, firms with a degree of exposure larger than 20% shrink compared to the pre-crisis level, and this negative effect is stronger than for firms with a degree of exposure larger than 10%. This confirms that changes in demand conditions abroad affect firms' value-added growth differently, and that the effect is stronger for more internationalized exporters.

Foreign demand shocks therefore have a heterogeneous effect on value-added growth and favor superstar exporters with a low-labor share. These firms grow disproportionately more. This finding complements the findings of Autor et al. (2017) who show that the growth of superstar firms explains the decline of the labor share across sectors in the US and in several other OECD countries. Figure 4 shows that foreign demand growth can rationalize part of the rise of superstar firms/exporters, at least in the manufacturing sector.[29] These results corroborate the existence of a "winner take most" phenomenon in manufacturing. Foreign demand favors more internationalized exporters and contributes to the observed between-firm effect documented in Section 2.

4.2 Foreign Demand Growth and Labor Shares

What is the effect of foreign demand shocks on firm-level labor shares? The results from estimating Equation (4) are displayed in Column 2 of Table 3. The elasticity of labor share

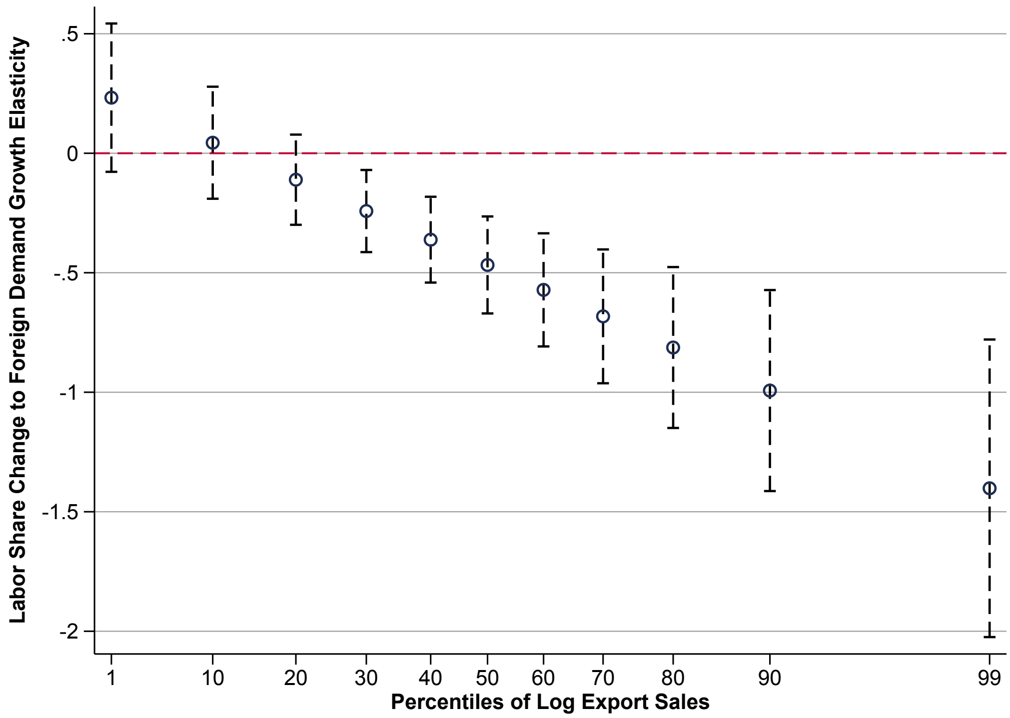
prior to the crisis. They document a positive causal effect of export sales on domestic sales for French manufacturing exporters.

[27] The five most affected countries by the Asian financial crisis were Indonesia, Malaysia, the Philippines, South Korea and Thailand.

[28] I average this ratio over the pre-crisis years for each firm.

[29] Other explanations are also likely to be causing this phenomenon, such as mergers and acquisitions and technological advances, for instance.

Figure (5) Within-Between Exporter Effect



Notes: This Figure is obtained by estimating Equation (4). This Figure reports the elasticity of the change in a firm's labor share to its foreign demand growth evaluated at different percentiles of the (log) export sales distribution (at time t_0). The coefficients used to compute these elasticities are reported in column 2 of Table 3. The percentiles of the initial export sales distribution are reported in Table 9.

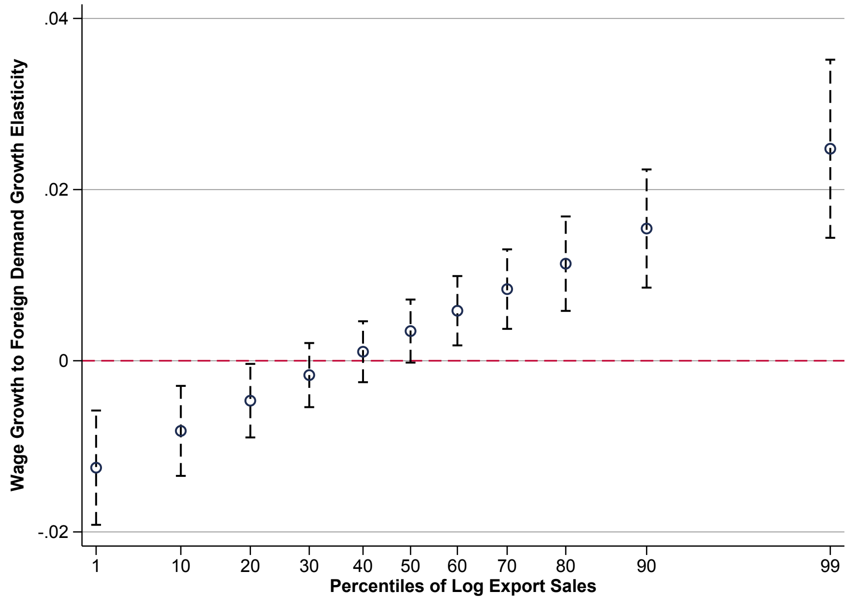
changes to foreign demand growth is displayed in Figure 5. It shows that exporters that are not highly internationalized experience an increase in their labor share following an increase in foreign demand. More internationalized exporters, on the other hand, experience a drop in their labor share while the labor share of top exporters exhibit an even larger decrease.

The use of micro-data allows me to study how the numerator of a firm's labor share, total labor compensation, varies with foreign demand shocks. Because changes in labor compensation can be driven by changes in the number of workers or in wages, I further study the evolution of these two margins separately. The estimated parameters are reported in the last three columns of Table 3. To meet the increase in foreign demand, firms might need to hire more workers. Similarly, an increase in foreign demand might lead firms to raise wages in order to incentivize workers to meet the increase in demand.[30]

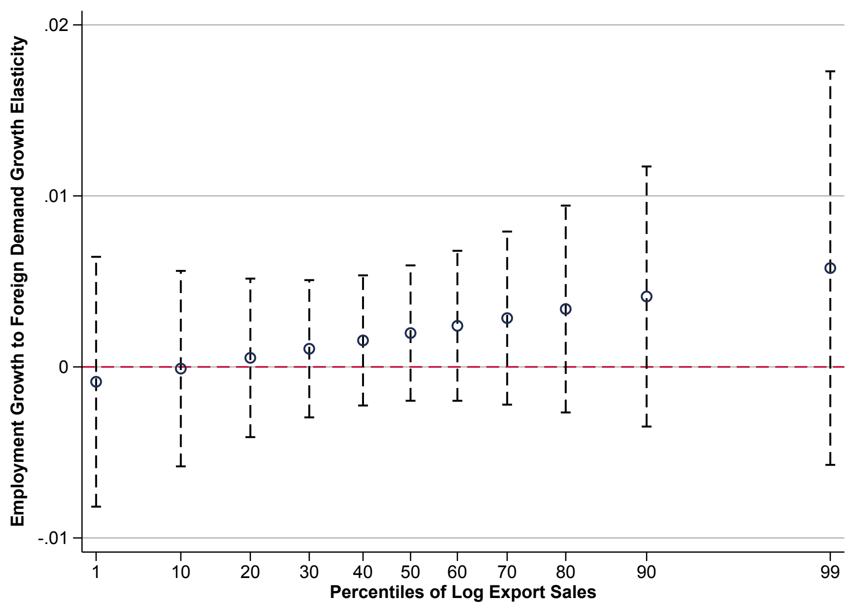
[30] Garin et al. (2018) study the causal effect of changes in demand conditions abroad on wages in Portugal before and after the Great Recession of 2008 and find positive significant effects.

Figure (6) Foreign Demand, Wages, and Employment

(a) Wages



(b) Employment



Notes: This Figure is obtained by estimating Equation (4) but where the dependent variable is the change in average wages for Panel 6a and in the number of employees for Panel 6b. This Figure reports the elasticity of the change in a firm's wages and number of workers to its foreign demand growth evaluated at different percentiles of the (log) export sales distribution (at time t_0). The coefficients used to compute these elasticities are reported in columns 4 and 5 of Table 3. The percentiles of the initial export sales distribution are reported in Table 9.

Column 4 of Table 3 and Figure 6a suggest that individuals working in superstar exporters experience wage gains. The last column of the table as well as Figure 6b show that superstars do not hire disproportionately more workers following an increase in foreign demand.[31] As labor supply is arguably inelastic in the short-run, the increase in labor demand brought about by foreign demand growth leads to higher wages, thereby driving up total labor compensation (column 3 of Table 3). Moreover, the finding that the number of workers does not react and that superstar exporters grow disproportionately more suggests that their labor productivity is going to increase. I also note that the effect on wages depicted in Figure 6a likely masks a lot of heterogeneity across skill types. Foreign demand growth might favor more skilled workers, for instance. This issue is left for future research.

Empirically, the fact that the labor share of superstar exporters decreases relatively more is explained by the reallocation effect depicted in Figure 4. Top exporters grow disproportionately more, pushing down their labor share. Conversely, firms in the bottom 1% of the export sales distribution experience an increase in their labor share, driven by the fact that their value-added is going down, though the coefficient is not statistically significant.

The increase in foreign demand improves the condition of individuals working in superstar exporters, as suggested by Figure 6a. In relative terms, however, changes in demand conditions abroad shrink the share of the pie going back to workers. This within-between exporter effect points to the importance of the pure between-exporter, or reallocation, effect displayed in the previous subsection in driving changes in the labor share of firms.

4.3 Robustness Tests

I show that both the intensive margin reallocation of value-added towards superstar exporters and the stronger decrease in the labor share they experience are not driven by the choice of sample, variables or specification.

Additional controls and firm-specific trends. Table 4 confirms the findings of Table 3 when addressing the concern that offshoring may affect a firm's foreign demand by including the growth rate of each firm's total imports. The point estimates remain statistically significant at the 1% level in column 1 and 4. In column 2 and 5, I control for the fact

[31] Higher hours worked could also be a way for firms to meet the increase in demand on the output market. Unfortunately, the data do not allow me to test this hypothesis.

Table (4) Robustness: Controls and Pre-Trends

Internationalization Measure (Superstar_{it_0})	ln Export Sales					
Dependent variable	$\Delta \ln \text{VA}_{it}$			$\Delta\text{Labor Share}_{it}$		
	(1)	(2)	(3)	(4)	(5)	(6)
$\tilde{\Delta}\text{ForeignDemand}_{it}$	-0.0177***	-0.0177***	-0.014***	0.1650	0.1529	0.0288
	(0.0042)	(0.0042)	(0.0046)	(0.1925)	(0.1923)	(0.2226)
$\tilde{\Delta}\text{ForeignDemand}_{it} \times \text{Superstar}_{it_0}$	0.0067***	0.0067***	0.0047***	-0.1436***	-0.1398***	-0.1065*
	(0.0011)	(0.0011)	(0.0012)	(0.0486)	(0.0486)	(0.0554)
Superstar_{it_0}	-0.0058***	-0.0058***		0.0196**	0.0200***	
	(0.0002)	(0.0002)		(0.0079)	(0.0078)	
$\Delta \ln \text{Imports}_{it}$	0.0209***	0.0209***	0.0136***	-0.2007***	-0.1918***	-0.1815***
	(0.0008)	(0.0008)	(0.0007)	(0.0271)	(0.0272)	(0.0295)
Δ Capital Intensity_{it}		-0.0025	-0.0131***		-0.7123***	-0.3387***
		(0.0024)	(0.0024)		(0.0829)	(0.0927)
Two-digit Sector × Year FE	✓	✓	✓	✓	✓	✓
Firm FE			✓			✓
# Observations	152,713	152,713	152,713	152,713	152,713	152,713

Notes: Standard errors clustered at the firm level. *** p<0.01, ** p<0.05, * p<0.1. The coefficients from the regression models are estimated over 1994-2001 using OLS. All columns include industry by year fixed effects. $\Delta \ln \text{VA}_{it}$ is the change in a firm's value-added. $\tilde{\Delta}\text{ForeignDemand}_{it}$ is the change in a firm's foreign demand. Superstar_{it_0} is a measure of the degree of internationalization of the firm and is the log of the export sales of the firm in the first year in which it appears in the sample. Δ ln Imports_{it} is the change in a firm's total imports from the rest of the world, $\Delta \ln (1+\text{Imports})_{it}$, and is a measure of offshoring. Δ Capital Intensity_{it} is the change in a firm's capital intensity as measured by the log of its capital-labor ratio. Columns 3 and 6 controls for firm-specific trends through the inclusion of firm fixed effects.

that foreign demand shocks may also incentivize firms to automate part of the production process through the inclusion of the growth rate of capital intensity. The main effect on the interaction term is largely stable. Finally, in column 3 and 6, I control for firm-specific trends by adding firm fixed-effects. The point estimates on the interaction term survive this tough test test and remain significant. The number of observations is smaller in this table because of the presence of a few singletons.

Future demand shocks. Table 16 further tests whether the initial export composition of firms can be responsible for the growth of value-added and changes in the firms' labor share. If pre-trends are responsible for these changes, we should expect future demand shocks to have a statistically significant impact on contemporaneous outcomes. Reassuringly, column 2 and 4 show that the effect is never significant while the coefficient on the interaction term between contemporaneous demand shocks and the superstar measure are precisely estimated as in Table 3. Though the coefficient in the third column is not significant at the 10% level (but is significant at the 14% level), the estimates are all significant at the 5% level for firms above the 30th percentile of the initial export sales distribution. This confirms that firm-specific trends are unlikely to drive the results.

Alternative time period. I provide evidence that both between and within-between exporter effects operate when I extend the sample to the whole 1994-2007 period. This is shown in the first two columns of Table 17. The main results are not affected and all the estimates are significant at the 1% level. To show that the results in the first two columns are not driven by the period 1994-2001, I focus on the sample of firms that operate over the 2001-2007 period. This does not alter the point estimates, which are even stronger over that time period. Foreign demand growth drives down the manufacturing labor share through the reallocation effect mentioned before, and through a decrease in the labor share of firms which is strongest for top exporters. Even though the aggregate labor share experiences an increase after 2001, this test shows that the results are not driven by the time period and that foreign demand growth unambiguously pulls the labor share *down*.

Alternative internationalization measures. Table 18 uses the other internationalization measures described in Table 2, namely the export intensity of a firm, its number of products exported and the number of destination countries served. The interaction term is positive (negative) and significant in the first (last) three columns. The finding that superstar exporters grow relatively more than less internationalized firms and experience a stronger decrease in their labor share does not depend on the choice of internationalization measure.

Alternative labor share measure. Panel G.9a of Figure G.9 displays the elasticity of sales growth to foreign demand growth, while Panel G.9b shows how the equipped labor share evolves with foreign demand growth. The top panel shows that the elasticity of sales growth to foreign demand growth closely corresponds to that of value-added growth reported in Figure 4, meaning that the results are driven by an increase in sales. The bottom panel displays a downward sloping elasticity with a firm's degree of internationalization. This shows that *all* the primary factors of production (capital and labor) of a firm are receiving a lower share of that firm's sales and that the effect is exacerbated for superstar exporters.

Exclusion of extreme years. As shown in Figure 1, the labor share declines sharply in 1994 while it increases in 2001. Without these two years, the labor share dropped by 2 percentage points over 1995-2000 (Table 1). To test the sensitivity of the result to the inclusion of these years, I exclude 1994 and 2001 of the sample and re-estimate Equations (3) and (4). Table 19 shows that the reallocation towards superstar exporters and the within-between effect survive the exclusion of these two years.

Exclusion of key industries. The different industries within manufacturing experienced a different growth rate of exports over the period as shown in Figure G.8. Firms' value-added and labor share can evolve differently within different industries and be driven by industry-specific trends. I further exclude the industries whose growth rate of exports was particularly high to test whether the results are driven by these industries. More specifically, I exclude the chemical, rubber, plastics and fuel, electrical and optical equipment, and transport equipment industries from my sample. Table 20 shows that the results survive this restriction and are not driven by a few key industries.

Alternative firm size measures. Fact 3 shows that more internationalized exporters have a lower labor share. I test whether the results hold when considering other "superstar" firm characteristics instead of these internationalization measures. I instead use capital intensity and revenue productivity as alternative measures of firm size/heterogeneity, as shown in Figure G.10 and Figure G.11, respectively. The elasticities displayed in all four panels leave the key results reported in Figure 4 and Figure 5 unchanged, though the coefficients are smaller in magnitude and less precisely estimated.

Alternative lag structure. Internationalized exporters are defined in the first year in which they appear in the sample to avoid simultaneity issues. This choice, however, prevents firms from becoming large players on international markets. I assess the robustness of the main results to lagging the internationalization measures, in order to allow exporters to move along the export sales distribution. This test is reported in Table 21. The results are robust to lagging the superstar variable once (column 1 and 2) or twice (column 3 and 4).

Sample of survivors. Table 3 contains firms that appear in at least two time periods (survivors) but it also contains entrants and exiters. Table 22 tests whether the subsample of exporters surviving the entire 1994-2001 period yields similar results. The estimated coefficients of interest (β^{Rank} and χ^{Rank}) have the same sign as the baseline estimates that contain entrants and exiters and are statistically significant. This test shows that entrants and exiters over the period do not drive the results.

Outsourcing. An alternative mechanism that could explain the reallocation of value-added shares towards large exporters and the decline in their labor share is outsourcing.

Over the last decades, several industries such as the automobile industry have transferred part of their activity to business partners to focus on their core activity. Two observable consequences of outsourcing could be a sudden increase in investment as the firm narrows its activity to its core competency and large changes in employment. I therefore remove firm-year observations for which the growth rate of total investments and the growth rate of employment is lower than the bottom or higher than the top 10% percent of each growth rate distribution within each 2-digit industry. This allows me to keep a sample of firms that have arguably not experienced any restructuring which would affect their value-added growth rate or their labor share. The point estimates reported in Table 23 are very similar to those in Table 3 and are estimated precisely.

4.4 Magnitude

How large is the effect of a surge in foreign demand on the manufacturing labor share? I make use of the Foster et al. (2001) decomposition method and the point estimates obtained in Section 4.1 and 4.2 to get a sense of the magnitude of the effects. I focus on the effect of foreign demand shocks on firms that survive over at least two years and do not study the entry-exit margins. Although the following results are partial equilibrium in nature, they provide interesting evidence on the magnitude of the effect of foreign demand growth in generating changes in the manufacturing labor share.

From Equation (2), the reallocation margin is given by:

$$\Delta \mathrm{LS}_t^{\mathrm{Between}} := \sum_{i \in \mathrm{S}} \left(\omega_{it} - \omega_{it-1}\right)\left(\mathrm{LS}_{it-1} - \mathrm{LS}_{t-1}\right) + \sum_{i \in \mathrm{S}} \left(\omega_{it} - \omega_{it-1}\right)\left(\mathrm{LS}_{it} - \mathrm{LS}_{it-1}\right)$$

while the within-firm effect is given by:

$$\Delta \mathrm{LS}_t^{\mathrm{Within}} := \sum_{i \in \mathrm{S}} \omega_{it-1}\left(\mathrm{LS}_{it} - \mathrm{LS}_{it-1}\right)$$

Using the point estimates obtained, I can compute the percentage point change in the labor share caused by the reallocation effect and arising from foreign demand changes, labeled $\Delta \hat{\mathrm{LS}}_t^{\mathrm{Between}}$:

$$\begin{aligned}\Delta \hat{\mathrm{LS}}_t^{\mathrm{Between}} &= \sum_{i \in \mathrm{S}} \left(\hat{\omega}_{it}^{\mathrm{Between}} - \omega_{it-1}\right)\left(\mathrm{LS}_{it-1} - \mathrm{LS}_{t-1}\right) \\ &+ \sum_{i \in \mathrm{S}} \left(\hat{\omega}_{it}^{\mathrm{Between}} - \omega_{it-1}\right)\left(\hat{\zeta}^{\mathrm{Rank}} \tilde{\Delta} \mathrm{ForeignDemand}_{it} + \hat{\chi}^{\mathrm{Rank}} \tilde{\Delta} \mathrm{ForeignDemand}_{it} \times \mathrm{Superstar}_{it_0}\right)\end{aligned} \tag{7}$$

Table (5) Magnitude of the Effects

	$\Delta\hat{LS}_t^{\text{Between}}$ (1)	$\Delta\hat{LS}_t^{\text{Within}}$ (2)	$\Delta\hat{LS}_t^{\text{Within}} + \Delta\hat{LS}_t^{\text{Between}}$ (3)	Contribution Between (%) (4)	Contribution (%) (5)
1994-1995	-0.0065	-0.2127	-0.2192	1.07	6.77
1995-1996	-0.0562	-0.0618	-0.118	6.24	-8.49
1996-1997	-0.0016	-0.0110	-0.0126	0.26	1.48
1997-1998	0.0815	-0.0287	0.0528	-22.03	-13.2
1998-1999	-0.0688	-0.0327	-0.1015	6.62	15.62
1999-2000	-0.1306	-0.0667	-0.1973	25.61	14.3
2000-2001	0.0308	0.0069	0.0377	-440	3.56
1994-2001	-0.1514	-0.4067	-0.5581	3.75	13.68
1994-2000	-0.1823	-0.4136	-0.5959	4.52	11.59

Notes: This decomposition is done for the sample of manufacturing exporters using the estimated parameters recovered from estimating Equations (3) and (4). The predicted between term in column 1 is the sum of the between and the cross effect described in Equation (7). Column 2 contains the predicted within-between firm effect described in Equation (9). Column 3 is the sum of columns 1 and 2. Column 4 is obtained by taking the ratio $\frac{\Delta\hat{LS}_t^{\text{Between}}}{\Delta LS_t^{\text{Between}}}$ for each year interval, using the values reported in column 3 of Table 1. Column 5 is obtained by taking the ratio of the predicted labor share change arising from foreign demand growth reported in column 3 to the observed overall change reported in column 1 of Table 1 for each year interval. The estimated parameters used to compute the predicted values are reported in columns 1 and 2 of Table 3. The last two rows of the table sum the previous rows over the whole 1994-2001 and 1994-2000 period.

The predicted values for the value-added weights are given by:

$$\hat{\omega}_{it}^{\text{Between}} = \frac{\text{VA}_{it-1}\left(1 + \hat{\alpha}^{\text{Rank}}\tilde{\Delta}\text{ForeignDemand}_{it} + \hat{\beta}^{\text{Rank}}\tilde{\Delta}\text{ForeignDemand}_{it} \times \text{Superstar}_{it_0}\right)}{\sum_i \text{VA}_{it-1}\left(1 + \hat{\alpha}^{\text{Rank}}\tilde{\Delta}\text{ForeignDemand}_{it} + \hat{\beta}^{\text{Rank}}\tilde{\Delta}\text{ForeignDemand}_{it} \times \text{Superstar}_{it_0}\right)} \tag{8}$$

Value-added is lagged in the previous equation. If there were no effect, $\hat{\alpha}^{\text{Rank}} = \hat{\beta}^{\text{Rank}} = 0$ so that $\hat{\omega}_{it}^{\text{Between}} = \omega_{it-1}$ which would imply that the predicted between-firm component would be nil ($\Delta\hat{LS}_t^{\text{Between}} = 0$).

The percentage point change arising from changes in firms' labor share and caused by foreign demand changes can be obtained using the estimated coefficients from Equation (4). This gives the predicted within-between term $\Delta\hat{LS}_t^{\text{Within}}$:

$$\Delta\hat{LS}_t^{\text{Within}} = \sum_{i \in S} \omega_{it-1}\left(\hat{\zeta}^{\text{Rank}}\tilde{\Delta}\text{ForeignDemand}_{it} + \hat{\chi}^{\text{Rank}}\tilde{\Delta}\text{ForeignDemand}_{it} \times \text{Superstar}_{it_0}\right) \tag{9}$$

I use the OLS coefficients provided in the first two columns of Table 3 to compute the predicted between-firm margin $\Delta\hat{LS}_t^{\text{Between}}$ and the predicted within-between firm margin $\Delta\hat{LS}_t^{\text{Within}}$.

The main quantitative results are displayed in Table 5. In column 1, foreign demand growth generates a 0.15 percentage point decline in the labor share through reallocation towards low-labor share exporters. The within-between firm effect is much stronger and generates a 0.41 percentage point decline in the labor share. The sum of these two margins is reported in column 3. Both between-firm and within-between firm effects arising from foreign demand growth generate a 0.56 percentage point decline in the manufacturing labor share over 1994-2001. In column 4, I compute the share of the *observed* reallocation effect towards low-labor share exporters explained by foreign demand growth. To do so, I compute the ratio $\frac{\Delta \hat{LS}_t^{\text{Between}}}{\Delta LS_t^{\text{Between}}}$ for each year. Foreign demand explains about 4% of the observed reallocation effect towards low-labor share, superstar exporters in manufacturing. This result complements the findings of Autor et al. (2017) who document the rise of superstar firms. Their rise can be caused by a variety of factors, including globalization, mergers and acquisitions, and technological advances. Column 4 shows that part of their rise is caused by changes in demand conditions on foreign markets. Finally, column 5 computes the share of the actual decline in the French manufacturing labor share that can be attributed to foreign demand growth. To do so, I compare the overall predicted labor share decline reported in column 3 to the actual overall change reported in column 1 of Table 1. Foreign demand growth, through the between-firm and within-between firm effects it generates, explains about 14% of the overall decline in the French manufacturing labor share. These results are arguably a *lower* bound for the overall effect of international trade on the labor share. Foreign demand induces firms to patent more (Aghion et al., 2018). The authors find that the effect is stronger for more productive exporters. This increase in innovation going through changes in foreign demand conditions could further reallocate output towards larger exporters. A more globalized economy also means a country more open to imports from the rest of the world. Bloom et al. (2016) show that the rise of Chinese exports to European countries over the period 1996-2007 spurred innovation. This channel, which goes through the import side of trade, can also lead to intensive margin reallocations towards larger firms. This could reinforce the trade-induced superstar effect.

In Table 6, I study the sensitivity of the results to the exclusion of superstar exporters. I first trim the top 1% of the export sales distribution and estimate baseline specifications (3) and (4). I then use the point estimates reported in columns 1-2 of Table 24 and compute the new predicted labor share changes and quantify their importance in explaining the observed reallocation effect and observed labor share decline. Columns 1-3 of Table 6 show that between and within-firm effects are much smaller in the absence of superstar exporters. The labor share decrease generated by foreign demand growth only amounts to 0.26 percentage points, half the amount obtained previously. Foreign demand growth only explains 0.5% of the reallocation effect occurring in the data, as displayed in Column

Table (6) Magnitude of the Effects without the Superstar Exporters

	$\Delta\hat{LS}_t^{\text{Between}}$ (1)	$\Delta\hat{LS}_t^{\text{Within}}$ (2)	$\Delta\hat{LS}_t^{\text{Within}} + \Delta\hat{LS}_t^{\text{Between}}$ (3)	Contribution Between (%) (4)	Contribution (%) (5)
1994-1995	-0.0111	-0.1551	-0.1662	1.82	5.13
1995-1996	0.0020	-0.0274	-0.0254	-0.22	-1.83
1996-1997	0.0020	-0.0010	0.001	-0.37	-0.12
1997-1998	-0.0040	-0.0464	-0.0504	1.08	12.6
1998-1999	-0.0075	-0.0066	-0.0141	0.72	2.17
1999-2000	0.0049	0.0102	0.0151	-0.96	-1.09
2000-2001	-0.0045	-0.0155	-0.02	64.29	-1.89
1994-2001	-0.0183	-0.2418	-0.2601	0.45	6.38
1994-2000	-0.0137	-0.2263	-0.24	0.34	4.67

Notes: This decomposition is done for the sample of manufacturing exporters using the estimated parameters recovered from estimating Equations (3) and (4). Firms in the top 1% of the initial log export sales distribution have been discarded from the sample. The predicted between term in column 1 is the sum of the between and the cross effect described in Equation (7). Column 2 contains the predicted within-between firm effect described in Equation (9). Column 3 is the sum of columns 1 and 2. Column 4 is obtained by taking the ratio $\frac{\Delta\hat{LS}_t^{\text{Between}}}{\Delta LS_t^{\text{Between}}}$ for each year interval, using the values reported in column 3 of Table 1. Column 5 is obtained by taking the ratio of the predicted labor share change arising from foreign demand growth reported in column 3 to the observed overall change reported in column 1 of Table 1 for each year interval. The estimated parameters used to compute the predicted values are reported in columns 1 and 2 of Table 24. The last two rows of the table sum the previous rows over the whole 1994-2001 and 1994-2000 period.

4. Column 5 points to the key role of superstar exporters in driving down the manufacturing labor share. Not accounting for top sellers on international markets leads to foreign demand growth explaining 6% of the labor share decline versus 14% obtained in Table 5.

Table 5 highlights the importance of the within-between margin in driving the manufacturing labor share down, as it accounts for 73% of both between and within-between effects.[32] Although the within-between firm effect is explained by the reallocation effect, the extent to which firm heterogeneity and this reallocation effect can account for this within-between firm effect is uncertain. In Table 7, I shut down the heterogeneity parameters β^{Rank} and χ^{Rank} and estimate my baseline specifications, assuming that the effect played by foreign demand on the firms' growth rate and labor share does not vary with their degree of internationalization. Columns 1-3 report much smaller results. In column 4, foreign demand growth only accounts for 0.2% of the reallocation effect. This result is not surprising given that the reallocation effect is about the interaction term between a firm's foreign demand and its degree of internationalization. Column 5 indicates that not allowing foreign demand growth to impact the growth rate of firms and their labor share differently leads to foreign demand growth accounting for 2.5% of the observed labor share decline. Importantly, although the within-firm component of column 2 is still the most important margin and accounts for 93% of the decline generated by foreign demand

[32]This number is obtained by taking the ratio $\frac{\Delta\hat{LS}_t^{\text{Within}}}{\Delta\hat{LS}^{\text{Within}}+\Delta\hat{LS}^{\text{Between}}}$ for the whole 1994-2001 period using the numbers reported in columns 2 and 3 of Table 5.

Table (7) Shutting Down the Heterogeneity Parameters

	$\Delta\hat{LS}_t^{\text{Between}}$ (1)	$\Delta\hat{LS}_t^{\text{Within}}$ (2)	$\Delta\hat{LS}_t^{\text{Within}} + \Delta\hat{LS}_t^{\text{Between}}$ (3)	Contribution Between (%) (4)	Contribution (%) (5)
1994-1995	0.0035	-0.0529	-0.0494	-0.57	1.52
1995-1996	-0.0043	-0.0136	-0.0179	0.48	-1.29
1996-1997	-0.0003	-0.0022	-0.0025	0.05	0.29
1997-1998	0.0097	-0.0089	0.0008	-2.62	-0.2
1998-1999	-0.0065	-0.0066	-0.0131	0.63	2.02
1999-2000	-0.0124	-0.0097	-0.0221	2.43	1.60
2000-2001	0.0034	-0.0005	0.0029	-48.57	0.27
1994-2001	-0.0069	-0.0944	-0.1013	0.17	2.48
1994-2000	-0.0103	-0.0939	-0.1042	0.26	2.03

Notes: This decomposition is done for the sample of manufacturing exporters using the estimated parameters recovered from estimating Equations (3) and (4) from which the interaction terms and the Superstar$_{it_0}$ variables are dropped. The predicted between term in column 1 is the sum of the between and the cross effect described in Equation (7). Column 2 contains the predicted within-between firm effect described in Equation (9). Column 3 is the sum of columns 1 and 2. Column 4 is obtained by taking the ratio $\frac{\Delta\hat{LS}_t^{\text{Between}}}{\Delta LS_t^{\text{Between}}}$ for each year interval, using the values reported in column 3 of Table 1. Column 5 is obtained by taking the ratio of the predicted labor share change arising from foreign demand growth reported in column 3 to the observed overall change reported in column 1 of Table 1 for each year interval. The estimated parameters used to compute the predicted values are reported in columns 3 and 4 of Table 24. The last two rows of the table sum the previous rows over the whole 1994-2001 and 1994-2000 period.

growth, understanding the role played by foreign demand growth in generating changes in the labor share boils down to understanding the *reallocation* effect that takes place and favors superstar exporters. The reallocation effect accounts for 82% of the role played by foreign demand on the labor share, not only through the pure between-firm effect but also through the within-*between* firm effect.[33] It is therefore the key effect to rationalize.

5 Theory

The previous section highlighted the importance of reallocations towards superstar exporters in driving down the manufacturing labor share, through between-firm and within-*between* firm effects. I now rely on a monopolistic competition model to rationalize the reallocation effect. The two key results of the model is that larger firms have a lower labor share because they charge higher markups and an increase in demand leads to intensive margin reallocations towards these large firms.

5.1 Closed Economy Model

The framework builds on Zhelobodko et al. (2012). The market structure is monopolistic competition and firms are heterogeneous in terms of their productivity. For sake of

[33]This figure is obtained by comparing column 5 of Table 7 to column 5 of Table 5 for the whole 1994-2001 period.

simplicity and because the focus of the paper is not on the impact of foreign demand on reallocations of export sales across *products* within multi-product firms but rather on reallocation across *firms*, firms are assumed to be single-product firms.[34] To highlight the relationship between firm size and markups, I further abstract from capital as I have shown that the share of all primary factors of production in a firm's total sales decreases with foreign demand (Figure G.9b). The economy is assumed to be closed. The model in open-economy delivers the same results as the one in closed-economy and is therefore relegated to Appendix E.4. An increase in foreign demand will lead to a reallocation of output towards the most productive exporters with a low labor share.

Consumers side. There are L consumers in the economy who demand x_i units of a differentiated good indexed over the interval $i \in [0, N]$. The wage is the numeraire so that a consumer's income is set equal to one. Preferences are additively separable and each consumer solves:

$$\max_{x_i} \int_0^N u(x_i)di \quad \text{s.t.} \quad \int_0^N p_i x_i di = 1$$

The first-order condition with respect to x_i leads to the following inverse demand function:

$$p(x_i; \lambda) = \frac{u'(x_i)}{\lambda} \tag{10}$$

The inverse demand function is positive and downward sloping if and only if $u'(x_i) > 0$ and $u''(x_i) < 0$, which I assume. The marginal utility of income λ is defined from the budget constraint and (10) as:

$$\lambda = \int_0^N u'(x_i)x_i di \tag{11}$$

From (10), the marginal utility of income acts as a demand shifter. If it increases, the residual demand curve shifts inward so that prices decrease at any given quantity level.

Firms side. Firms produce a distinct differentiated good and there is a set of entrants N_e who can pay a sunk cost of entry expressed in units of labor f_e to produce or not. If they decide to pay that cost, they draw their productivity level φ from a distribution $G(\varphi)$ whose support is given over $[0, \infty]$. When producing, firms have to pay a fixed cost f which gives rise to increasing returns to scale. Each firm i produces a good q_i using labor l_i as an input. A firm's production function is $q_i = \varphi l_i$ where φ is its productivity and is

[34] For a treatment of multi-product firms and evidence of intensive margin reallocations leading to aggregate productivity gains in the French context, see Mayer et al. (2016).

firm-specific. The total cost function TC_i of the firm is $\mathrm{TC}_i = \frac{w}{\varphi} q_i + f$ where f is the fixed cost of production.

The condition for profit maximization such that marginal revenue is equal to marginal cost entails that the price p_i of a good is equal to that firm's markup μ_i times its marginal cost of production:

$$p_i = \mu_i \frac{w}{\varphi} \tag{12}$$

Multiplying both sides of (12) by q_i and rearranging, one obtains:

$$\frac{w l_i}{p_i q_i} = \frac{1}{\mu_i} \tag{13}$$

This equation relates a firm's labor share to that firm's markup.[35] In the cross-section, firms that charge higher markups have a lower labor share.

From the goods market equilibrium condition, total quantity produced is $q_i = x_i L$. Firms choose the x_i that maximizes their per-consumer operating profits π^c:[36]

$$\pi^c(\varphi, \lambda) := \max_{x_i} \left\{ \left(\frac{u'(x_i)}{\lambda} - \frac{1}{\varphi} \right) x_i \right\} \tag{14}$$

This gives rise to the optimal quantity demanded by individual consumers:

$$x(\varphi, \lambda) := \arg\max_{x_i} \left\{ \left(\frac{u'(x_i)}{\lambda} - \frac{1}{\varphi} \right) x_i \right\} \tag{15}$$

Revenue sales per-consumer are defined as:

$$r(\varphi, \lambda) = p\big(x(\varphi, \lambda), \lambda\big) x(\varphi, \lambda) \tag{16}$$

while total net profits are given by:

$$\Pi(\varphi, \lambda) = \pi^c(\varphi, \lambda) L - f \tag{17}$$

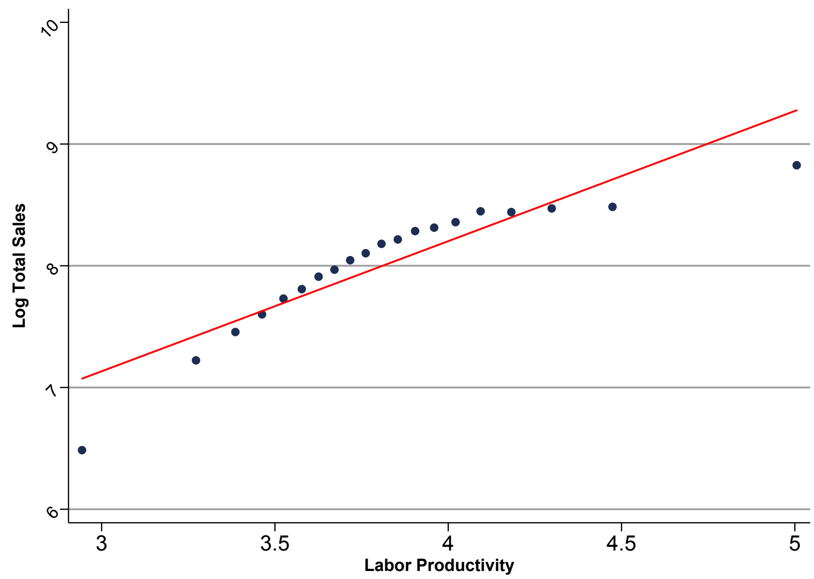
Total profits are continuous and from the envelope condition, profits increase in φ so that there exists a unique cutoff productivity level φ^* that solves:

$$\Pi(\varphi^*, \lambda) = 0 \iff \pi^c(\varphi^*, \lambda) L = f \tag{18}$$

[35] The denominator of (13) corresponds to sales or value-added. Both are equal to each other as I abstract from materials.

[36] I make use of the inverse demand function given in (10).

Figure (7) Labor Productivity and Firm Size



Firms that are less productive than the cutoff productivity level ($\varphi < \varphi^*$) will not find it profitable to produce and will exit.

Free entry is assumed to hold and this condition writes:

$$\int_{\varphi^*}^{\infty} \Big[\pi^c(\varphi, \lambda)L - f\Big] dG(\varphi) = f_e \tag{19}$$

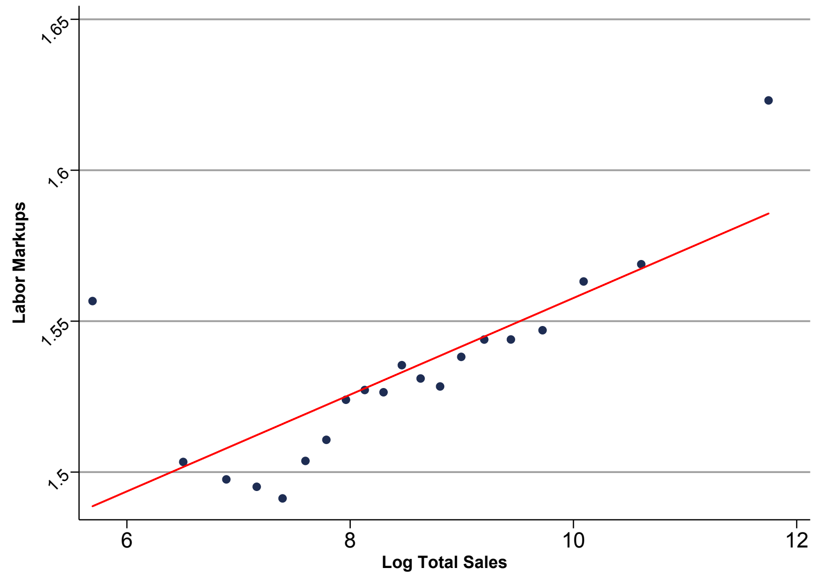
Marshall's Second Law of Demand. The two key results of the model hinge on an assumption relating a firm's demand elasticity to its size, assumption commonly referred to as Marshall's Second Law of Demand (MSLD):

Assumption 1. *(Marshall's Second Law of Demand) The inverse demand elasticity* $\sigma_p(x_i) := -\frac{\partial p(x_i)/\partial x_i}{p(x_i)/x_i}$ *increases in* x_i: $\frac{\partial \sigma_p(x_i)}{\partial x_i} > 0$.

This assumption is equivalent to saying that the demand elasticity decreases with x_i. It implies that a profit-maximizing firm's marginal revenue decreases in x_i, as shown in Appendix E.1. The fact that marginal revenues decrease with consumption generates a positive relationship between a firm's productivity level and its production. Assumption 1 is sufficient to generate a positive relationship between firm size and markups.

Krugman (1979) derives a model of international trade with increasing returns to scale in which he studies the effect of an expansion of the world economy on welfare. His model with no firm heterogeneity predicts that trade leads to pro-competitive effects (lower markups). This is because the demand elasticity is not constant. More specifi-

Figure (8) Markups and Firm Size



cally, "these results depend [...] on the assumption that the elasticity of demand falls with c(onsumption). This assumption, which might alternatively be stated as an assumption that the elasticity of demand rises when the price of a good is increased, seems plausible. In any case, it seems to be necessary if this model is to yield reasonable results, and I make the assumption without apology" (Krugman, 1979). Recent work by De Loecker et al. (2016) shows that markups and quantities are positively correlated with one another. Their method of estimating markups does not make any assumption on the market structure in which firms operate and is therefore consistent with larger firms facing a lower demand elasticity in a monopolistic competition context. Mayer et al. (2016) show that the patterns of product-mix reallocations they find in French manufacturing are consistent with larger firms facing a lower demand elasticity.

Because Assumption 1 is key to rationalize the reallocation effect, I provide evidence that more productive firms are larger, as shown in Appendix E.2. Figure 7 indicates a positive relationship between (labor) productivity and firm size, as measured by total sales. I also estimate firms' total factor productivity (TFP) using production function estimation techniques (Olley and Pakes, 1996; Levinsohn and Petrin, 2003; Ackerberg et al., 2015). Figure G.12 also shows a positive correlation between revenue TFP and firm size.[37] To show more directly the relationship between markups and firm size implied by MSLD, I estimate firm-level markups (Hall, 1988; De Loecker and Warzynski, 2012) using production function estimation techniques. De Loecker and Warzynski (2012) show that for

[37] Details on the estimation can be found in Appendix D.

cost-minimizing producers, firm-level markups drive a wedge between the output elasticity of a flexible input and that input's share in total revenues. Thereby, given an input's output elasticity, a lower revenue share of that input in total sales will command a higher markup. More details on this method are provided in Appendix D. The relationship between markups and firm size is shown in Figure 8 and points to a positive relationship between markups and firm size in my sample of French manufacturing exporters.[38] These pieces of evidence motivate Assumption 1.

As shown in Appendix E.2, MSLD leads to the following proposition:

Proposition 1. *More productive firms charge higher markups and have a lower labor share.*

Proof. See Appendix E.2. □

When MSLD holds, more efficient firms produce more and therefore face a lower demand elasticity. This allows them to charge higher markups as consumers are less sensitive to price changes and this translates into a lower labor share from Equation (13). The fact that more internationalized firms have a lower labor share (Fact 3) is consistent with Marshall's Second Law of Demand.

Demand increase and reallocation effect. Given the theoretical result linking a firm's productivity level and its size to its labor share, a decline in the manufacturing labor share will occur if an increase in demand reallocates output towards high productivity type firms. Totally differentiating a firm's total profits with respect to L leads to:

$$\frac{d\Pi}{dL}\frac{L}{\Pi} = \frac{\partial\Pi}{\partial L}\frac{L}{\Pi} + \frac{\partial\Pi}{\partial\lambda}\frac{\lambda}{\Pi} \times \frac{d\lambda}{dL}\frac{L}{\lambda} \tag{20}$$

This equation tells us that the elasticity of profits to a change in demand (population L) can be decomposed into two effects: a market size effect, which is the first component on the right hand side of the equation, and a competition effect. The first one tends to rise firms' profits while the second one decreases profits as competition is fiercer.[39] In general,

[38]This positive relationship between firm size and markups can also be obtained when the market structure is oligopolistic. In the Atkeson and Burstein (2008) and Edmond et al. (2015) framework, more productive firms charge higher markups because they produce more and have lower prices which translates into a higher market share for these firms. In their model, under the assumption that the elasticity of substitution within sectors is higher than that across sectors, this leads to more productive firms charging higher markups. This is because firms with a high market share will mostly compete with firms in other sectors. As the competition is low in their own sector, they will face a low demand elasticity close to the elasticity of substitution across sectors. This result holds regardless of whether firms compete à la Cournot or à la Bertrand.

[39]The fact that an increase in λ leads to lower profits follows from differentiating (14) with respect to λ and using the envelope theorem. Competition always increases with demand L as shown in the Appendix.

it is hard to know which effect dominates but with additively separable preferences, the solution turns out to be tractable. As shown in Appendix E.3, Equation (20) boils down to:

$$\frac{d\Pi}{dL}\frac{L}{\Pi} = 1 - \frac{[\sigma_p(\varphi,\lambda)]^{-1}}{\int_{\varphi^*}^{\infty} \frac{\pi^c(\varphi,\lambda)}{\pi^c(\lambda)}[\sigma_p(\varphi,\lambda)]^{-1} dG(\varphi)} \tag{21}$$

The market size effect is equal to unity. The competition effect is the ratio of a firm's demand elasticity to a weighted average of demand elasticities faced by all surviving firms. These demand elasticities are weighted by the share of each firm's profit in total profits. The denominator is an average demand elasticity. Firms that have a lower than average demand elasticity will have $\frac{[\sigma_p(\varphi,\lambda)]^{-1}}{\int_{\varphi^*}^{\infty} \frac{\pi^c(\varphi,\lambda)}{\pi^c(\lambda)}[\sigma_p(\varphi,\lambda)]^{-1} dG(\varphi)} < 1$ so that $\frac{d\Pi}{dL}\frac{L}{\Pi} > 0$.

The intuition of the result is as follows. Under Assumption 1, more productive firms face a lower demand elasticity. When demand increases, the market size effect dominates for larger firms as they face a lower than average demand elasticity and are not highly penalized by the concomitant increase in competition. Firms with a higher than average demand elasticity, namely less productive firms, will experience a decrease in profits as the competition effect dominates. This triggers intensive margin reallocations towards more productive firms.[40] Because these very productive firms also have a low labor share from Proposition 1, this triggers a decline in the manufacturing labor share. As Mrázová and Neary (2017) put it, an increase in demand generates a "Matthew Effect".[41] Proposition 2 follows:

Proposition 2. *A market size increase drives the labor share down through a reallocation of output towards large, low-labor share firms.*

Proof. See Appendix E.3. □

In the model, there exists a negative relationship between a firm's productivity level and its demand elasticity so that more productive firms face a lower demand elasticity. This predicts a heterogeneous response of value-added growth when foreign demand increases. This response is higher for firms that are highly internationalized in my empirical

[40] Syverson (2004a,b) shows that greater substitutability, which means more competition, reallocates output from low-productive firms to high-productive firms and reduces productivity dispersion. This is consistent with the fact that concentration can increase in a more competitive environment.

[41] The Matthew Effect originally refers to a sentence appearing in the Gospel According to St. Matthew: "For unto every one that hath shall be given, and he shail have abundance: but from him that hath not shall be taken away even that which he hath". Merton (1968) refers to this biblical statement to describe situations in which, everything else equal, more famous researchers get more attention for their work, compared to less famous ones. More famous researchers therefore become more famous, hence the analogy with Proposition 2.

framework. This model is therefore consistent with the between-firm and within-between firm effects highlighted in Section 4.

Finally, it is important to note that when preferences are CES, the inverse demand elasticity is constant and given by $\sigma_p(x_i) = \frac{1}{\sigma}$ with σ the elasticity of substitution across varieties. Both effects turn out to be equal to one and cancel each other out:

$$\sigma_p(x_i) = \frac{1}{\sigma} \Longrightarrow \frac{d\Pi}{dL}\frac{L}{\Pi} = 0$$

Intensive margin reallocations are incompatible with CES preferences when the market structure is monopolistic.

Discussion on markups and labor shares. I now discuss the implications of the model for changes in aggregate and firm-level markups and labor shares. Markups vary across firms because of MSLD. An increase in demand reallocates output towards more productive firms that are larger. Since larger firms charge higher markups, aggregate markups rise through this reallocation effect, consistent with De Loecker and Eeckhout (2017, 2018) and Bauer and Boussard (2019). Here, the fall in the manufacturing labor share through the reallocation effect is therefore consistent with the rise of aggregate markups.

Another interesting implication of the model is that firm-level labor shares should *increase*. The increase in demand abroad generates an increase in competition on the foreign market, leading to a higher price elasticity of demand and to lower markups charged on the foreign market. *Everything else equal*, firm-level markups will decrease, leading to an increase in the labor share at the firm-level from (13). Empirically, it is, possible that within-firm markups increase following an increase in foreign demand, depending on how markups charged on the *domestic* market react.[42] There exists another explanation that could lead to a *decrease* in the labor share of firms. As foreign demand grows and firms get larger and expand, their share of fixed cost in total output might go down. If fixed costs are denominated in labor, this could lead to a decrease in the labor share of firms.

[42]The profit maximization condition that a firm's marginal revenue equals its marginal cost entails that Equation (12) holds for *each* market. Given that a firm's labor share is the sum of labor compensation divided by the sum of value-added across markets, one can express the *firm-level* labor share LS_{it} as a function of markups charged on each market D and F weighted by the share of export sales in total sales ω_i^F. This leads to the following relationship $\text{LS}_{it} = (1-\omega_i^F)(\mu_i^D)^{-1} + \omega_i^F(\mu_i^F)^{-1}$. The labor share of non-exporters ($\omega_i^F = 0$) is determined by their markup charged on the domestic market. For exporters ($\omega_i^F \neq 0$), the overall effect of foreign demand changes on their firm-level labor share depends on a within-market component (whether μ_i^D and μ_i^D increase or not) and a between-market component. The difference between markups charged on each market can be either exacerbated or attenuated by a change in export intensity ω_i^F.

Theoretically, the increase in the labor share of firms predicted by the decrease in markups goes against the result highlighted in column 2 of Table 7 that the labor share of firms goes down following an increase in their foreign demand. As argued above, this pure negative within-firm effect only accounts for 18% of the role played by foreign demand on the labor share and is therefore much less important than the reallocation effect in generating changes in the labor share. Investigating the channels (changes in markups, changes in the share of fixed costs in value-added) behind this negative within-firm effect is beyond the scope of the paper and I leave this interesting question for future research.

6 Conclusion

In this article, I study and quantify the impact of foreign demand changes on the manufacturing labor share. To do so, I use firm-level data on the universe of French exporters operating in the manufacturing sector.

I provide causal empirical evidence that foreign demand growth allows low-labor share firms, superstar exporters, to grow disproportionately more. Importantly, I also find that this reallocation effect towards superstar exporters triggered by foreign demand growth generates a stronger decrease in their labor share. These effects appear to be robust to a variety of tests and are not driven by the choice of sample, specification or time period. These two channels account for 14% of the labor share decline over 1994-2001.

The finding that export demand drives down the labor share and that reallocations towards superstar exporters are a key mechanism suggests that the impact of international trade on the labor share is more complex than just changes in import exposure. Understanding the role played by international trade in shaping the labor share requires understanding the impact of both its import-side *and* export-side. It is important to note that the results are arguably a lower bound for the overall effect of export demand and international trade more broadly construed on the manufacturing labor share. First, this article has focused exclusively on the role played by foreign demand on the labor share and I have abstracted from studying the impact of offshoring and import competition on the labor share. Second, the analysis is partial equilibrium and does not capture the impact of foreign demand changes on innovation. Recent work has shown that foreign demand spurs innovation and larger firms innovate more in response to an increase in their foreign demand (Aghion et al., 2018). Innovating is also a means to grow and gain market shares, which would likely strengthen the importance of the reallocation effect.

The theoretical framework rationalizes the intensive margin reallocations towards superstar exporters observed empirically and is consistent with increased concentration, as foreign demand growth benefits disproportionately more to superstar exporters. This observation is important for two reasons. First, the disproportionate growth of superstar exporters in response to foreign demand shocks is likely to be the product of *fiercer* competition, at least on international markets. Second, superstar exporters are also more productive, so that their rise is a source of aggregate productivity growth.

Finally, although export demand is a determinant of labor share changes through intensive margin reallocations towards superstar exporters, factors other than trade or pure technological improvements might be at play and reallocate output towards superstar firms. Institutional changes such as changes in competition policy could allow the expansion of large exporters. The emergence of firms' wage-setting power is also an important issue to consider, and in particular, how it might lead large players on the input market to dominate the output market. These are interesting avenues for future research.

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A Data Appendix

A.1 Sample Selection

I detail below how I construct my main sample and describe the different variables used in the empirical framework.

I only keep observations that report their taxes to the BRN and RSI regime. I drop firm-year observations with missing SIREN or with a SIREN number that only contains zeros or nines. I further keep observations whose first two digits of main activity code is strictly between 15 and 37. That is, I keep manufacturing firms according to NAF Rev. 1. I drop observations with negative, null or missing values for sales, value-added, number of workers. I also get rid of firm-year pairs with negative values for domestic sales, export sales, wages, social contributions. Firm-year observations with a labor share lower than zero or higher than unity are dropped. Finally, I drop values equal to zero for labor compensation and eliminate observations for which the growth rate of sales is lower than the bottom or higher than the top 1% percent of the growth rate distribution within each 2-digit industry. This allows me to remove outliers. I only keep firm-year observations that exported at least once according to the customs data. This sample of exporting firms represents 74% of total value-added of the raw manufacturing sample.

A.2 List of Variables

- **Capital:** The capital measure is measured as the book value of fixed tangible assets. I deflate capital expenditures by sector-level price indices from EUKLEMS. *Source: FICUS and authors' calculation*

- **Capital Intensity:** The capital intensity of a firm is the log of the capital-labor ratio of the firm. *Source: Authors' calculation*

- **Destination Served:** Total number of destinations (European and Extra-European) served by a firm in a given year. *Source: Customs data and author's calculation*

- **Employment:** Total number of employees working in each firm. *Source: FICUS*

- **Export Intensity:** Export intensity is the ratio of export sales as reported in FICUS to total sales. This is to ensure that the number takes values between 0 and 1. *Source: FICUS*

- **Export Sales:** Export sales reported by the firm in thousands of euros. This variable is available in the fiscal files and is highly correlated (correlation coefficient above

0.9) with total export sales computed from the customs data. Firms are classified as exporters if they sell a positive amount abroad according to the customs. I use export sales from the customs data for the empirical analysis. Figure 2 uses export sales from the balance-sheet data but the pattern is similar when using data from the customs instead. *Source: FICUS and customs data*

- **Imports:** Imports are available from the customs data and are disaggregated at the firm-origin-product-year level. Firm-level imports are obtained by summing a firm's imports across origin countries and product types in a given year. *Source: Author's calculation and customs data*

- **Labor Compensation:** This variable is the sum of two components separately available in the fiscal files: salaries and social benefits that are paid by the employer and that benefit the worker in the form of retirement funds, social security funds etc. *Source: FICUS*

- **Labor Productivity:** Labor productivity is the ratio of real value-added to the number of employees. *Source: FICUS and author's calculation*

- **Labor Share:** I construct the firm-level labor share variable as follows. In accounting, gross value-added is equal to the sum of gross operating surplus, labor compensation (as defined above) and taxes net of subsidies. We therefore do not allocate taxes net of subsidies and build the labor share as the ratio of labor compensation to gross value-added. Observations with values outside the $(0, 1)$ interval are discarded. *Source: FICUS and author's calculation*

- **Labor Share (Equipped):** Equipped labor shares are defined as the ratio of a firm's value-added to its total sales. This definition captures the supply of all primary factors of production (labor and capital). It is defined as $\text{LS}_{it}^{\text{Equipped}} = \frac{\text{VA}_{it}}{\text{Sales}_{it}}$. *Source: Author's calculation*

- **Markups:** Markups are defined as the ratio of a firm's price to its marginal cost. Firm-level markups are estimated using the De Loecker and Warzynski (2012) methodology. The estimation of markups is explained in more detail in Appendix D. *Source: Authors' calculation*

- **Materials:** Materials are defined as the sum of expenditures on raw materials and merchandises including changes in inventory. I further deflate this expenditure variable by 2-digit sector intermediate goods price indices from EU KLEMS to obtain the quantity of materials. *Source: FICUS and authors' calculation*

- **NAF Code:** 2-digit sector code according to the NACE Rev. 1 classification. Some sectors are pooled together, depending to the availability of sector-price deflators from EUKLEMS. *Source: FICUS*

- **Products:** Total number of products defined at the 8-digit level (CN8 classification) exported by a firm in a given year. *Source: Customs data and author's calculation*

- **Total Factor Productivity:** The total factor productivity (TFP) of a firm is measured as the difference between a firm's sales and its use of labor and capital inputs. The estimation of revenue TFP (TFPR) is explained in more detail in Appendix D. *Source: Author's calculation*

- **Total Sales:** Total sales (domestic sales plus export sales) reported by the firm in thousands of euros. *Source: FICUS*

- **Value-Added:** This variable is directly available in FICUS and follows the accounting definition according to which it is equal to total sales minus input expenses taking into account changes in inventories. *Source: FICUS*

- **Wages:** Firm-level wages are obtained by dividing labor compensation by employment for each firm-year observation. *Source: FICUS and authors' calculation*

B Alternative Decomposition of Labor Share Changes

Defining $\overline{\mathrm{LS}}_t$ and $\overline{\omega}_t$ as the unweighted mean labor share and value-added share, respectively, and $\bar{\Delta}X_{it} = X_{it} - \overline{X}_t$, one can decompose (1) into two components as initially done in Olley and Pakes (1996) for productivity. This yields

$$\mathrm{LS}_t = \overline{\mathrm{LS}}_t + \sum_i \bar{\Delta}\omega_{it}\bar{\Delta}\mathrm{LS}_{it} \tag{22}$$

Subtracting LS_{t-1} from (22), the change in the labor share from one year to the next is therefore given by:

$$\mathrm{LS}_t - \mathrm{LS}_{t-1} = \left(\overline{\mathrm{LS}}_t - \overline{\mathrm{LS}}_{t-1}\right) + \left(\sum_i \bar{\Delta}\omega_{it}\bar{\Delta}\mathrm{LS}_{it} - \sum_i \bar{\Delta}\omega_{it-1}\bar{\Delta}\mathrm{LS}_{it-1}\right) \tag{23}$$

Melitz and Polanec (2015) (MP) further refine this decomposition method in order to account for entry and exit of firms. Writing the change in a variable X between $t-1$ and

t by ΔX_t, this decomposition writes:[43]

$$\Delta \mathrm{LS}_t = \Delta \overline{\mathrm{LS}}_t^{\mathrm{S}} + \Delta \left(\sum_i \bar{\Delta} \omega_{it} \bar{\Delta} \mathrm{LS}_{it} \right)^{\mathrm{S}} + \omega_t^{\mathrm{ENT}} \left(\mathrm{LS}_t^{\mathrm{ENT}} - \mathrm{LS}_t^{\mathrm{S}} \right) + \omega_{t-1}^{\mathrm{EXT}} \left(\mathrm{LS}_{t-1}^{\mathrm{S}} - \mathrm{LS}_{t-1}^{\mathrm{EXT}} \right) \tag{24}$$

Between any two years, firms can be survivors (superscript S), new firms or entrants (ENT) or exiters (EXT). ω_t^{ENT} is the overall value-added share of new firms at time t, while $\omega_{t-1}^{\mathrm{EXT}}$ is that of exiters at $t-1$.[44] $\mathrm{LS}_t^{\mathrm{S}}$, $\mathrm{LS}_t^{\mathrm{ENT}}$ and $\mathrm{LS}_t^{\mathrm{EXT}}$ are each group's aggregate labor share at time t.

The first two terms of (24) are the within and between-firm effects previously mentioned for survivors. The third term reflects the contribution of entrants to labor share changes. The entry of firms with a larger labor share than survivors in the same period could increase the aggregate labor share. The effect will be larger, the larger the share of entrants in value-added in the second period. The intuition is similar for the last term of the decomposition accounting for the contribution of exit.

The results of this decomposition are provided in Table 11 for the sample of exporting firms and in Table 12 for the whole manufacturing sample. The within-firm effect given in column 2 is positive over the period, as was already the case with the FHK decomposition. Column 3 shows that there is still a strong association between the overall change in the labor share and the between-firm component. Reallocations of output towards low-labor share firms drive down the labor share. The contribution of entry and exit is lower, however, than with the FHK decomposition provided in Table 1 and Table 10 (column 4). As Melitz and Polanec (2015) note, the effect of entry and exit is overmeasured with the FHK decomposition because the reference labor share level for the contribution of entrants and exiters is the same (LS_{t-1}). The entry-exit margin absorbs part of the contribution of surviving firms to the overall change in the labor share.

C Direction of the Bias with Export Sales as a Proxy

Using export sales as a measure of foreign demand shocks in Equations (3) and (4) would be associated with several problems including simultaneity bias. For example, changes in management practices might lead firms to grow more and make it easier to serve foreign markets by exporting more.

[43] See Equation (6) in their paper.
[44] Note that $\omega_t^{\mathrm{ENT}} + \omega_t^{\mathrm{S}} = 1$ and that $\omega_{t-1}^{\mathrm{EXT}} + \omega_{t-1}^{\mathrm{S}} = 1$.

Let us consider the following simple two-equation framework without interaction terms where the dependent variable is the growth rate of value-added:

$$\Delta \ln \text{VA}_{it} = \kappa \Delta \ln \text{EXPORTS}_{it} + \Delta \varepsilon_{it} \tag{25}$$

and

$$\Delta \ln \text{EXPORTS}_{it} = \delta \Delta \ln \text{VA}_{it} + \Delta \eta_{it} \tag{26}$$

Let us further assume that

$$\text{Cov}\left(\Delta \eta_{it}, \Delta \varepsilon_{it}\right) > 0 \tag{27}$$

so that the factors affecting value-added and export growth are positively correlated with each other. An example would be growth in foreign demand entering $\Delta \eta_{it}$ being positively associated with better management practices affecting value-added growth through $\Delta \varepsilon_{it}$.

The coefficient κ captures the elasticity between export growth and value-added growth. One can reasonably expect κ to be positive so that higher exports allow the firm to grow and bounded above by unity so that the elasticity is less than 1% for a one percent change in export growth. Similarly, δ captures the percentage change in exports when value-added increases by one percent and we can expect the true coefficient δ to be bounded below and above by zero and unity, respectively. Solving the system of equations leads to:

$$\Delta \ln \text{EXPORTS}_{it} = \frac{1}{1 - \kappa \delta} \Delta \eta_{it} + \frac{\delta}{1 - \kappa \delta} \Delta \varepsilon_{it} \tag{28}$$

and

$$\Delta \ln \text{VA}_{it} = \frac{\kappa}{1 - \kappa \delta} \Delta \eta_{it} + \frac{1}{1 - \kappa \delta} \Delta \varepsilon_{it} \tag{29}$$

The OLS estimate of κ is given by $\hat{\kappa}^{\text{OLS}}$ and is such that:

$$\hat{\kappa}^{\text{OLS}} = \frac{\text{Cov}\left(\Delta \ln \text{EXPORTS}_{it}, \Delta \ln \text{VA}_{it}\right)}{\text{Var}(\Delta \ln \text{EXPORTS}_{it})} = \kappa + \frac{\text{Cov}\left(\Delta \ln \text{EXPORTS}_{it}, \Delta \varepsilon_{it}\right)}{\text{Var}(\Delta \ln \text{EXPORTS}_{it})}$$

Using the solution given in (28) in the previous equation asymptotically leads to:

$$\text{plim } \hat{\kappa}^{\text{OLS}} = \kappa + \frac{1}{1 - \kappa \delta} \frac{\sigma_{\Delta \eta_{it} \Delta \varepsilon_{it}}}{\sigma^2_{\Delta \ln \text{EXPORTS}_{it}}} + \frac{\delta}{1 - \kappa \delta} \frac{\sigma^2_{\Delta \varepsilon_{it}}}{\sigma^2_{\Delta \ln \text{EXPORTS}_{it}}} \tag{30}$$

We therefore get that:

$$\text{sgn}\left\{\hat{\kappa}^{\text{OLS}} - \kappa\right\} = \text{sgn}\left\{1 - \kappa\delta\right\} \tag{31}$$

Given the relatively mild assumption that $\kappa \in (0,1)$ and $\delta \in (0,1)$, this entails that the OLS coefficient of interest would likely to be upward biased:

$$\hat{\kappa}^{\text{OLS}} > \kappa \tag{32}$$

D Estimation Appendix

De Loecker and Warzynski (2012) show that for cost-minimizing producers, firm-level markups drive a wedge between the output elasticity of a flexible input and that input's share in total revenues. Thereby, given an input's output elasticity, a lower revenue share of that input in total sales will command a higher markup. Markups vary across firms because that share varies across firms while the output elasticity is constant. In the case where the production function is assumed to be Translog, the output elasticity of the flexible input varies across firms but this is because the input use varies across firms. The main advantage of this method is that one does not need to know the market structure or specify a demand model in order to estimate markups. In fact, "only" two pieces of information are required: an output elasticity on a flexible input and the revenue share of that input. While the latter is readily available in the French data as well as in most firm-level datasets, the former requires estimating a production function.[45]

Formally, assume that producers are cost-minimizing and write the Lagrangian

$$\mathcal{L}(X_{it}, K_{it}, \lambda_{it}) = \sum_X P_{it}^X X_{it} + r_{it} K_{it} + \lambda_{it}\Big(Y_{it} - F_{it}(X_{it}, K_{it})\Big) \tag{33}$$

where P_{it}^X is the price of any variable input X, r_{it} is the rental rate of capital K_{it}, output is given by Y_{it}, the production technology is $F_{it}(.)$ and λ_{it} is the Lagrange multiplier associated to the constraint. The first-order condition with respect to any flexible input is thus

$$P_{it}^X = \lambda_{it} \frac{\partial F(.)}{\partial X_{it}} \quad \forall X_{it} \in \mathbf{X}$$

Because the Lagrange multiplier is equal to the change in total cost arising from relaxing

[45] These methods are discussed at length in De Loecker and Goldberg (2014) and Basu (2019) provides a recent overview of the different methods used to estimate markups.

the constraint, it is equal to the marginal cost MC_{it} of producing one extra unit of output, or $\lambda = MC_{it}$. Defining the markup μ_{it} as the ratio of price P_{it} to marginal cost allows us to write the previous equation as

$$P_{it}^{X}\mu_{it} = P_{it}\frac{\partial F(.)}{\partial X_{it}} \quad \forall X_{it} \in \mathbf{X}$$

Multiplying both sides by $X_{it}F(.)$ and using the fact that $Y_{it} = F(.)$ this yields the formula for firm-level markups

$$\mu_{it} = \frac{\theta_{it}^{X}}{\alpha_{it}^{X}} \tag{34}$$

where $\theta_{it}^{X} := \frac{\partial F(.)/\partial X_{it}}{F(.)/X_{it}}$ is the output elasticity of a flexible input X and $\alpha_{it}^{X} := \frac{P_{it}^{X}X_{it}}{P_{it}Y_{it}}$ is an input's revenue share. I follow De Loecker and Warzynski (2012) and assume that labor is the flexible input.

Production function estimation. The estimation method relies on the seminal papers of Olley and Pakes (1996), Levinsohn and Petrin (2003) and Ackerberg et al. (2015). The idea is that output is produced by using labor and capital, and depends on productivity. I assume that the production function is Leontief in materials and I abstract from materials. Total factor productivity (TFP) is a residual because it is not observed and most importantly, its absence in standard production function estimation leads to biased estimates of labor and capital. This is due to the fact that these inputs are chosen depending on the productivity realizations that the firm observes. The way one can solve this issue and back out productivity is by assuming that the demand for materials is a function of capital, labor and productivity as in Ackerberg et al. (2015).

Formally, I assume a Translog production function in log-form where output y is being produced by labor l, capital k and depends on productivity ω which is Hicks neutral. Firms are indexed by i.

$$y_{it} = \alpha_l l_{it} + \alpha_k k_{it} + \alpha_{ll} l_{it}^2 + \alpha_{kk} k_{it}^2 + \alpha_{lk} l_{it} k_{it} + \omega_{it} \tag{35}$$

The Hicks neutral term ω_{it} is a function of a predictable term z_{it} that the firm has access to but is unobserved to the econometrician and a noise ξ_{it}. For simplicity, it is assumed that ω_{it} is the sum of these two components:

$$y_{it} = \alpha_l l_{it} + \alpha_k k_{it} + \alpha_{ll} l_{it}^2 + \alpha_{kk} k_{it}^2 + \alpha_{lk} l_{it} k_{it} + z_{it} + \xi_{it}$$

I follow Ackerberg et al. (2015) and De Loecker and Warzynski (2012) and assume that the demand for materials is an invertible function of capital and the only unobserved term z_{it}:

$$m_{it} = \Phi_t(k_{it}, z_{it})$$

This implies that one can invert the demand for materials to control for productivity as a function of observables:

$$z_{it} = \Psi_t(k_{it}, m_{it})$$

where $\Psi_t(.) := \Phi_t^{-1}(.)$. The resulting equation is:

$$y_{it} = \alpha_l l_{it} + \alpha_k k_{it} + \alpha_{ll} l_{it}^2 + \alpha_{kk} k_{it}^2 + \alpha_{lk} l_{it} k_{it} + \Psi_t(k_{it}, m_{it}) + \xi_{it}$$

which can be rewritten as:

$$y_{it} = f_t(l_{it}, k_{it}, m_{it}) + \xi_{it} \tag{36}$$

The estimation method consists of two steps. In the first step, I non parametrically estimate Equation (36). In practice, I approximate $f_t(.)$ by a third order polynomial in its arguments as well as interactions of all the terms. This yields predicted output $\hat{f}_t(.)$. I then use the fact that:

$$z_{it} = \hat{f}_t(l_{it}, k_{it}, m_{it}) - \alpha_l l_{it} - \alpha_k k_{it} - \alpha_{ll} l_{it}^2 - \alpha_{kk} k_{it}^2 - \alpha_{lk} l_{it} k_{it} \tag{37}$$

I now specify the law of motion of productivity which is assumed to follow a first-order Markov process:

$$z_{it} = h_t(z_{it-1}) + \vartheta_{it}$$

In practice, I estimate:

$$\hat{z}_{it}(\alpha_l, \alpha_k, \alpha_{ll}, \alpha_{kk}, \alpha_{lk}) = \sum_{j=1}^{3} \beta_j \hat{z}_{it-1}^j(\alpha_l, \alpha_k, \alpha_{ll}, \alpha_{kk}, \alpha_{lk}) + \vartheta_{it} \tag{38}$$

where it is clear that productivity is derived from the estimation of (37) and a guess on $(\alpha_l, \alpha_k, \alpha_{ll}, \alpha_{kk}, \alpha_{lk})$. Estimating (38) gives us an estimate of $\vartheta_{it}(\alpha_l, \alpha_k, \alpha_{ll}, \alpha_{kk}, \alpha_{lk})$ which is the innovation term to productivity.

The second stage of the estimation procedure consists of using moment conditions and estimating the system by GMM:

$$\boldsymbol{E}\left(\hat{\vartheta}_{it}\left(\alpha_l, \alpha_k, \alpha_{ll}, \alpha_{kk}, \alpha_{lk}\right)\begin{pmatrix} l_{it-1} \\ k_{it} \\ l_{it-1}^2 \\ k_{it}^2 \\ l_{it-1}k_{it} \end{pmatrix}\right) = 0 \tag{39}$$

These moment conditions are standard in the empirical IO literature (De Loecker and Warzynski, 2012). Capital is assumed to be a dynamic input so that the innovation term is uncorrelated with its value at time t. Labor is assumed to be flexible so that its demand might vary with the innovation shock in t and its lagged value must be used instead. The parameters of interest solve the moment conditions in (39).

Once the output elasticities have been recovered, productivity can be defined as the Solow residual:

$$\hat{z}_{it} = y_{it} - \hat{\alpha}_l l_{it} - \hat{\alpha}_k k_{it} - \hat{\alpha}_{ll} l_{it}^2 - \hat{\alpha}_{kk} k_{it}^2 - \hat{\alpha}_{lk} l_{it} k_{it} \tag{40}$$

In order to recover markups, I use the output elasticity of labor computed as $\hat{\theta}_{it}^L = \hat{\alpha}_l + 2\hat{\alpha}_{ll} l_{it} + \hat{\alpha}_{lk} k_{it}$ and the De Loecker and Scott (2016) correction that takes into account that the production function is Leontief in materials. The estimation is done for each 2-digit industry separately.

E Mathematical Appendix

E.1 Marshall's Second Law of Demand and Marginal Revenue

The first-order condition of the firm's optimization problem given in (14) gives:

$$\frac{\partial p(x_i)}{\partial x_i} x_i + p(x_i) = \frac{1}{\varphi} \tag{41}$$

Defining the inverse demand elasticity as $\sigma_p(x_i) := -\frac{\partial p(x_i)/\partial x_i}{p(x_i)/x_i}$, equation (41) rewrites:

$$p(x_i)\Big(1 - \sigma_p(x_i)\Big) = \frac{1}{\varphi}$$

This condition states the well-known condition that profit-maximizing firms produce up to the point where their marginal revenue $\text{MR}(x_i)$ is equal to their marginal cost MC.

Given the support of $G(\varphi)$, the marginal cost is always non-negative which entails that a firm's marginal revenue must be non-negative. This condition is met if the inverse demand elasticity is such that $\sigma_p(x_i) \leq 1$. A second important condition for profit maximization is that the second-order condition on (14) is met. This condition reads:

$$\frac{\partial p(x_i)}{\partial x_i}\Big(1-\sigma_p(x_i)\Big) - p(x_i)\frac{\partial \sigma_p(x_i)}{\partial x_i} < 0 \tag{42}$$

This condition is equivalent to saying that a firm's marginal revenue decreases in x_i. Using the definition of the inverse demand elasticity and rearranging (42), this yields:

$$-p(x_i)\left(\big(1-\sigma_p(x_i)\big) + \frac{\partial \sigma_p(x_i)}{\partial x_i}\frac{x_i}{\sigma_p(x_i)}\right) < 0 \tag{43}$$

Given Assumption 1 that the inverse demand elasticity increases in x_i, or conversely, that the demand elasticity decreases in x_i and that $\sigma_p(x_i) \leq 1$, this yields a downward sloping marginal revenue curve:

$$\frac{\partial \mathrm{MR}(x_i)}{\partial x_i} < 0 \tag{44}$$

Therefore, MSLD implies that marginal revenues decrease with x_i.

Inverse demand elasticity and CES preferences. CES preferences are very often used in international trade. Their inverse demand function is given by:[46]

$$p(x_i) = \kappa^{\frac{1}{\sigma}} x_i^{-\frac{1}{\sigma}}$$

Deriving $\sigma_p(x_i)$ given the CES inverse demand function leads to $\sigma_p(x_i) = \frac{1}{\sigma}$. This trivially entails that $\frac{\partial \sigma_p(x_i)}{\partial x_i} = 0$ so that MSLD does not hold for this class of functions. As shown in the next subsection, this implies that CES preferences are not consistent with a positive relationship between firm size and markups. More details on functions consistent with MSLD can be found in Mrázová and Neary (2017).

[46]Maximizing the utility function $U = \left(\int_0^1 c_i^{\frac{\sigma-1}{\sigma}} di\right)^{\frac{\sigma}{\sigma-1}}$ subject to the budget constraint $\int_0^1 p_i c_i di = 1$ leads to the following equation with $\kappa := \frac{1}{\int_0^1 p_i^{1-\sigma} di} = \frac{1}{P^{1-\sigma}}$ where P is the price index.

E.2 Proof of Proposition 1

In this section, I derive how markups, sales and profits vary with the demand elasticity. Using the first-order condition (41) and the definition of the inverse demand elasticity, the inverse demand function writes:

$$p(x_i) = \frac{1}{1-\sigma_p(x_i)}\frac{1}{\varphi}$$

Equation (44) implies that for any two firms 1 and 2 such that $\varphi_2 < \varphi_1$:

$$\frac{\mathrm{MR}(x_1)}{\mathrm{MR}(x_2)} = \frac{\varphi_2}{\varphi_1} < 1$$

which implies that $x_1 > x_2$. Therefore, more efficient firms produce more. Since $p(x_i) = \frac{u'(x_i)}{\lambda}$ is decreasing in x_i, more productive firms also sell at lower prices.

Regarding the relationship between firm size and markups, Marshall's Second Law of Demand is key. Indeed, given that a firm's markup is defined as $\mu(x_i) := \frac{1}{1-\sigma_p(x_i)}$, this leads to:

$$\mathrm{sgn}\left\{\frac{\partial \mu(x_i)}{\partial x_i}\right\} = \mathrm{sgn}\left\{\frac{\partial \sigma_p(x_i)}{\partial x_i}\right\} > 0 \tag{45}$$

Given that more productive firms also produce more, these firms face a lower demand elasticity which allows them to charge higher markups. It follows from (13) that larger, more productive firms have a lower labor share.

E.3 Proof of Proposition 2

I derive Proposition 2 that shows how profits vary with a change in market size. First, total operating profits are given by:

$$\Pi(\varphi, \lambda, L) := \max_{q_i}\left\{\left(\frac{u'(\frac{q_i}{L})}{\lambda} - \frac{1}{\varphi}\right)q_i\right\} \tag{46}$$

Market size effect. Differentiating total operating profits with respect to L we get (20) in the text.

There are several terms whose sign needs be studied. The first one is the market size effect $\frac{\partial \Pi}{\partial L}\frac{L}{\Pi}$. Differentiating (46) with respect to L and applying the envelope theorem yields:

$$\frac{\partial \Pi}{\partial L}\frac{L}{\Pi} = -\frac{u''}{\lambda}\frac{q^2}{L^2}\frac{L}{\Pi} = -p'\frac{q^2}{L}\frac{1}{\left[p(x,\lambda) - \frac{1}{\varphi}\right]q}$$

Using the first-order condition (41) we get:

$$\frac{\partial \Pi}{\partial L}\frac{L}{\Pi} = 1 \tag{47}$$

Competition effect. I now derive the first part of the competition effect $\frac{\partial \Pi}{\partial \lambda}\frac{\lambda}{\Pi}$. Applying the envelope theorem and differentiating profits with respect to λ:

$$\frac{\partial \Pi}{\partial \lambda}\frac{\lambda}{\Pi} = -\frac{u'(x)q}{\lambda^2}\frac{\lambda}{\Pi} = -p\frac{q}{\Pi} = -\frac{pq}{\left[p - \frac{1}{\varphi}\right]q} = -\frac{p}{\left[p - \frac{1}{\varphi}\right]}$$

Making use of (41):

$$\frac{\partial \Pi}{\partial \lambda}\frac{\lambda}{\Pi} = -\frac{1}{\sigma_p(\varphi, \lambda)} < 0 \tag{48}$$

by the definition of the inverse demand elasticity and the fact that $x = x(\varphi, \lambda)$ at the optimum.

Finally, deriving $\frac{d\lambda}{dL}\frac{L}{\lambda}$ entails making use of the free-entry condition. Let us denote the value of a firm by $V(\lambda, L)$. The expected value of a firm must equal the sunk cost from the free entry condition:

$$V(\lambda, L) := \int_{\varphi^*}^{\infty} \left[\pi^c(\varphi, \lambda)L - f\right] dG(\varphi) = f_e$$

Totally differentiating this equation and solving for $\frac{d\lambda}{dL}$ yields:

$$\frac{d\lambda}{dL} = -\frac{\partial V(\lambda, L)/\partial L}{\partial V(\lambda, L)/\partial \lambda} \tag{49}$$

Applying Leibniz's rule to the free-entry condition and using the cut-off condition in (18) I obtain:

$$\frac{\partial V(\lambda, L)}{\partial L} = \int_{\varphi^*}^{\infty} \pi^c(\varphi, \lambda) dG(\varphi) - \left[\pi^c(\varphi^*, \lambda)L - f\right]\frac{d\varphi^*}{dL} = \int_{\varphi^*}^{\infty} \pi^c(\varphi, \lambda) dG(\varphi)$$

Applying Leibniz's rule to the denominator of (49) and (18):

$$\frac{\partial V(\lambda, L)}{\partial \lambda} = \int_{\varphi^*}^{\infty} L\frac{\partial \pi^c(\varphi, \lambda)}{\partial \lambda} dG(\varphi) - \left[\pi^c(\varphi^*, \lambda)L - f\right]\frac{d\varphi^*}{d\lambda} = \int_{\varphi^*}^{\infty} L\frac{\partial \pi^c(\varphi, \lambda)}{\partial \lambda} dG(\varphi)$$

Substituting the previous two equations in (49):

$$\frac{d\lambda}{dL} = -\frac{\int_{\varphi^*}^{\infty} \pi^c(\varphi,\lambda)dG(\varphi)}{\int_{\varphi^*}^{\infty} L\frac{\partial \pi^c(\varphi,\lambda)}{\partial\lambda}dG(\varphi)}$$

Rewriting this equation to obtain an elasticity:

$$\frac{d\lambda}{dL}\frac{L}{\lambda} = -\frac{\int_{\varphi^*}^{\infty} \pi^c(\varphi,\lambda)dG(\varphi)}{\int_{\varphi^*}^{\infty} \lambda\frac{\partial \pi^c(\varphi,\lambda)}{\partial\lambda}dG(\varphi)} = -\frac{\int_{\varphi^*}^{\infty} \pi^c(\varphi,\lambda)dG(\varphi)}{\int_{\varphi^*}^{\infty} \frac{\partial \pi^c(\varphi,\lambda)}{\partial\lambda}\frac{\lambda}{\pi^c(\varphi,\lambda)}\pi^c(\varphi,\lambda)dG(\varphi)}$$

Using (48) and substituting finally yields:

$$\frac{d\lambda}{dL}\frac{L}{\lambda} = \frac{\int_{\varphi^*}^{\infty} \pi^c(\varphi,\lambda)dG(\varphi)}{\int_{\varphi^*}^{\infty} \pi^c(\varphi,\lambda)\frac{1}{\sigma_p(\varphi,\lambda)}dG(\varphi)} \tag{50}$$

Combining (47), (48) and (50) in (20) gives:

$$\frac{d\Pi}{dL}\frac{L}{\Pi} = 1 - \frac{1}{\sigma_p(\varphi,\lambda)}\frac{\int_{\varphi^*}^{\infty} \pi^c(\varphi,\lambda)dG(\varphi)}{\int_{\varphi^*}^{\infty} \pi^c(\varphi,\lambda)\frac{1}{\sigma_p(\varphi,\lambda)}dG(\varphi)} \tag{51}$$

Defining $\pi^c(\lambda) := \int_{\varphi^*}^{\infty} \pi^c(\varphi,\lambda)dG(\varphi)$, (51) writes as (21) in the text.

Noting that $[\sigma_p(\varphi,\lambda)]^{-1}$ is the demand elasticity and that the denominator of (21) is a profit-weighted average demand elasticity, we find that profits rise with market size for firms that face a lower than average demand elasticity. Given MSLD that the demand elasticity decreases with productivity, this is equivalent to saying that firms that are more productive than average will experience an increase in their profits following an increase in market size. From Proposition 1 that more productive firms have a lower labor share, this implies that an increase in market size will decrease the manufacturing labor share through a reallocation effect.

E.4 Open-Economy Framework

This section describes the open economy framework.[47] There are two countries that populate the world economy. The domestic economy D trades with a foreign economy denoted F. This foreign economy is characterized by a market size level L_F and a competition level λ_F. Preferences are the same on both markets which implies that per-consumer

[47]The exposition of the open-economy framework is explained in more details in Mayer et al. (2016). As mentioned in the text, I abstract from multi-product exporters.

profits, quantity and revenues depend on both the competition level and the firm's productivity level, as in the closed economy case.

As in Demidova and Rodríguez-Clare (2013), I assume that country F is a small economy so that changes in market size abroad do not impact the number of domestic entrants, the competition level λ_D nor the domestic productivity cutoff in D.

Exporting is costly. There is a fixed cost of serving the foreign market for domestic firms. This fixed cost of exporting writes f_F and is paid in units of domestic labor. Exporters also incur an additional iceberg trade cost so that exporting one unit of a good requires sending $\tau > 1$ units. This leads to the following total export profits for any domestic firm:[48]

$$\Pi_X^D(\varphi, \lambda_F) = \pi^c\big(\frac{\varphi}{\tau}, \lambda_F\big) L_F - f_F$$

As before, total export profits $\Pi_X^D(\varphi, \lambda_F)$ are an increasing function of its first argument, so that firms below a certain export productivity threshold φ_X^* might decide not to export. This is given by the following condition:

$$\Pi\big(\varphi_X^*, \lambda_F\big) = 0 \Longleftrightarrow \pi^c\big(\frac{\varphi_X^*}{\tau}, \lambda\big) L_F = f_F$$

The condition for producing on the domestic market for domestic firms is still given by (18).

Firms in F draw their productivity level from a distribution $G_F(\varphi)$ and a there is pool of entrants N_e^F. Firms in F will self-select into producing domestically and exporting to D if they are productive enough with the relevant cutoff productivity levels given by the usual zero-profit conditions.

What matters for the purpose of the analysis is that an increase in L_F generates intensive margin reallocation effects towards larger exporters from country D. A change in market size abroad will lead to an increase in the level of competition λ_F because profit opportunities will be higher and with free-entry, this will make some firms enter, leading to fiercer competition.[49] Because larger domestic exporters have a lower than average demand elasticity, the market size effect will still dominate for these firms, leading to higher export sales and allowing them to grow relative to smaller exporters.

[48] Because the iceberg trade cost enters the marginal cost of production, an increase in τ will decrease the first argument of the per-consumer profit function and therefore lead to lower profits.

[49] Free-entry is inherently a long-run process. The increase in competition would also occur in the short-run, otherwise the consumers' budget constraint would be violated.

F Additional Tables

Table (8) Summary Statistics Main Sample

	Mean (1)	Standard Deviation (2)	Median (3)
Labor share (%)	70.4	17.1	73.1
ln Export sales	4.9	2.8	4.9
ln Value-added	7	1.6	6.9
ln Labor compensation	6.6	1.6	6.5
Export-intensity (%)	17.9	23.4	7.5
# Products exported	20	37	8
# Destinations served	10.4	13.8	6
Δ Labor share	0.19	11	0
Δ ln Export sales	0.1	1.1	0.07
$\tilde{\Delta}$ Foreign demand	0.04	0.3	0.03
Δ ln Value-added	0.05	0.3	0.04
Δ ln Labor compensation	0.05	0.2	0.04
Δ Export-intensity	0.7	11.6	0
Δ ln # Products exported	0.05	0.5	0
Δ ln # Destinations served	0.05	0.4	0
# Firms		59,374	
# Observations		226,077	
# Survivors (1994-2001)		9,154	

Notes: The sample consists of exporting firms. The period considered is 1994-2001. Export sales, labor compensation and value-added are in thousands of euros. Labor share is the ratio of labor compensation to value-added and is in between 0 and 100.

Table (9) Percentiles of Initial Export Sales Distribution

	P1 (1)	P10 (2)	P20 (3)	P30 (4)	P40 (5)	P50 (6)	P60 (7)	P70 (8)	P80 (9)	P90 (10)	P99 (11)
ln Export sales$_{t_0}$	-0.27	1.04	2.11	3.03	3.86	4.59	5.32	6.09	6.99	8.24	11.09

Notes: The sample consists of exporting firms. The period considered is 1994-2001. Export sales are in thousands of euros. The initial year is defined as the first year in which exporters appear in the sample.

Table (10) FHK Decomposition of Labor Share Changes on Whole Sample

	Total Change (1)	Within (2)	Between (3)	Entry-Exit (4)
1994-1995	-1.24	0.01	-0.95	-0.3
1995-1996	0.68	1.64	-0.8	-0.16
1996-1997	-0.97	-0.52	-0.45	0.01
1997-1998	-0.76	0.01	-0.41	-0.36
1998-1999	-0.61	0.21	-0.82	0.006
1999-2000	-1.49	-0.89	-0.24	-0.36
2000-2001	1.36	1.55	0.004	-0.19
1994-2001	-3.03	2	-3.67	-1.36
1994-2000	-4.39	0.45	-3.67	-1.17

Notes: This decomposition uses Equation (2) for the whole sample of manufacturing firms which includes both exporters and non exporters. Column 1 is the change in the aggregate labor share for the whole sample of firms. Column 2 is the within-firm margin. Column 3 is the sum of the between and the cross effect. Column 4 is the sum of the entry and exit components.

Table (11) MP Decomposition of Labor Share Changes

	Total Change (1)	Within (2)	Between (3)	Entry-Exit (4)
1994-1995	-3.24	0.21	-1.07	-2.37
1995-1996	1.39	1.19	-0.12	0.32
1996-1997	-0.85	-0.32	-1.02	0.48
1997-1998	-0.4	-0.17	-0.12	-0.11
1998-1999	-0.65	0.33	-1	0.01
1999-2000	-1.38	-0.41	-0.42	-0.55
2000-2001	1.06	0.83	0.99	-0.76
1994-2001	- 4.08	1.67	-2.76	-2.97
1994-2000	-5.14	0.84	-3.76	-2.22

Notes: This decomposition uses Equation (24) for the sample of manufacturing exporters. Column 1 is the change in the aggregate labor share for the sample of exporting firms. Column 2 is the within-firm margin. Column 3 is the between-firm margin. Column 4 is the sum of the entry and exit components and refers to entry and exit into exporting.

Table (12) MP Decomposition of Labor Share Changes on Whole Sample

	Total Change (1)	Within (2)	Between (3)	Entry-Exit (4)
1994-1995	-1.24	0.75	-1.76	-0.23
1995-1996	0.68	1.27	-0.37	-0.22
1996-1997	-0.97	0.48	-1.52	0.08
1997-1998	-0.76	0.23	-0.64	-0.36
1998-1999	-0.61	0.41	-1.08	0.07
1999-2000	-1.49	-0.21	-1.03	-0.25
2000-2001	1.36	0.63	1.12	-0.38
1994-2001	-3.03	3.56	-5.29	-1.3
1994-2000	-4.39	2.93	-6.41	-0.92

Notes: This decomposition uses Equation (24) for the whole sample of manufacturing firms which includes both exporters and non exporters. Column 1 is the change in the aggregate labor share for the whole sample of firms. Column 2 is the within-firm margin. Column 3 is the between-firm margin. Column 4 is the sum of the entry and exit components.

Table (13) Statistics on Internationalization and Equipped Labor Shares

Statistic Internationalization Measure	Equipped Labor Share Above Median (1)	 Top 25 % (2)	 Top 10 % (3)	 Top 1 % (4)
Export intensity	36.8	35.9	35.2	35
ln Export sales	35.2	32.9	31.1	28.2
ln # Products exported	34.1	32.4	31.4	30.3
ln # Destinations served	34.2	33.3	32.9	32.7
# Firms	29,676	14,838	5,936	594

Notes: The results are obtained by taking the mean of each variable (equipped labor share, export intensity, export sales, number of products exported and number of countries served) over time for each firm and calculating the equipped labor share of firms that belong to the top 50, 25, 10 and 1% in terms of export intensity, number of products exported and number of countries served. The equipped labor share is defined as the ratio of value-added to total sales and captures all primary factors of production.

Table (14) Internationalization and Labor Share across Groups

	Above Median	Below Median	Difference
Export intensity	70.7	71.9	-1.3***
	(0.093)	(0.097)	(0.13)
ln Export sales	70	72.7	-2.7***
	(0.093)	(0.096)	(0.13)
ln # Products exported	70.4	72.2	-1.8***
	(0.091)	(0.099)	(0.13)
ln # Destinations served	70	72.7	-2.7***
	(0.091)	(0.098)	(0.13)
	Top 25%	Bottom 75%	Difference
Export intensity	69.4	72	-2.6***
	(0.14)	(0.08)	(0.15)
ln Export sales	67.8	72.5	-4.6***
	(0.13)	(0.08)	(0.15)
ln # Products exported	69.5	71.9	-2.4***
	(0.13)	(0.08)	(0.15)
ln # Destinations served	69	72.1	-3.1***
	(0.13)	(0.08)	(0.15)
	Top 10%	Bottom 90%	Difference
Export intensity	67.4	71.7	-4.3***
	(0.23)	(0.07)	(0.22)
ln Export sales	64.9	72	-7.2***
	(0.22)	(0.07)	(0.22)
ln # Products exported	68.5	71.6	-3.1***
	(0.2)	(0.07)	(0.22)
ln # Destinations served	67.5	71.7	-4.2***
	(0.2)	(0.07)	(0.22)
	Top 1%	Bottom 99%	Difference
Export intensity	63.8	71.3	-7.6***
	(0.88)	(0.07)	(0.68)
ln Export sales	58.7	71.4	-12.7***
	(0.73)	(0.07)	(0.67)
ln # Products exported	65.5	71.4	-5.9***
	(0.66)	(0.07)	(0.68)
ln # Destinations served	63.4	71.4	-8***
	(0.7)	(0.07)	(0.68)

Notes: This table displays the mean labor share of firms with a labor share above and below several thresholds. The last column tests the difference in these two means. The results show that firms above each given threshold have a lower labor share than firm below it.

Table (15) Internationalization and Labor Share: Regression Analysis

Dependent variable	Labor Share					
	(1)	(2)	(3)	(4)	(5)	(6)
Export intensity	-3.96***				-2.9***	-1.83***
	(0.33)				(0.34)	(0.33)
ln Export sales		-0.54***			-0.54***	-0.12***
		(0.03)			(0.03)	(0.03)
ln # Products exported			-0.17***		0.21***	0.70***
			(0.06)		(0.07)	(0.07)
ln # Destinations served				-0.26***	0.26***	0.97***
				(0.08)	(0.1)	(0.09)
ln Total sales						-9.52***
						(0.19)
Two-digit Sector $\times$ Year FE	✓	✓	✓	✓	✓	✓
Firm FE	✓	✓	✓	✓	✓	✓
# Observations	209,114	209,114	209,114	209,114	209,114	209,114

Notes: Standard errors clustered at the firm level. *** p<0.01, ** p<0.05, * p<0.1. The coefficients from the regression models are estimated over 1994-2001 using OLS. All columns include industry by year fixed effects and control for firm-specific trends through the inclusion of firm fixed effects..

Table (16) Robustness: Future Demand Shocks

Internationalization Measure (Superstar_{it_0})	ln Export Sales			
Dependent variable	$\Delta \ln \text{VA}_{it}$		$\Delta\text{Labor Share}_{it}$	
	(1)	(2)	(3)	(4)
$\tilde{\Delta}\text{ForeignDemand}_{it}$	-0.0083		-0.0031	
	(0.0056)		(0.2509)	
$\tilde{\Delta}\text{ForeignDemand}_{it} \times \text{Superstar}_{it_0}$	0.0040***		-0.0917	
	(0.0014)		(0.0622)	
$\tilde{\Delta}\text{ForeignDemand}_{it+1}$		0.0074		-0.1043
		(0.0058)		(0.2702)
$\tilde{\Delta}\text{ForeignDemand}_{it+1} \times \text{Superstar}_{it_0}$		-0.0011		0.0125
		(0.0014)		(0.0633)
Two-digit Sector × Year FE	✓	✓	✓	✓
Firm FE	✓	✓	✓	✓
# Observations	117,721	117,721	117,721	117,721

Notes: Standard errors clustered at the firm level. *** $p<0.01$, ** $p<0.05$, * $p<0.1$. The coefficients from the regression models are estimated over 1994-2001 using OLS. All columns include industry by year fixed effects and control for firm-specific trends through the inclusion of firm fixed effects. $\Delta \ln \text{VA}_{it}$ is the change in a firm's value-added. $\tilde{\Delta}\text{ForeignDemand}_{it}$ is the change in a firm's foreign demand. $\tilde{\Delta}\text{ForeignDemand}_{it+1}$ is the future foreign demand shock, defined as the change in foreign demand from year t to year $t+1$. Superstar_{it_0} is a measure of the degree of internationalization of the firm and is the log of the export sales of the firm in the first year in which it appears in the sample.

Table (17) Robustness: Alternative Time Period

Internationalization Measure (Superstar$_{it_0}$)	ln Export Sales			
Dependent variable	Δ ln VA$_{it}$	ΔLabor Share$_{it}$	Δ ln VA$_{it}$	ΔLabor Share$_{it}$
Time Period	1994-2007		2001-2007	
	(1)	(2)	(3)	(4)
$\tilde{\Delta}$ForeignDemand$_{it}$	-0.0107***	0.35***	-0.0087**	0.633***
	(0.003)	(0.133)	(0.0045)	(0.1798)
$\tilde{\Delta}$ForeignDemand$_{it}$ $\times$ Superstar$_{it_0}$	0.006***	-0.2071***	0.0063***	-0.293***
	(0.0008)	(0.0343)	(0.0011)	(0.0468)
Superstar$_{it_0}$	-0.0067***	0.0215***	-0.0076***	0.0403***
	(0.0002)	(0.0058)	(0.0003)	(0.0093)
Two-digit Sector $\times$ Year FE	✓	✓	✓	✓
# Observations	306,853	306,853	165,703	165,703

Notes: Standard errors clustered at the firm level. *** p<0.01, ** p<0.05, * p<0.1. The coefficients from the regression models are estimated over 1994-2007 for columns 1 and 2 and over 2001-2007 for columns 3 and 4 using OLS. All columns include industry by year fixed effects. $\Delta \ln \text{VA}_{it}$ is the change in a firm's value-added. $\tilde{\Delta}\text{ForeignDemand}_{it}$ is the change in a firm's foreign demand. Superstar$_{it_0}$ is a measure of the degree of internationalization of the firm and is the log of the export sales of the firm in the first year in which it appears in the sample.

Table (18) Robustness: Alternative Internationalization Measures

Dependent variable	$\Delta \ln \text{VA}_{it}$			$\Delta\text{Labor Share}_{it}$		
Internationalization Measure (Superstar_{it_0})	Export Intensity	ln # Products Exported	ln # Destinations Served	Export Intensity	ln # Products Exported	ln # Destinations Served
	(1)	(2)	(3)	(4)	(5)	(6)
$\tilde{\Delta}\text{ForeignDemand}_{it}$	0.00001	-0.0031	-0.0053	-0.1568	0.1069	0.1587
	(0.0027)	(0.0037)	(0.0035)	(0.1164)	(0.1599)	(0.1553)
$\tilde{\Delta}\text{ForeignDemand}_{it} \times \text{Superstar}_{it_0}$	0.0633***	0.0071***	0.0116***	-1.18*	-0.2872***	-0.4248***
	(0.0146)	(0.0019)	(0.0024)	(0.64)	(0.0876)	(0.1108)
Superstar_{it_0}	-0.0246***	-0.0124***	-0.0159***	0.359***	0.0085	0.0036
	(0.0031)	(0.0005)	(0.0006)	(0.0991)	(0.0163)	(0.0192)
Two-digit Sector × Year FE	✓	✓	✓	✓		
# Observations	166,323	166,323	166,323	166,323	166,323	166,323

Notes: Standard errors clustered at the firm level. *** p<0.01, ** p<0.05, * p<0.1. The coefficients from the regression models are estimated over 1994-2001 using OLS. All columns include industry by year fixed effects. $\Delta \ln \text{VA}_{it}$ is the change in a firm's value-added. $\tilde{\Delta}\text{ForeignDemand}_{it}$ is the change in a firm's foreign demand. Superstar_{it_0} is a measure of the degree of internationalization of the firm. Columns 1 and 4 use the export intensity of a firm, columns 2 and 5 the log of the total number of products exported by the firm and columns 3 and 6 use the log of the total number of destinations served by the firm as the main measure of internationalization. All these measures are defined in the first year in which the firm appears in the sample.

Table (19) Robustness: Period 1995-2000

Internationalization Measure (Superstar_{it_0})	ln Export Sales				
Dependent variable	$\Delta \ln \text{VA}_{it}$	$\Delta\text{Labor Share}_{it}$	$\Delta \ln \text{Labor Compensation}_{it}$	$\Delta \ln \text{Wages}_{it}$	$\Delta \ln \text{Workers}_{it}$
	(1)	(2)	(3)	(4)	(5)
$\tilde{\Delta}\text{ForeignDemand}_{it}$	-0.0202***	0.3	-0.0135***	-0.0163***	0.0028
	(0.0051)	(0.2176)	(0.0049)	(0.0049)	(0.0054)
$\tilde{\Delta}\text{ForeignDemand}_{it} \times \text{Superstar}_{it_0}$	0.0081***	-0.1876***	0.0042***	0.0047***	-0.0005
	(0.0012)	(0.0538)	(0.0011)	(0.0010)	(0.0012)
Superstar_{it_0}	-0.0052***	0.0112	-0.0054***	-0.0010***	-0.0044***
	(0.0003)	(0.0096)	(0.0003)	(0.0002)	(0.0003)
Two-digit Sector × Year FE	✓	✓	✓	✓	✓
# Observations	118,498	118,498	118,498	118,498	118,498

Notes: Standard errors clustered at the firm level. *** p<0.01, ** p<0.05, * p<0.1. The coefficients from the regression models are estimated over 1995-2000 using OLS. All columns include industry by year fixed effects. $\Delta \ln \text{VA}_{it}$ is the change in a firm's value-added. $\tilde{\Delta}\text{ForeignDemand}_{it}$ is the change in a firm's foreign demand. Superstar_{it_0} is a measure of the degree of internationalization of the firm and is the log of the export sales of the firm in the first year in which it appears in the sample.

Table (20) Robustness: Dropping Key Industries

Internationalization Measure (Superstar_{it_0})	ln Export Sales				
Dependent variable	$\Delta \ln \text{VA}_{it}$	$\Delta\text{Labor Share}_{it}$	$\Delta \ln \text{Labor Compensation}_{it}$	$\Delta \ln \text{Wages}_{it}$	$\Delta \ln \text{Workers}_{it}$
	(1)	(2)	(3)	(4)	(5)
$\tilde{\Delta}\text{ForeignDemand}_{it}$	-0.0166***	0.3245	-0.0103**	-0.0072	-0.0032
	(0.0046)	(0.1993)	(0.0043)	(0.0045)	(0.005)
$\tilde{\Delta}\text{ForeignDemand}_{it} \times \text{Superstar}_{it_0}$	0.0069***	-0.1722***	0.0035***	0.0023**	0.0012
	(0.0011)	(0.0514)	(0.001)	(0.001)	(0.0011)
Superstar_{it_0}	-0.0060***	0.0163*	-0.006***	-0.0015***	-0.0045***
	(0.0003)	(0.0094)	(0.0003)	(0.0002)	(0.0003)
Two-digit Sector × Year FE	✓	✓	✓	✓	✓
# Observations	123,617	123,617	123,617	123,617	123,617

Notes: Standard errors clustered at the firm level. *** p<0.01, ** p<0.05, * p<0.1. The coefficients from the regression models are estimated over 1994-2001 using OLS. All columns include industry by year fixed effects. $\Delta \ln \text{VA}_{it}$ is the change in a firm's value-added. $\tilde{\Delta}\text{ForeignDemand}_{it}$ is the change in a firm's foreign demand. Superstar_{it_0} is a measure of the degree of internationalization of the firm and is the log of the export sales of the firm in the first year in which it appears in the sample. Naf Rev. 1 industries 23-25, 30-33 and 34-35 are dropped from the sample.

Table (21) Robustness: Alternative Lag Structure

Internationalization Measure (Superstar)	ln Export Sales			
Dependent variable	$\Delta \ln \text{VA}_{it}$ (1)	$\Delta \ln \text{Labor Share}_{it}$ (2)	$\Delta \ln \text{VA}_{it}$ (3)	$\Delta \ln \text{Labor Share}_{it}$ (4)
$\tilde{\Delta}\text{ForeignDemand}_{it}$	-0.0188***	0.3503*	-0.0213***	0.6610***
	(0.0044)	(0.1871)	(0.0053)	(0.2376)
$\tilde{\Delta}\text{ForeignDemand}_{it} \times \text{Superstar}_{it-1}$	0.0068***	-0.1713***		
	(0.0010)	(0.0443)		
Superstar_{it-1}	-0.0056***	0.0573***		
	(0.0002)	(0.0085)		
$\tilde{\Delta}\text{ForeignDemand}_{it} \times \text{Superstar}_{it-2}$			0.0084***	-0.2492***
			(0.0012)	(0.0538)
Superstar_{it-2}			-0.0042***	0.0586***
			(0.0003)	(0.0094)
Two-digit Sector × Year FE	✓	✓	✓	✓
# Observations	166,323	166,323	124,140	124,140

Notes: Standard errors clustered at the firm level. *** p<0.01, ** p<0.05, * p<0.1. The coefficients from the regression models are estimated over 1994-2001 using OLS. All columns include industry by year fixed effects. $\Delta \ln \text{VA}_{it}$ is the change in a firm's value-added. $\tilde{\Delta}\text{ForeignDemand}_{it}$ is the change in a firm's foreign demand. Superstar is a measure of the degree of internationalization of the firm and is the log of the export sales of the firm. This measure is lagged one year in columns 1 and 2 and lagged two years in columns 3 and 4.

Table (22) Robustness: Sample of Survivors

Internationalization Measure (Superstar$_{it_0}$)	ln Export Sales				
Dependent variable	Δ ln VA$_{it}$ (1)	ΔLabor Share$_{it}$ (2)	Δ ln Labor Compensation$_{it}$ (3)	Δ ln Wages$_{it}$ (4)	Δ ln Workers$_{it}$ (5)
$\tilde{\Delta}$ForeignDemand$_{it}$	-0.0299***	1.3914***	-0.0034	-0.0008	-0.0026
	(0.0077)	(0.3910)	(0.0052)	(0.0072)	(0.0074)
$\tilde{\Delta}$ForeignDemand$_{it}$ $\times$ Superstar$_{it_0}$	0.0094***	-0.3807***	0.0021**	0.0008	0.0013
	(0.0016)	(0.0823)	(0.0010)	(0.0012)	(0.0013)
Superstar$_{it_0}$	-0.0033***	0.0438***	-0.0027***	-0.0005***	-0.0022***
	(0.0003)	(0.0104)	(0.0003)	(0.0002)	(0.0003)
Two-digit Sector $\times$ Year FE	✓	✓	✓	✓	✓
# Observations	64,076	64,076	64,076	64,076	64,076

Notes: Standard errors clustered at the firm level. *** p<0.01, ** p<0.05, * p<0.1. The coefficients from the regression models are estimated over 1994-2001 on the sample of surviving exporters using OLS. All columns include industry by year fixed effects. Δ ln VA$_{it}$ is the change in a firm's value-added. $\tilde{\Delta}$ForeignDemand$_{it}$ is the change in a firm's foreign demand. Superstar$_{it_0}$ is a measure of the degree of internationalization of the firm and is the log of the export sales of the firm in the first year in which it appears in the sample.

Table (23) Robustness: Trim Top and Bottom 10% of Employment and Investment Distribution

Internationalization Measure (Superstar$_{it_0}$)	ln Export Sales				
Dependent variable	Δ ln VA$_{it}$ (1)	ΔLabor Share$_{it}$ (2)	Δ ln Labor Compensation$_{it}$ (3)	Δ ln Wages$_{it}$ (4)	Δ ln Workers$_{it}$ (5)
$\tilde{\Delta}$ForeignDemand$_{it}$	-0.016***	0.3241	-0.01***	-0.0108***	0.001
	(0.0042)	(0.2045)	(0.0034)	(0.0034)	(0.0021)
$\tilde{\Delta}$ForeignDemand$_{it}$ $\times$ Superstar$_{it_0}$	0.0068***	-0.1594***	0.0036***	0.0033***	0.0002
	(0.0011)	(0.053)	(0.0007)	(0.0007)	(0.0004)
Superstar$_{it_0}$	-0.0041***	0.0372***	-0.0037***	-0.0019***	-0.0018***
	(0.0002)	(0.0098)	(0.0002)	(0.0002)	(0.0001)
Two-digit Sector $\times$ Year FE	✓	✓	✓	✓	✓
# Observations	112,090	112,090	112,090	112,090	112,090

Notes: Standard errors clustered at the firm level. *** p<0.01, ** p<0.05, * p<0.1. The coefficients from the regression models are estimated over 1994-2001 using OLS. All columns include industry by year fixed effects. Δ ln VA$_{it}$ is the change in a firm's value-added. $\tilde{\Delta}$ForeignDemand$_{it}$ is the change in a firm's foreign demand. Superstar$_{it_0}$ is a measure of the degree of internationalization of the firm and is the log of the export sales of the firm in the first year in which it appears in the sample. Firm-year observations in the top and bottom 10% of both the employment and investment distributions have been discarded in order to keep a sample of firms that do not experience drastic changes due to outsourcing.

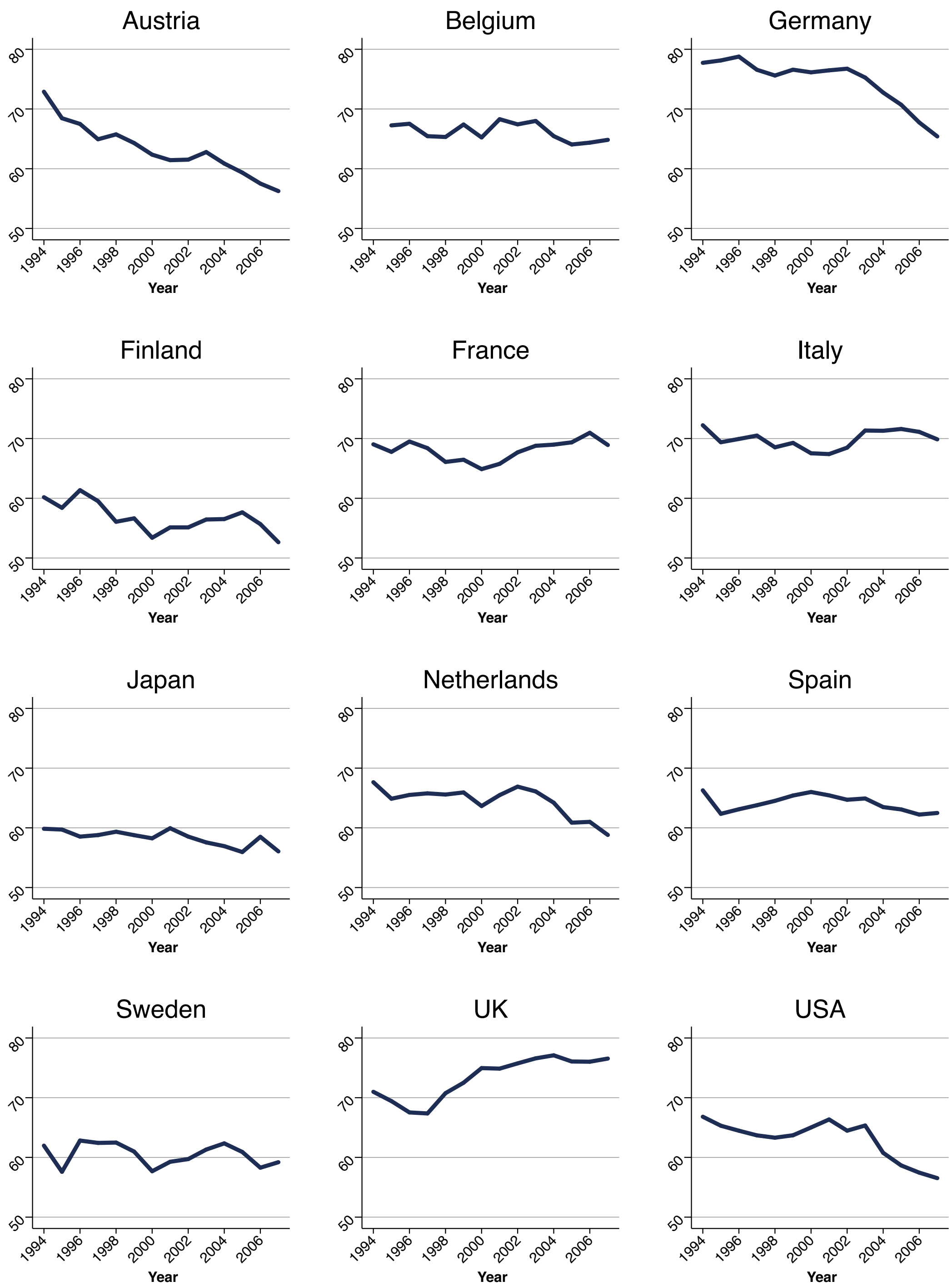
Table (24) Sensitivity Analysis

Internationalization Measure (Superstar_{it_0})	ln Export Sales			
Sensitivity Test	No Superstar Exporters		No Heterogeneous Effect	
Dependent variable	$\Delta \ln \text{VA}_{it}$ (1)	$\Delta\text{Labor Share}_{it}$ (2)	$\Delta \ln \text{VA}_{it}$ (3)	$\Delta\text{Labor Share}_{it}$ (4)
$\tilde{\Delta}\text{ForeignDemand}_{it}$	-0.0147***	0.1607	0.0067***	-0.2806***
	(0.0040)	(0.1777)	(0.0023)	(0.1043)
$\tilde{\Delta}\text{ForeignDemand}_{it} \times \text{Superstar}_{it_0}$	0.0061***	-0.1299***		
	(0.0010)	(0.0456)		
Superstar_{it_0}	-0.0063***	0.0199**		
	(0.0003)	(0.0084)		
Two-digit Sector × Year FE	✓	✓	✓	✓
# Observations	163,583	163,583	166,323	166,323

Notes: Standard errors clustered at the firm level. *** p<0.01, ** p<0.05, * p<0.1. The coefficients from the regression models are estimated over 1994-2001 using OLS. All columns include industry by year fixed effects. $\Delta \ln \text{VA}_{it}$ is the change in a firm's value-added. $\tilde{\Delta}\text{ForeignDemand}_{it}$ is the change in a firm's foreign demand. Superstar_{it_0} is a measure of the degree of internationalization of the firm and is the log of the export sales of the firm in the first year in which it appears in the sample. Firms in the top 1% of the initial log export sales distribution have been discarded from the sample in columns 1 and 2. In columns 3 and 4, the interaction terms and the Superstar_{it_0} variables are dropped from the estimation of Equations (3) and (4).

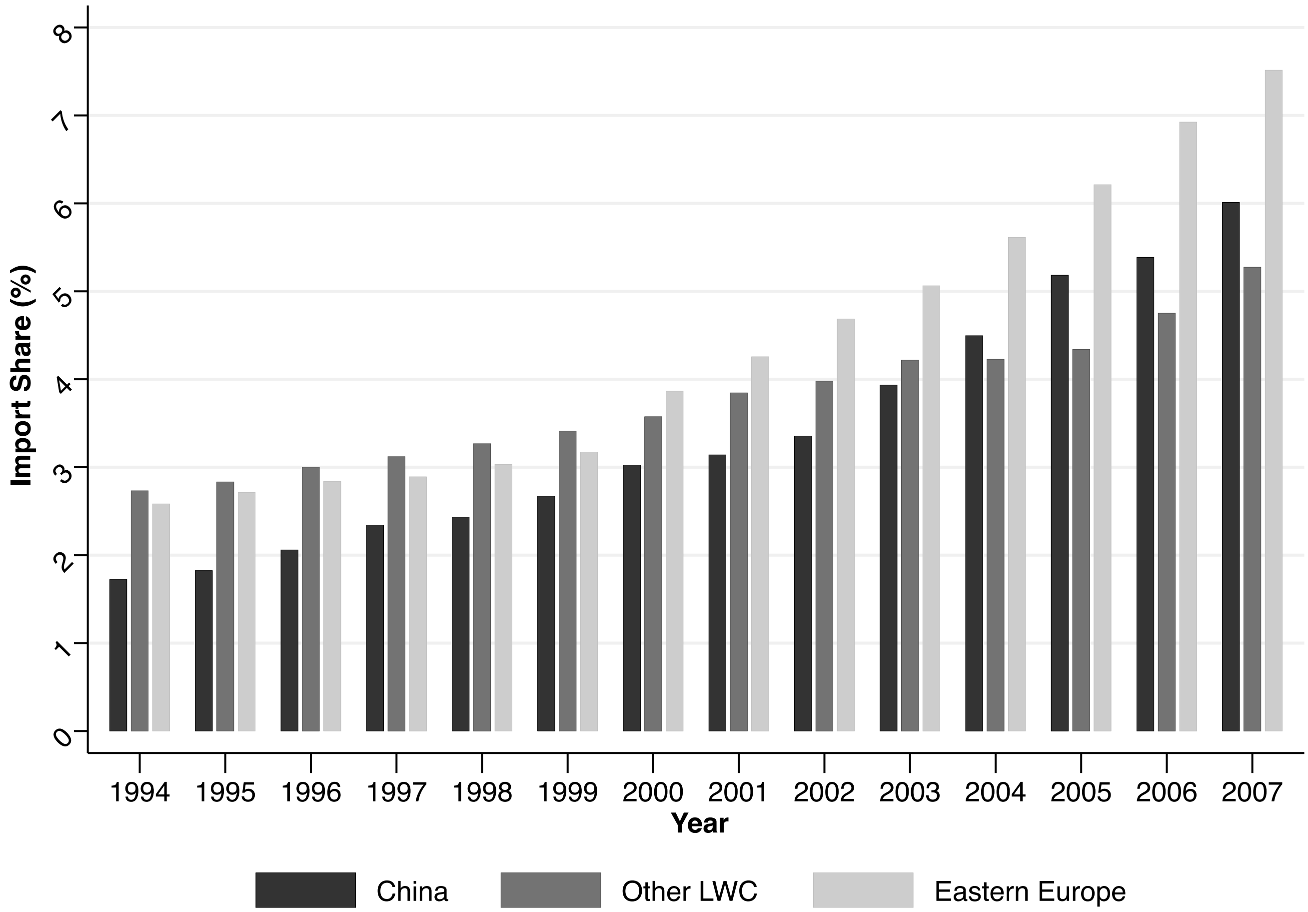
G Additional Figures

Figure (G.1) Manufacturing Labor Share by Country (1994-2007)



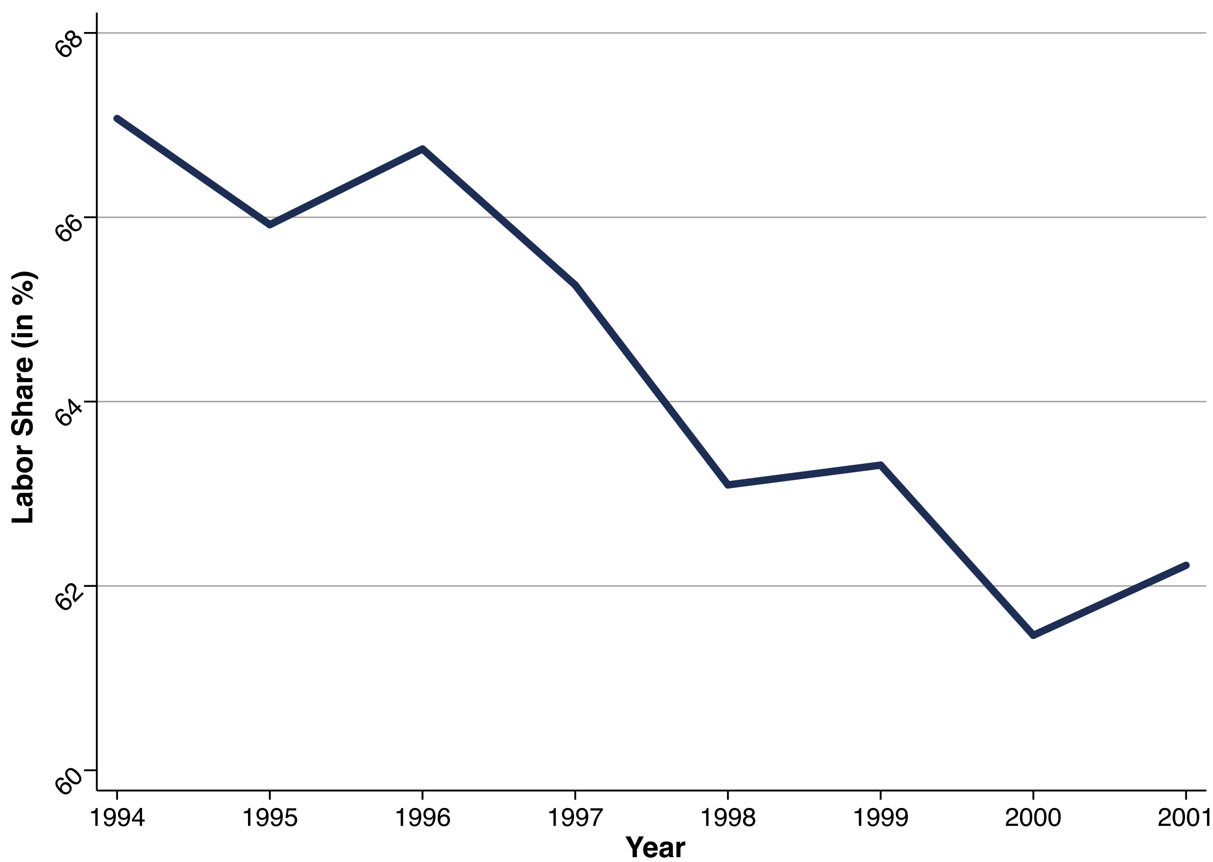
Notes: The data come from EU KLEMS Revision 2012 (O'Mahony and Timmer, 2009).

Figure (G.2) Chinese, LWC and Eastern European Exports in Total French Imports



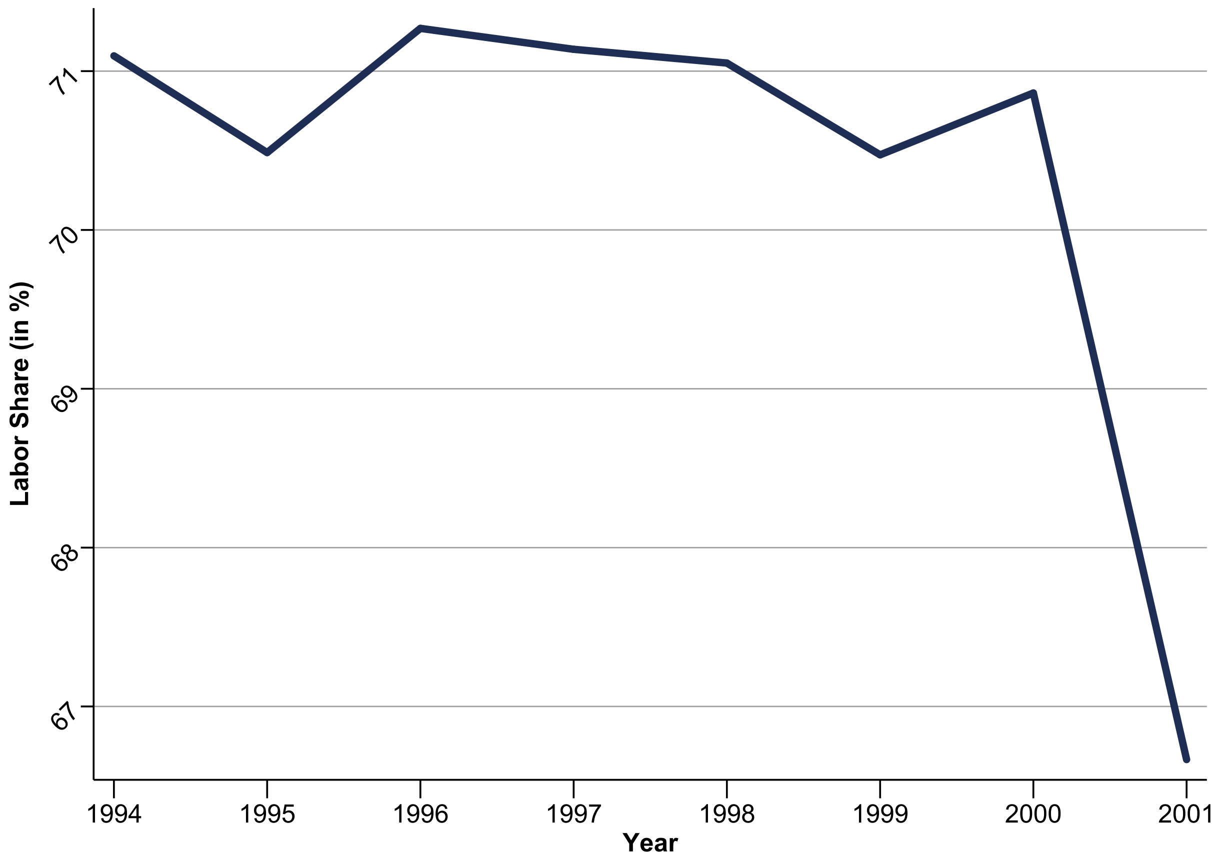
Notes: The data source is BACI. LWC stands for Low-Wage Countries. These countries are defined as in Auer et al. (2013) and the countries included are: India, Malaysia, Mexico, the Philippines, Thailand, Turkey, Poland, Romania, Slovakia. Eastern European countries are defined as in Dauth et al. (2014) and include: Bulgaria, the Czech Republic, Hungary, Poland, Romania, Slovakia, Slovenia, Russia, Belarus, Estonia, Latvia, Lithuania, Moldova, Ukraine, Azerbaijan, Georgia, Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan, and Uzbekistan.

Figure (G.3)   Manufacturing Labor Share (Macro Data)



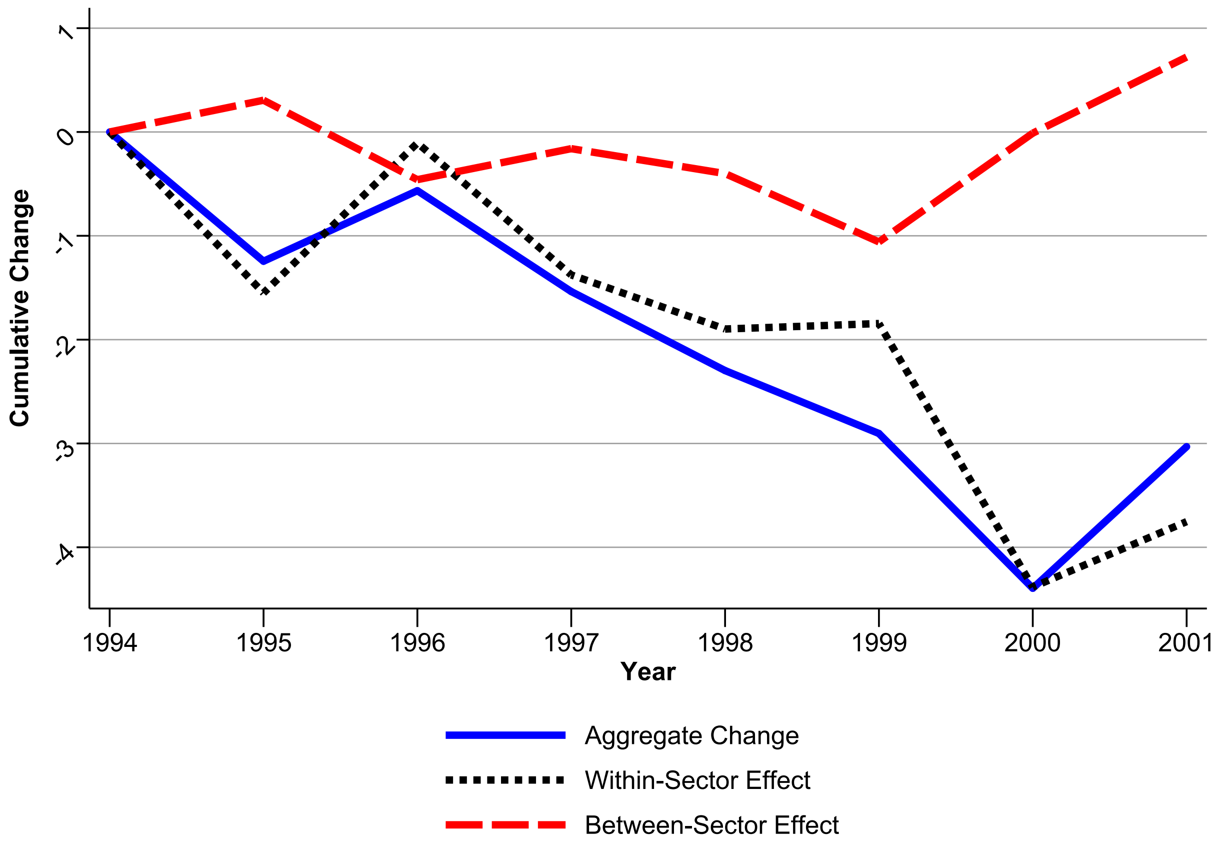
Notes: The data source is EU KLEMS (September 2017 release, Revised July 2018) from Jäger (2016).

Figure (G.4) Manufacturing Labor Share of Domestic Firms



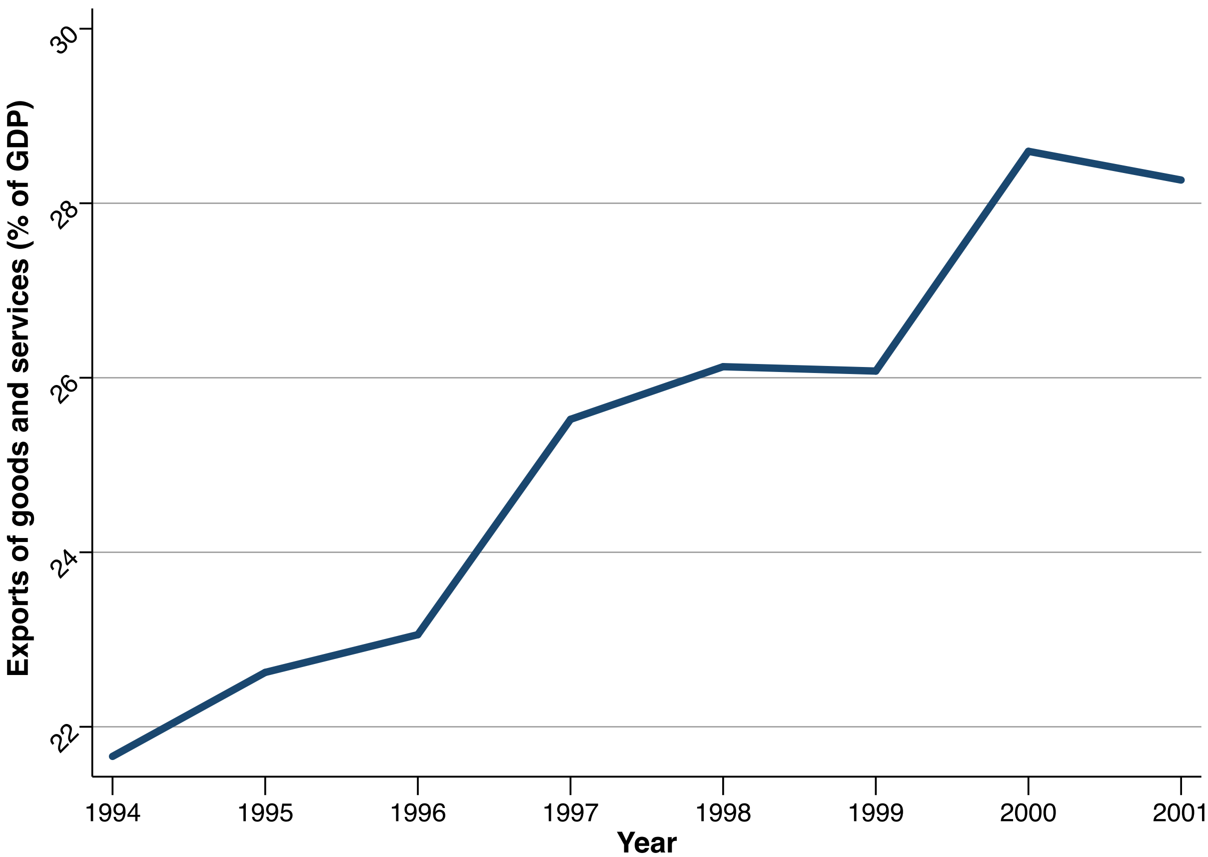
Notes: The data source is FICUS.

Figure (G.5) Within/Between-Sector Decomposition of Manufacturing Changes in the Labor Share



Notes: The data source is FICUS.

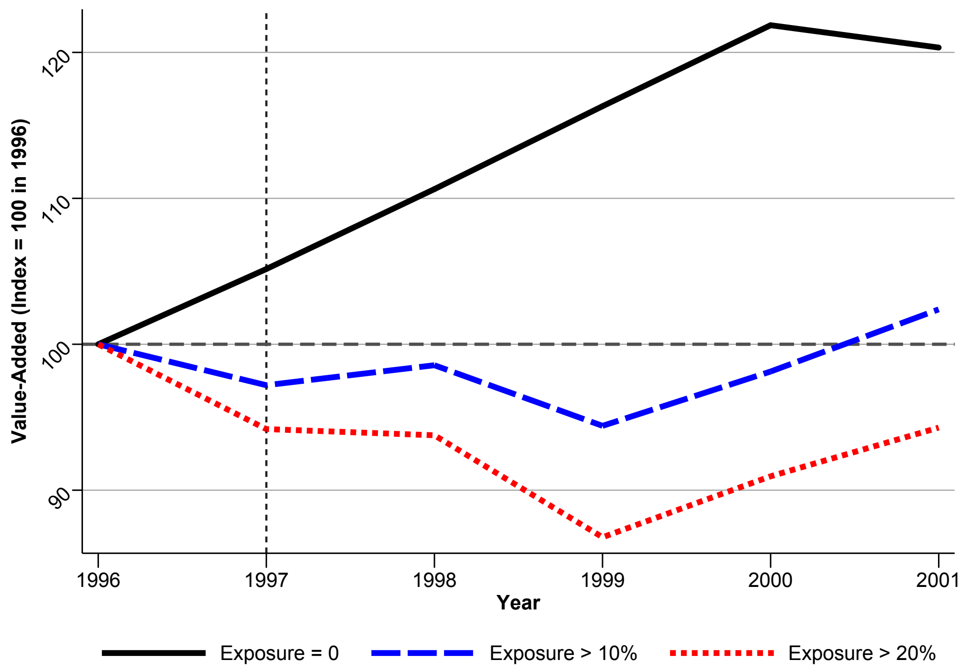
Figure (G.6) French Exports to GDP Ratio



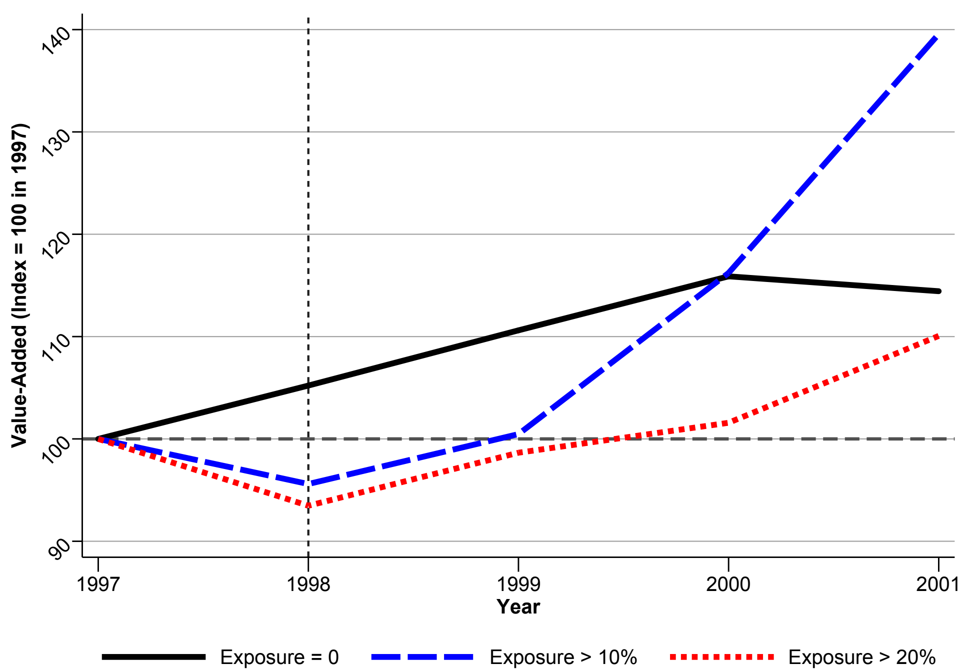
Notes: The data come from the World Bank national accounts data.

Figure (G.7) Value-Added of French Exporters during Financial Crisis

(a) Asian Financial Crisis

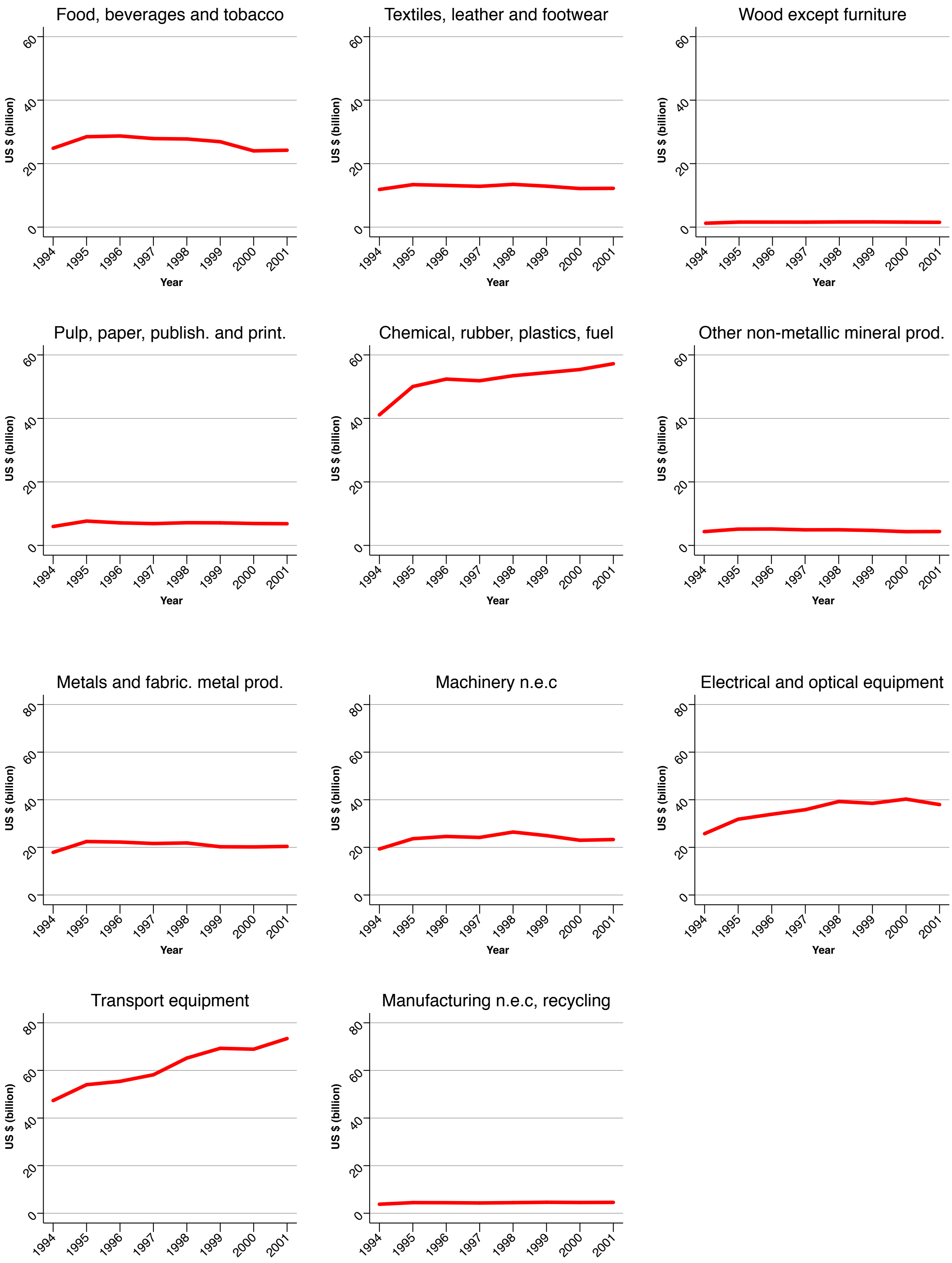


(b) Russian Financial Crisis



Notes: The sample of firms consists of surviving exporters over the whole 1994-2001 period.

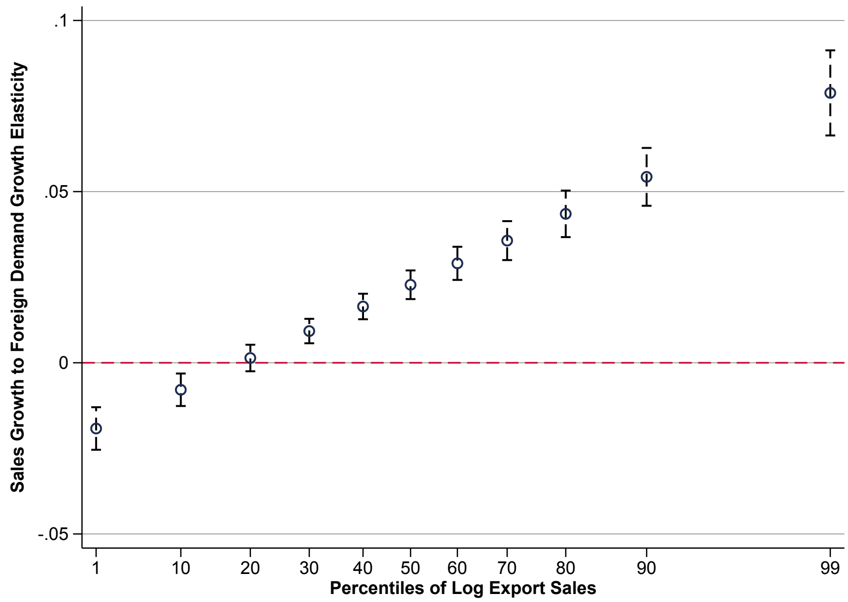
Figure (G.8) Sectoral French Exports to the Rest of the World by Industry



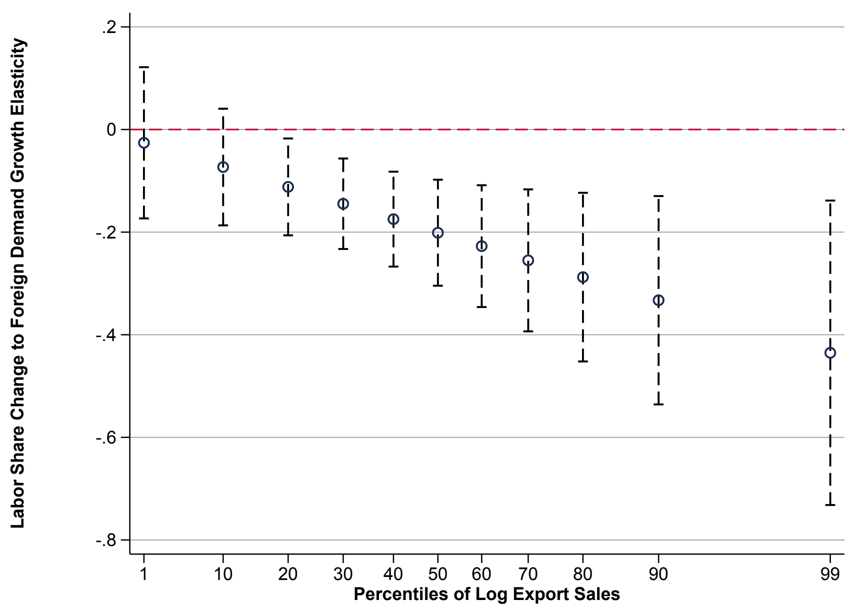
Data Source: BACI

Figure (G.9) Foreign Demand, Total Sales, and Equipped Labor Share (Internationalization Measure: log Export Sales)

(a) Dependent Variable: Total Sales



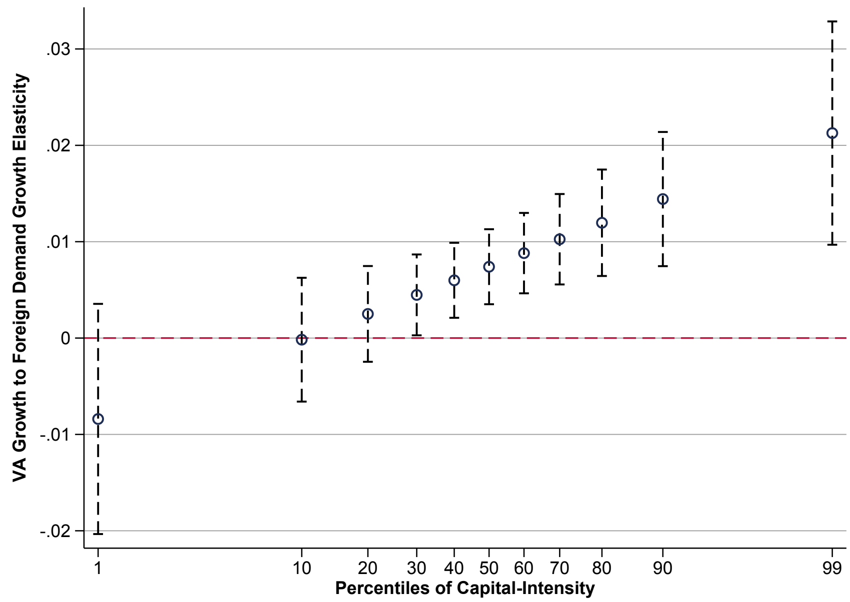
(b) Dependent Variable: Equipped Labor Share



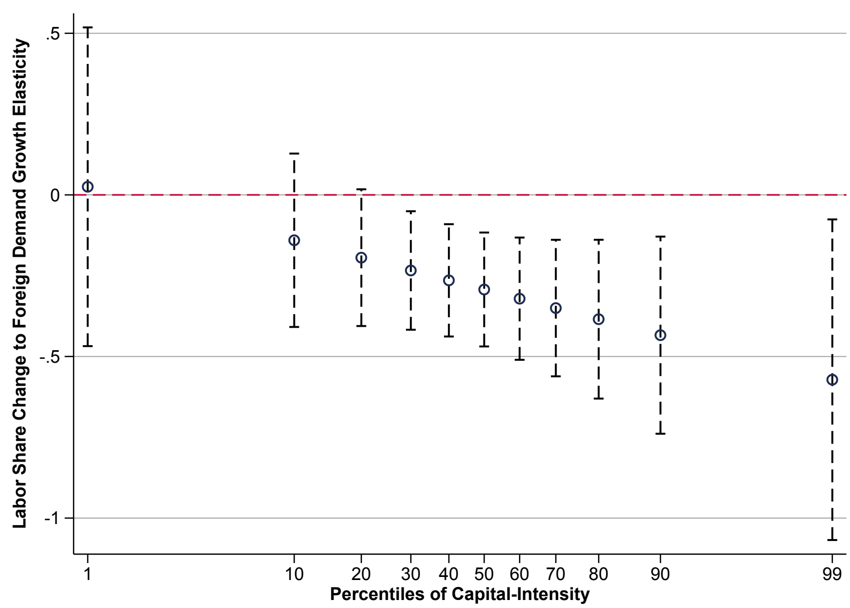
Notes: This Figure is obtained by estimating Equation (4) but where the dependent variable is the change in a firm's total sales for Panel G.9a and in its equipped labor share for Panel G.9b. This Figure reports the elasticity of the change in a firm's total sales and in its equipped labor share to its foreign demand growth evaluated at different percentiles of the (log) export sales distribution (at time t_0). The percentiles of the initial export sales distribution are reported in Table 9.

Figure (G.10) Foreign Demand, Value-Added, and Labor Share (Heterogeneity Measure: Capital Intensity)

(a) Between-Exporter Effect



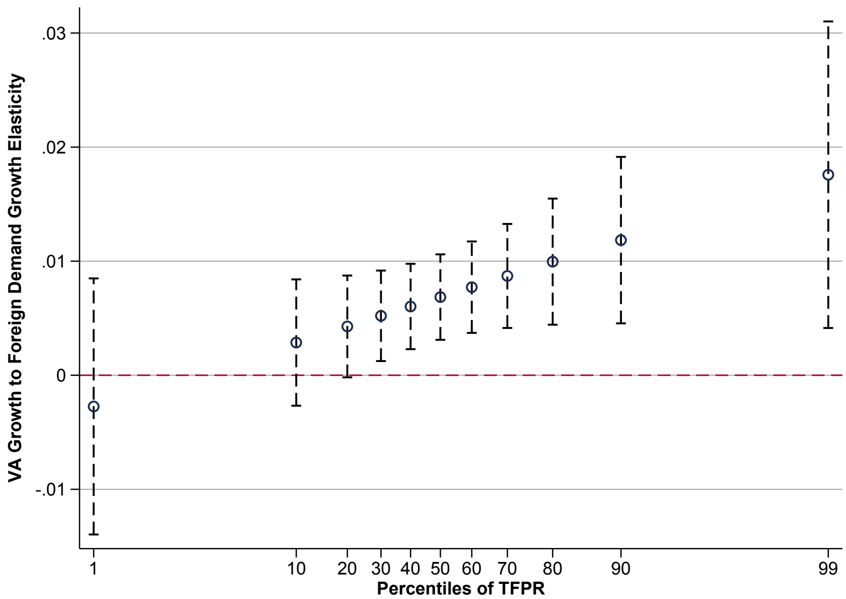
(b) Within-Between Exporter Effect



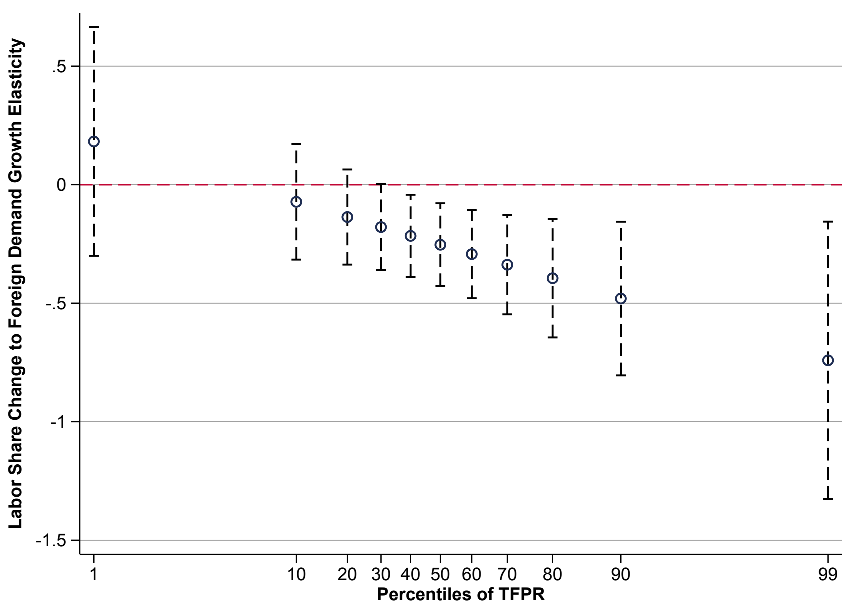
Notes: This Figure is obtained by estimating Equations (3) and (4). This Figure reports the elasticity of the change in a firm's value-added growth and labor share change to its foreign demand growth evaluated at different percentiles of the capital intensity distribution (at time t_0).

Figure (G.11) Foreign Demand, Value-Added, and Labor Share (Heterogeneity Measure: Revenue TFP)

(a) Between-Exporter Effect

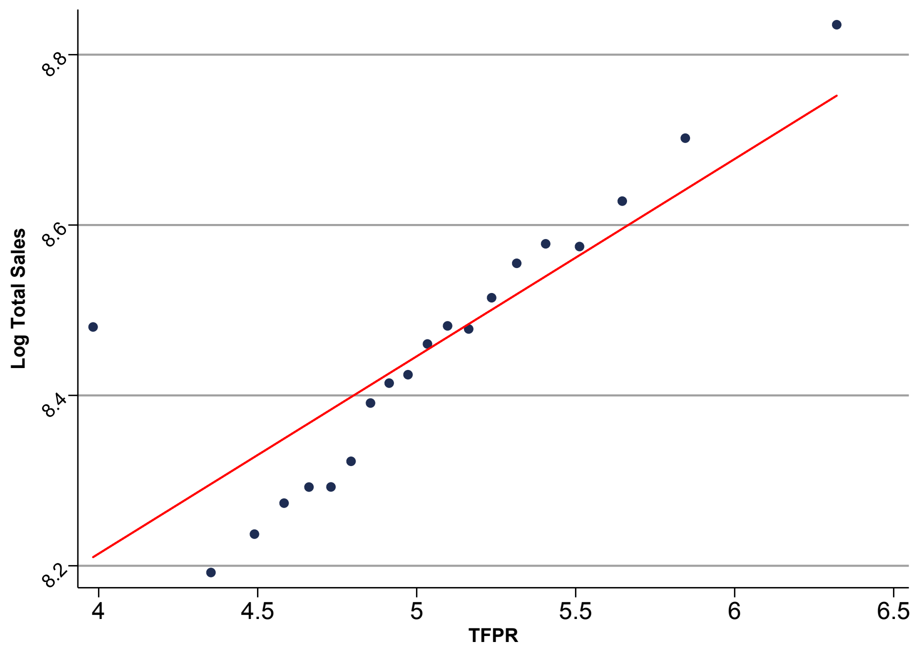


(b) Within-Between Exporter Effect



Notes: This Figure is obtained by estimating Equations (3) and (4). This Figure reports the elasticity of the change in a firm's value-added growth and labor share change to its foreign demand growth evaluated at different percentiles of the revenue TFP distribution (at time t_0).

Figure (G.12) Revenue TFP and Firm Size



Notes: Revenue TFP (x-axis) is estimated as described in Appendix D. Firm size (y-axis) is defined as the log of total sales at the firm level. The sample consists of exporting firms over the period 1994-2001.