Market Structures in Small Open Economies: Evidence from Denmark*

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Abstract

This paper provides some stylized facts about market structure in Denmark, a country exhibiting high rates of exports and imports as is common in small developed economies. Utilizing disaggregated data at the firm-product level for manufacturing industries, we highlight the widespread presence of industries that are neither purely oligopolistic or monopolistically competitive; rather, they contain a few domestic leaders with numerous firms having insignificant domestic market shares. We also document that, relative to the latter type of firms, leaders have greater labor productivity, are more capital intensive, and pay higher wages; additionally, they are more likely to export and import, although they exhibit a greater domestic intensity relative to exporters with negligible domestic market shares. Finally, through a model of leaders and followers, we investigate how leaders can benefit from acting strategically against small firms and quantify its potential impact on industry outcomes through a numerical exercise.

Keywords: small economy, Denmark, domestic leaders, manufacturing.
JEL codes: L13, L11, F12, L6.

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1 Introduction

One common feature of small countries that distinguishes them from large economies is their heavy dependence on international trade (Benito et al. 2002, Van Den Bulcke and Verbeke 2001, Hannerz and Gingrich 2017). Regarding exports, this is a consequence of the restricted size of their home market, which makes firms commonly sell abroad to increase their production scale and, hence, operate efficiently. As for imports, their limited variety of resources and market size create hurdles to supply the whole diversity of goods that consumers demand. Thus, these countries end up importing more intensively and exposing local firms to tougher competition.

Given these distinctive features of a small open economy, what kind of market structures arise? In this paper, we provide some evidence on the matter by identifying stylized facts for Denmark. Our findings highlight the ubiquity of industries with coexistence of domestic leaders and numerous negligible firms. For these industries, we identify empirical features of their firms and present a model that highlights the incentives of leaders to behave strategically against the negligible firms.

In Section 2, we identify patterns regarding the market structure of Danish manufacturing industries. Our findings are based on highly disaggregated data regarding Danish manufacturing, which primarily come from two sources: Danish Prodcom statistics and international transactions collected by Danish customs. These datasets are part of the country's official statistics and cover almost all the international transactions and more than 90% of total production by industry.

Two features make these datasets particularly suitable for the analysis of market structure. First, the information is presented at the firm-product level and disaggregated at the 8-digit product level, making it possible to allocate each firm-product to an appropriately defined industry. In this way, we avoid issues arising with typical balance-sheet data declared for tax purposes, where a firm's total revenue is usually allocated to the specific industry that generates the greatest bulk of it.

Second, the information on international transactions is also presented at the firm-product level and encompasses imports by both manufacturing and non-manufacturing firms. This becomes particularly relevant for small economies like Denmark, where import competition is pronounced, since the importance of a domestic firm within an industry can only be measured once that imports are accounted for.

By obtaining the domestic market share of each domestic firm in terms of expenditures (i.e., domestic sales plus imports), our findings are as follows. First, around half of the industries have numerous Danish firms with negligible domestic market shares operating. Throughout the paper, we refer to these firms as domestic non-leaders (DNLs). Remarkably, when we measure the importance of these industries by total manufacturing expenditure, we find that they determine the majority of it. Specifically, more than 80% of total expenditure is covered by them.

In addition, we show that DNLs are not the only type of firms operating in these industries. Rather, they commonly coexist with a handful of firms that accrue great domestic market share, which we refer to as domestic leaders (DLs). Specifically, among industries with numerous DNLs, more than 85% of them have at least one DL and they represent more than 80% of the total manufacturing expenditure.

Delving into properties of these industries, we analyze how DLs compare with DNLs across several features. The results point out that DLs have greater labor productivity (i.e., revenue per employee), are more capital intensive, and pay higher wages. Additionally, they are more likely to engage in exporting and importing activities, although a different picture emerges when we measure their degree of internationalization through domestic intensity (i.e., a firm's domestic sales relative to the sales at home plus exports): conditional on exporting, DLs tend to display greater domestic intensity than DNLs. The result becomes relevant in light of the mixed empirical evidence on this matter[1] and the debate on whether a firm's position at its home market predicts a specific type of export behavior (for classical studies regarding this, see Mascarenhas 1986, Bonaccorsi 1992, Porter 1998).

Based on the ubiquity of these types of industries, in Section 3 we investigate the implications that such a market structure might entail. In particular, the asymmetry of these firms in terms of size and position at home can lead DLs to make strategic moves against DNLs to gain a better position domestically (see Kwoka and White 2001 and D'Aveni 2002 for several examples of such behavior).

To explore this matter, we present an open-economy model where DLs are represented as in monopolistic competition and embed a set of non-negligible heterogeneous firms to capture the presence of DLs. Moreover, we suppose that DLs engage in strategic moves and make investment decisions to gain a better position locally. To isolate the strategic motive

[1] For instance, Ito and Pucik (1993), Hennart and Park (1994), and Ito (1997) find similar results for Japanese manufacturing industries, while Guan and Ma (2003) show that there is no statistical relation between domestic intensity and being a DL in Chinese manufacturing.

to invest by these DLs, we utilize the two-stages approach by Fudenberg and Tirole (1984). Thus, we consider a scenario where DLs decide on domestic investments prior to both entry of DNLs and the market stage. Then, we compare the outcomes of this scenario with a non-strategic benchmark where domestic investments are not observed by rival firms.

The results of the model indicate that DLs act more aggressively through overinvesting. The goal is to deter entry of DNLs and capture domestic sales that, otherwise, would go to DNLs. A corollary of this is that, even when we assume competition à la Bertrand, DLs never accommodate entry. The result clearly contrasts with what occurs in models with one incumbent and one potential entrant à la Fudenberg and Tirole (1984). This occurs because, in our model, DNLs are governed by free-entry rules. Thus, as in Etro (2006; 2008), accommodating strategies are always unprofitable since they end up inducing additional entry and, hence, turning futile the attempt of softening competition.

To assess the potential impact of this type of behavior, in Section 4 we calibrate the model and perform some numerical exercises. We find that, on average, each DL could increase its domestic revenue by around 36%. In addition, the domestic market share of each would become greater by around 2.5 percentage points and its domestic intensity higher by around 5 percentage points. Nonetheless, the results exhibit great heterogeneity across and within industries.

Our paper is related to different strands of the literature. First, it touches upon studies that characterize markets in open economies. In particular, it is related to studies that have identified a coexistence of large and small firms. At the country level, this has been documented in Axtell (2001) for the USA and Fujiwara et al. (2004) for several European countries; at the industry level, a similar pattern has been shown by Bronnenberg et al. (2009) and Hottman et al. (2016) for various industries in the USA and Gaubert and Itskhoki (2018) for French manufacturing.

We contribute to the literature in several respects. First, the evidence that we provide covers all the industries belonging to manufacturing. Thus, in contrast to studies that analyze some specific industries, we can measure their relative importance with respect to the whole manufacturing sector. Specifically, this allows us to conclude that industries with leaders and negligible firms coexisting cover the great bulk of total manufacturing expenditure. Second, our results are based on highly disaggregated information at the firm-product level and including imports. Thus, we improve upon results utilizing balance-sheet data, which allocates a firm's total revenue to the main activity of the firm without splitting it into the different industries from which this is generated. Finally, we focus on the case of Denmark, which is a small economy exhibiting high rates of exports and imports.[2]

Furthermore, our paper is related to studies that search for stylized facts of firms through the use of microdata. Regarding this, there is a vast literature initiated by Bernard and Jensen (1995) on the differences between exporters and firms that exclusively serve domestic markets. See in particular Eaton et al. (2004) for France, Mayer and Ottaviano (2008) for several European countries, and Bernard et al. (2012) for the USA. Furthermore, there is a growing literature on the so-called "superstar firms", including Freund and Pierola (2015), Autor et al. (2017), Gutiérrez and Philippon (2017), and De Loecker and Eeckhout (2018). While these papers define large firms according to a firm's exports or total revenue, we deal with large firms defined by their domestic market shares and, hence, their position at the home market.

2 Empirical Facts

We begin by presenting some empirical regularities regarding the market structure of Danish manufacturing industries. This is done by primarily using two datasets. One provides information about the production of manufacturing firms. The other contains international transactions by both manufacturing and non-manufacturing firms. Both datasets have information reported at the year-firm-product level and can be easily merged through a unique firm identifier. We take 2005 as the baseline year, with similar results for other years.

The first dataset contains information about physical production in manufacturing industries and constitutes the main source for Danish Prodcom statistics. Any unit with at least ten employees that lists manufacturing as its main activity is included. Overall, at least 90% of the total production value in each NACE (revision 1.1) 4-digit industry is covered.[3] Moreover, products are defined in terms of the Combined Nomenclature at the 8-digit level (hereafter, CN8), with information on values at the firm-product level.[4]

The second dataset is collected by Danish customs and reports imports (CIF values) and exports (FOB values) at the CN8 firm-product level. It covers firms belonging to the production dataset and also non-manufacturing firms. Overall, the trade flows recorded for

[2]See Mayer and Ottaviano (2008) for empirical regularities about exports and imports across European countries, including small economies.

[3]NACE is the standard industry classification used in the EU. It is similar to the NAICS system for North American countries and the older SIC used in the USA.

[4]The Combined Nomenclature is the classification used by EU countries to report trade data. Their first six digits coincide with the Harmonized System (HS) nomenclature.

EU countries are 95% for imports and 97% for exports, while the universe of transactions is covered for non-EU countries.

Table 1 contains descriptive statistics of the entire sample at our disposal. It comprises 203 industries and 3,686 firms. From the table, we can appreciate the typical pattern of a small economy, given by a high prevalence of international transactions. This is reflected by the high import penetration in each industry as well as the percentage of firms engaging in exporting activities.

Table 1. *Descriptive Statistics*

	% value	# industries	# firms	# exporters	% exporters	import share
Food & Beverages	14.4	33	317	224	71	41
Chemicals	10.6	17	125	110	88	60
Machinery	10.2	22	598	375	63	61
Metal Products	6.6	13	534	192	36	33
Motor Vehicles	6.5	3	66	41	62	91
Electrical Machinery	4.7	7	131	75	57	45
Printing	4.5	7	296	89	30	11
Media & Equipment	4.3	3	60	40	67	85
Basic Metals	4.3	12	52	33	63	86
Rubber & Plastic	4.2	7	234	163	70	55
Other Manufactures	4.2	12	310	207	67	51
Computers	3.9	2	19	15	79	95
Wood	3.4	6	183	61	33	46
Glass & Cement	3.4	23	159	62	39	32
Apparel	3.0	6	42	38	90	92
Paper	2.9	6	120	76	63	58
Medical Equipment	2.8	4	132	94	71	56
Other Transports	2.8	8	27	18	67	73
Textiles	2.1	10	98	71	72	79
Average of Sectors	5	10	175	99	64	62
All Sectors	100	203	3686	2091	57	58

Note: % value relative to total manufacturing sales, % exporters relative to its own sector, and import shares relative to the sector's total sales.

2.1 Empirical Regularities

We proceed to analyze the market structure of manufacturing industries. Throughout the paper, we refer to a *sector* as a 2-digit industry according to the NACE classification and reserve the term *industry* when it is defined at the 4-digit level. Since our information is at the firm-product level with goods defined at the CN8 level, we proceed by allocating each firm-product to its corresponding industry through a concordance table.[5]

Consistent with studies utilizing similar European datasets (e.g., Amiti et al. 2018), we classify a firm as domestic when it reports positive production in Denmark. Moreover, two types of imports are considered as foreign competition in an industry. The first type includes imports made by firms that do not engage in any production activity in Denmark; for instance, this encompasses imports made by retailers that are competing directly with

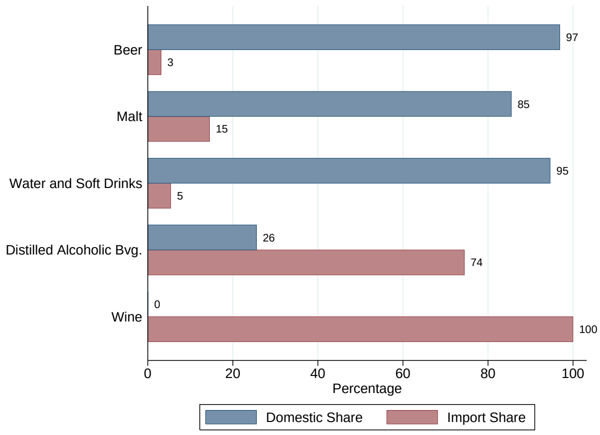
[5]Specifically, the concordance is provided by Eurostat through its RAMON portal.

sales by domestic firms. The second type includes imports made by domestic firms not producing in that industry; this represents foreign competition since they are inputs that the firm could have bought from a domestic firm.

To investigate the market structure of manufacturing industries, we calculate the domestic market shares of Danish firms in each industry. These are defined relative to the industry's expenditure, thereby comprising domestic sales and imports. Domestic firms' sales are defined as the turnover reported in the Prodcom dataset and, since this is reported without a breakdown between domestic sales and exports, we compute a firm's domestic sales as the difference between its total production value and its exports.[6]

For small economies, accounting for import competition becomes crucial to reflect the relevance of a domestic firm in total expenditures. Nonetheless, it is worth remarking that the existence of large import shares does not preclude the presence of Danish firms with high domestic market shares. In fact, there tends to be a pattern of specialization at the industry level, where some of the industries are dominated by imports and others by domestic firms. Figure 1 illustrates this through several industries belonging to the beverage sector.

Figure 1. *Market Share of Domestic Firms (Import Corrected): Beverage Sector*



Note: Market shares measured in terms of each industry's expenditures, which comprise domestic sales and imports.

Next, we present two stylized facts of Danish manufacturing. The first one refers to the market structure of its industries, while the second one characterizes its firms.

[6]In our dataset, total turnover is defined by the economic ownership of goods sold and produced by Danish firms, rather than as production on the physical territory of Denmark. Specifically, it includes sales of own goods (either produced, processed, or assembled by the firm), goods produced by a subcontractor established abroad (if the firm owns the inputs of the subcontracted firm), and resales of goods bought from other domestic firms and sold with any processing.

Stylized Fact 1. *Measuring the importance of industries through total expenditures, a typical market structure comprises a few domestic firms with high domestic market shares and numerous domestic firms with negligible market shares.*

Using the terminology employed so far, a typical industry in manufacturing consists of a handful of DLs coexisting with numerous DNLs. In order to provide evidence for this fact, we begin by identifying industries that include a subset of domestic firms having insignificant domestic market shares, which correspond to DNLs.[7] Since Krugman (1979; 1980), and more recently due to the path-breaking model by Melitz (2003), studies in International Trade have commonly assumed monopolistic competition as market structure. Therefore, checking the presence of a pool of DNLs across industries is relevant for consistency with that market structure, which assumes the existence of numerous insignificant firms.

The results are presented in Table 2. They indicate that industries with a pool of DNLs cover a little bit more than half of all the industries. Specifically, there are 107 industries out of a total of 203 satisfying this property. Nonetheless, they represent the bulk of total manufacturing expenditures, with more than 80% of the total expenditure in manufacturing coming from them.

Table 2. *Industries with DNLs*

	% value	% industries
Media Equipment	100	100
Leather	100	100
Wood	99	83
Medical Equipment	97	75
Electrical Machinery	95	71
Computers	94	50
Apparel	94	50
Chemicals	93	71
Rubber & Plastic	91	71
Machinery	90	59
Other Manufactures	89	58
Paper	89	67
Metal Products	88	62
Basic Metals	87	33
Textiles	80	60
Food & Beverages	77	49
Printing	67	57
Glass & Cement	44	17
Motor Vehicles	29	66
Total	80.4	52.7

Note: Value calculated relative to each sector's total sales. Percentage of industries indicates the number of industries relative to the sector. Total expresses the result relative to manufacturing.

In addition to the existence of several domestic firms with insignificant market shares, a market structure consistent with monopolistic competition requires absence of large firms,

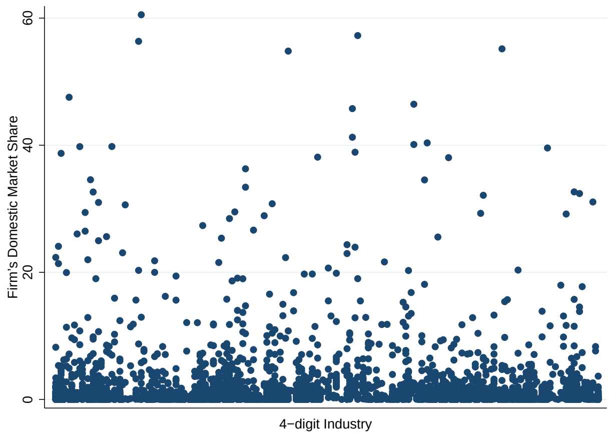
[7] Specifically, this is accomplished by keeping industries that have at least 12 firms and where the subset of 20% of domestic firms with the lowest market share or the 12 domestic firms with lowest market share accumulate less than 6% of total market share.

so that strategic behavior can be ruled out. To visually check whether this is the case, Figure 2a displays a scatter plot of domestic firms' market shares in industries with a pool of DNLs. Each vertical line corresponds to a different industry, with the vertical axis indicating the domestic market share of each firm belonging to that industry. The figure reveals the existence of numerous firms at the bottom but, also, a massive presence of outliers at the top. This suggests that industries with coexistence of DLs and DNLs are ubiquitous.

We can gain further insight into the market structure of these industries by defining a Danish firm-industry as a DL if it has a domestic market share greater than 3%, with similar results holding for other similar cutoffs. According to this criterion, in industries with a pool of DNLs, there are 331 DLs and 5,350 DNLs, with 92 industries having at least one DL. This reveals that industries exclusively comprising insignificant domestic firms, as in monopolistic competition, only occurs in 15 out of 203 manufacturing industries. Furthermore, Figure 2b points out that the bulk of expenditure among industries with numerous DNLs comes from industries with at least one DL operating.

Figure 2. *Market Share of Domestic Firms (Import Corrected)*

(a) Domestic Market Shares by Industry



(b) Industries with Coexistence of DNLs and DLs

	% value	% industries
Media Equipment	58	67
Leather	0	0
Wood	100	100
Medical Equipment	100	100
Electrical Machinery	100	100
Computers	0	0
Apparel	0	0
Chemicals	80	83
Rubber & Plastic	100	100
Machinery	93	92
Other Manufactures	85	86
Paper	100	100
Metal Products	95	88
Basic Metals	100	100
Textiles	69	67
Food & Beverages	100	100
Printing	100	100
Glass & Cement	100	100
Motor Vehicles	49	50
Total	82.3	86.0

Note: Market shares measured in terms of each industry's expenditures, which are the sum of domestic sales and imports. Existence of DLs in an industry defined as the presence of at least one domestic firm that has a domestic market share greater than 3%. In Table 2b, all percentages are relative to the industries with DNLs.

Stylized Fact 2. *Consider industries with coexistence of DLs and DNLs. Then, relative to DNLs, DLs have greater revenue productivity, are more capital intensive, and pay higher wages. Additionally, DLs are more likely to export and import, although they exhibit a greater domestic intensity relative to DNLs that export.*

Considering industries with coexistence of DLs and DNLs, Table 3 presents some empirical regularities regarding DLs relative to DNLs. The information comes from an additional dataset that provides accounting information at the firm level.[8]

Table 3. *DLs' Features*

	Size (1)	Exporter (2)	Importer (3)	R/L (4)	K/L (5)	Wages (6)
DL (dependent variable)	0.517***	0.0938***	0.0984***	0.126***	0.0677***	0.0947***
	(0.0359)	(0.0114)	(0.00973)	(0.0122)	(0.106)	(0.0122)
Sector FE	Yes	Yes	Yes	Yes	Yes	Yes
Sample Unit	Firm-Sector	Firm-Sector	Firm-Sector	Firm-Sector	Firm-Sector	Firm-Sector
Observations	3,100	3,100	3,100	3,100	3,100	3,100
R-squared	0.200	0.062	0.054	0.078	0.053	0.062

Note: Each column provides the result of a regression where the dependent variable is DL and each variable indicated in Columns (1) to (6) is the independent variable. Each firm is assigned to the sector in which it obtains its greatest revenue, where sector is defined as an industry at the 2-digit level. DL is a dummy variable that takes 1 if the firm has a market share greater than 3% in at least one industry of its sector. Market share is measured in terms of total sales value of the industry and account for import competition. Size is a dummy variable that takes 1 if the number of employees is greater than 250. Exporter and Importer are dummy variables. Rev/L is the revenue per employee, K/L is the capital per employee, and Wages is total wages per employee. The three variables are expressed in logs. Heteroskedastic-robust errors used.

All the variables in the table correlate positively with being a DL. Thus, DLs exhibit a greater size by employment, have greater labor productivity, are more capital intensive, and pay higher wages. Overall, the characterization of DLs relative to DNLs resembles the one obtained in the literature between firms only serving home and exporters, which has been the focus of a vast number of empirical studies since Bernard and Jensen (1995).

Furthermore, regarding engagement in international activities, Table 3 indicates that DLs are more likely to export and import. However, by comparing DLs and DNLs that export, the evidence suggests that DLs are less internationalized.

Specifically, Figure 3a compares these types of firms according to the distribution of domestic intensity for each group, where a firm's domestic intensity corresponds to a firm's domestic sales share relative to its total sales (i.e., domestic sales plus exports revenues). The graph reveals that both types of firms exhibit a home bias in terms of their sales. Nonetheless, this pattern is more pronounced for DLs. Thus, for instance, half of the DLs that export have a domestic intensity of at least 82%, while this number is 71% for DNLs that export.

In Figure 3b, we present further evidence regarding this matter by regressing domestic

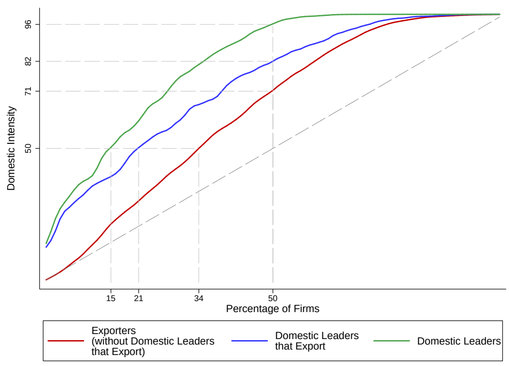
[8] Since the empirical analysis is at the firm-industry level, while the accounting data is at the firm level, some definitions need to be adapted. First, we assign each firm to the sector from which it obtains its greatest revenue, where recall that a sector is defined as an industry at the two digit level. In addition, we consider a firm as DL if it has a market share greater than 3% in at least one industry belonging to its sector.

market shares and domestic intensity controlling for industry fixed effects. Notice that there is no prior relation between a firm's domestic market share and its domestic intensity. In fact, there is a large theoretical literature arguing that there can be reasons for this relation to be positive or negative. This also explains why the empirical evidence on the subject is mixed. For instance, Ito and Pucik (1993), and Ito (1997) find results similar to ours for Japanese manufacturing industries, while Guan and Ma (2003) obtain no statistical difference between DLs and DNLs for several Chinese industries.

This is so because a firm's domestic intensity is determined not only by its domestic sales but, also, by its export revenues. In fact, the relation between domestic intensity and market shares may not be monotone. For instance, domestic firms with the lowest domestic market shares correspond on average to those that exclusively serve the local market, yet they exhibit the greatest domestic intensity. On the other hand, DLs, which have the greatest domestic market shares, exhibit greater domestic intensity than the DNLs that export. Ultimately, the relation between these variables depends on how domestic market shares correlate with a firm's international insertion.

Figure 3. *Relation between Domestic Market Share and Domestic Intensity of Firms*

(a) Cumulative Distribution of Firm's Domestic Intensity



(b) Regressions

	Firm's Domestic Intensity			
	(1)	(2)	(3)	(4)
Dom. Market Share	0.223**	1.120***		
	(0.113)	(0.225)		
DL				18.817***
				(1.533)
Size			-10.439***	-16.386***
			(2.495)	(2.487)
Industry FE	Yes	Yes		
Sector FE			Yes	Yes
Sample Unit	Firm-Ind	Exp-Ind	Exp-Sect	Exp-Sect
Observations	5,236	2,141	1,903	1,903
R-squared	0.145	0.120	0.106	0.180

Note: Domestic leader in an industry defined as a Danish firm that has a domestic market share greater than 3%. Domestic intensity defined at the firm level and as the ratio between firm's domestic revenues and its own total revenues, which comprises domestic revenues and exports. In Figure 3a, information is at firm-industry level with firms ordered from the left to the right starting with the firms with lowest domestic intensity. In Figure 3b, Exp-Ind indicates that the sample takes firm-industry as unit of observation and it is restricted to exporters. In Columns (3) and (4), observations are at the firm level. Each firm is assigned to the sector in which it obtains its greatest revenue. Exp-Sect indicates that only exporters are considered. DL is a dummy variable that takes 1 if the firm has a market share greater than 3% in at least one industry of the sector. Size is a dummy variable that takes 1 if the number of employees is greater than 250.

Regarding our results, there is a large theoretical literature positing that DLs could have greater domestic intensity relative to DNLs. The most immediate explanation for this is that a greater domestic intensity reflects a strong commitment by DLs to succeed in the domestic market. Alternatively, Mascarenhas (1986) argues that a greater domestic presence could rather respond to a lack of capabilities by DLs in foreign markets.

Another set of explanations argues that greater domestic intensity of DLs should be explained through its counterpart, which is a lower domestic intensity of DNLs. Thus, they seek an explanation by focusing instead on the behavior of DNLs. These firms might be forced to explore other markets and sell more intensively abroad given their weak position at home. Moreover, this strategy allows them to avoid direct competition with DLs, which could retaliate otherwise (Hennart and Park 1994, Porter 1998).

Finally, in Columns (3) and (4) of Figure 3b, we also show that the fact that DLs have a greater domestic intensity does not contradict previous studies that indicate a positive correlation between a firm's export intensity and its size (e.g., Mayer and Ottaviano, 2008). It is also a feature of the Danish data that greater size in terms of employment is associated with lower domestic intensity and, hence, greater export intensity.

3 Market Structure and Strategic Behavior

The evidence provided indicates that industries with coexistence of DLs and DNLs generate a substantial share of expenditure in Danish manufacturing. In such market structures, there exists a clear asymmetry between the size of firms, which can lead DLs to behave strategically against DNLs to gain a better position at home. Evidence of this type of behavior has been documented in the literature (see, in particular, Kwoka and White 2001 and D'Aveni 2002 for various examples). Next, we present a model that formalizes this.

These types of actions have been coined by Schelling (1960) as strategic moves. He argues that, once it is recognized that agents choose their actions in a strategic way, it should also be acknowledged that they behave strategically concerning the game itself. That is, if agents have the opportunity, they do not take the rules of the game as given; instead, they make moves that alter the original situation with the aim of achieving a better outcome. This intuition applied to oligopolies is reflected in the claim by Porter (1998) that "*successful firms not only respond to their environment but also attempt to influence it in their favor.*"

In tradable industries, large domestic firms are in a better position to make such strategic moves. This is a consequence of certain advantages that arise by being located where the buyer is, which allows domestic firms to collect more and better information concerning the local environment, react quicker to changes in market conditions, establish and maintain relations more easily with intermediaries at home, get a better grasp of customer tastes, and tailor strategies more effectively to the idiosyncrasies of the country. Consequently, given that DLs have the necessary size in the industry to influence market conditions, they can commit resources to dictate the condition under which other firms operate.

3.1 Main Features of the Model

We formalize strategic moves by DLs through a setup that considers a world economy with a horizontally differentiated good. DNLs are modeled as in the monopolistic-competition setup by Krugman (1980) and we embed a set of heterogeneous non-negligible firms as DLs. We suppose that competition is à la Bertrand and that DLs decide on country-specific sunk expenditures that enhance demand as in Sutton (1991; 1998). These investments should be understood in a broad sense, encompassing expenditures on advertisement, overhaul of products, brand image, and any instrument that increases the appeal of a firm's variety and requires a fixed sunk cost.

The strategic motive to invest is isolated by employing the traditional two-stage approach by Fudenberg and Tirole (1984). This consists of comparing the outcomes of two different games, which we refer to as a sequential and simultaneous scenario, respectively. In the former, DLs decide on their domestic investments prior to both the entry choices by DNLs and the market stage. As for the simultaneous scenario, it constitutes a non-strategic benchmark where the decisions on domestic investments are not observed and, hence, cannot be used strategically by DLs.

Our model predicts that, even when competition is in strategic complements, DLs never accommodate entry of DNLs and, instead, always preempt their entry. This is in clear contrast to what occurs in standard two-stage models as in Fudenberg and Tirole (1984) with one incumbent and one entrant (or, more generally, under barriers to entry). While accommodating entry is a possibility in that model, this outcome does not arise in our setup since we suppose that DNLs are governed by free-entry rules as in Etro (2006; 2008). He shows that accommodating is never profitable under endogenous market structures, irrespective of whether competition is in quantities or prices and, more generally, in strategic substitutes or complements. The reason is that this type of strategy would induce entry and, therefore, undermine the goal of softening competition to keep profits high. Thus, leaders always find it optimal to behave more aggressively.

3.2 Setup

Consider a set of countries $\mathcal{C}$, where any subscript ij refers to i as the country of origin and j as the destination. Throughout the description of the setup, we consider countries i and j such that $i, j \in \mathcal{C}$. Moreover, any variable with subscripts ii refers to a domestic variable in country i.

Our analysis focuses on an industry in isolation where each firm produces a unique variety. Moreover, we denote by $\overline{\mathcal{B}}_i$ and $\overline{\mathcal{S}}_i$ the set of varieties of DLs and DNLs from country i, and analyze an equilibrium of each scenario where there is a subset of DNLs that are active. Given that each firm is single product, we refer to a firm or variety ω indistinctly.

The supply side of the model can be understood as an augmented version of monopolistic competition that has an embedded set of non-negligible firms that decide on non-prices choices. Specifically, in each country i, there is an unbounded pool of potential entrants with a unique variety $\omega \in \overline{\mathcal{S}}_i$ and common productivity $\underline{\varphi}_i$. In addition, there is an exogenous number of non-negligible firms, with each having assigned a unique variety $\omega \in \overline{\mathcal{B}}_i$ and productivity φ_ω that is common knowledge across the world. We denote the set of DNLs and DLs from i serving j by $\Omega_{ij}^{\mathcal{S}}$ and $\Omega_{ij}^{\mathcal{B}}$ respectively.

The technology of production determines constant marginal costs $c(\varphi, \tau_{ij})$, where τ_{ij} represents a trade cost that any firm in i incurs when it sells to j. This function is smooth, satisfies $\frac{\partial c(\varphi,\tau_{ij})}{\partial \varphi} < 0$ and $\frac{\partial c(\varphi,\tau_{ij})}{\partial \tau_{ij}} > 0$, and we adopt the convention that firms do not incur any trade cost to sell in the domestic market. Furthermore, we streamline notation by denoting it by c_{ij}^{ω}, and use $c_{ij}^{\mathcal{S}}$ in particular to refer to the marginal cost of a DNL. Also, we suppose that $\varphi_\omega > \underline{\varphi}_i$ for each DL ω from i, so that DLs are more productive that any DNL from its own country.

DL ω from i decides on prices p_{ij}^{ω} and investments z_{ij}^{ω} for each country j, where z_{ij}^{ω} entails sunk expenditures $\overline{f}_z z_{ij}^{\omega}$ with $\overline{f}_z > 0$. As for DNL ω from i, it decides whether to pay an entry cost F_i and, if it does so, it chooses prices p_{ij}^{ω}. Instead, we simplify the problem by assuming that DNLs do not make investments decisions and $z_{ij}^{\omega} = 1$, without incurring any cost related to it. Moreover, we denote by M_i the mass of DNLs from i that pays the entry cost.

Preferences in i are given by an augmented CES utility function

$$U_i := \left\{ \sum_{k\in\mathcal{C}} \left[\int\limits_{\omega\in\Omega_{ki}^{\mathcal{S}}} \left(Q_{ki}^{\omega}\right)^{\frac{\sigma-1}{\sigma}} \mathrm{d}\omega + \sum_{\omega\in\Omega_{ki}^{\mathcal{B}}} \left[\left(z_{ki}^{\omega}\right)^{\frac{\delta}{\sigma-1}} Q_{ki}^{\omega}\right]^{\frac{\sigma-1}{\sigma}} \right] \right\}^{\frac{\sigma}{\sigma-1}}.$$

Routine calculations determine that the demand in i of a variety ω from j is given by

$$Q_{ji}^{\omega} := E_i \left(\mathbb{P}_i\right)^{\sigma-1} \left(z_{ji}^{\omega}\right)^{\delta} \left(p_{ji}^{\omega}\right)^{-\sigma}, \tag{1}$$

with $z_{ji}^{\omega} = 1$ for DNL ω and where $\sigma > 1$ and $\delta < 1$. Moreover, $\mathbb{P}_i$ is a price index given by

$$\mathbb{P}_i := \left\{ \sum_{k\in\mathcal{C}} \left[M_k \left(p_{ki}^{\mathcal{S}}\right)^{1-\sigma} + \sum_{\omega\in\Omega_{ki}^{\mathcal{B}}} \left(p_{ki}^{\omega}\right)^{1-\sigma} \left(z_{ki}^{\omega}\right)^{\delta} \right] \right\}^{\frac{1}{1-\sigma}}, \tag{2}$$

where (2) incorporates that DNLs are symmetric within country k and, so, they all set the same price $p_{ki}^{\mathcal{S}}$ in i.

The variable $\mathbb{P}_i$ represents the competitive conditions in country i and, as we show below, acts as a single sufficient statistic for each firm's profit function in i and its derivatives. In the terminology of Game Theory, it determines that the game is aggregative and, for each firm, $\mathbb{P}_i$ summarizes the externalities imposed by rivals in country i.

Using these definitions, the (expenditure-based) market share in i of a firm ω from j can be expressed as

$$s_{ji}^{\omega} := \frac{\left(z_{ji}^{\omega}\right)^{\delta} \left(p_{ji}^{\omega}\right)^{1-\sigma}}{\mathbb{P}_i^{1-\sigma}}, \tag{3}$$

which allows us to define the price-elasticity of demand in terms of this variable by

$$\varepsilon\left(s_{ji}^{\omega}\right) := \sigma + s_{ji}^{\omega}\left(1-\sigma\right).$$

3.3 Timing of the Scenarios

We consider two scenarios that allow us to isolate the strategic motive to invest at home by DLs through their comparison. For each of them, we suppose that there are DLs and DNLs coexisting in each market in equilibrium.

The formal timing of each scenario is as follows:

- **Simultaneous Scenario**: At the first stage, all DNLs around the world decide whether to pay the entry cost. After this, the market stage takes place, where all DLs and the DNLs that paid the entry cost decide on prices in each country and, also, DLs choose their investments in each country.

- **Sequential Scenario**: At the first stage, all DLs around the world decide on their domestic investments. After this, all DNLs around the world observe these choices and decide whether to pay the entry cost. Then, the market stage in each country takes place. At this stage, all DLs and the DNLs that paid the entry cost choose prices, while DLs also choose their non-domestic investments.

Details on the derivations and proofs of the results we present below are included in Appendix A. Moreover, in order to subsequently perform a numerical exercise, we express solutions in terms of market shares when possible.

3.4 Simultaneous Equilibrium

Given that a CES demand has an infinite choke price, any DNL that pays the entry cost finds it optimal to serve all countries in the world. Denote the gross profits in j of DNL ω from i by

$$\pi_{ij}^{\mathcal{S}}(\varphi) := E_j (\mathbb{P}_j)^{\sigma-1} \left(p_{ij}^{\mathcal{S}}\right)^{-\sigma} \left(p_{ij}^{\mathcal{S}} - c_{ij}^{\mathcal{S}}\right),$$

which determines that its optimal price is

$$p_{ij}^{\mathcal{S}} := \frac{\sigma}{\sigma-1} c_{ij}^{\mathcal{S}}.$$

In turn, this establishes that its optimal gross profits in j are

$$\pi_{ij}^{\mathcal{S}}(\mathbb{P}_j) := \frac{E_j (\mathbb{P}_j)^{\sigma-1} \left(\frac{\sigma}{\sigma-1} c_{ij}^{\mathcal{S}}\right)^{1-\sigma}}{\sigma}.$$

As for DLs, they are more productive than any DNL and we have supposed that there are DNLs serving each market. This implies that DLs are active in all countries and DL ω from i has profits in j given by

$$\pi_{ij}^{\omega} := E_j (\mathbb{P}_j)^{\sigma-1} \left(z_{ij}^{\omega}\right)^{\delta} \left(p_{ij}^{\omega}\right)^{-\sigma} \left(p_{ij}^{\omega} - c_{ij}^{\omega}\right) - \overline{f}_z z_{ij}^{\omega}.$$

Its optimal prices and investments in j are given by

$$p_{ij}^{\omega} = \frac{\varepsilon\left(s_{ij}^{\omega}\right)}{\varepsilon\left(s_{ij}^{\omega}\right) - 1} c_{ij}^{\omega}, \tag{4}$$

$$z_{ij}^{\omega} = E_j \frac{\delta s_{ij}^{\omega}\left(1 - s_{ij}^{\omega}\right)}{\overline{f}_z \varepsilon\left(s_{ij}^{\omega}\right)}. \tag{5}$$

By solving the system given by (4) and (5), and since market shares are given by (3), we obtain solutions $p_{ij}^{\omega,\text{sim}}(\mathbb{P}_j)$ and $z_{ij}^{\omega,\text{sim}}(\mathbb{P}_j)$ for each country j. This establishes that the competitive conditions in j, which are represented by $\mathbb{P}_j$, act as a single sufficient statistic for optimal choices in j.

Denote by $\mathbb{P}_i^{\text{sim}}$ and M_i^{sim} the price index and mass of DNLs in i under the simultaneous equilibrium. The fact that $\mathbb{P}_i$ is a single sufficient statistic of each firm's optimal choices in i determines that there is a Nash equilibrium at the market stage in i when the price index in that country is consistent with the optimal choices of all firms serving that country:

$$\mathbb{P}_i^{\text{sim}} = \left\{ \sum_{k \in \mathcal{C}} \left[M_k^{\text{sim}} \left(p_{ki}^{\mathcal{S}}\right)^{1-\sigma} + \sum_{\omega \in \Omega_{ki}^{\mathcal{B}}} \left[p_{ki}^{\omega,\text{sim}} \left(\mathbb{P}_i^{\text{sim}}\right) \right]^{1-\sigma} \left[z_{ki}^{\omega,\text{sim}} \left(\mathbb{P}_i^{\text{sim}}\right) \right]^{\delta} \right] \right\}^{\frac{1}{1-\sigma}}. \tag{6}$$

In addition, the free-entry condition for DNLs in each country i is given by

$$\sum_{k \in \mathcal{C}} \frac{E_k \left(\mathbb{P}_k^{\text{sim}}\right)^{\sigma-1} \left(\frac{\sigma}{\sigma-1} c_{ik}^{\mathcal{S}}\right)^{1-\sigma}}{\sigma} = F_i. \tag{FE}$$

Overall, we can identify the equilibrium by pinning down $\left(\mathbb{P}_i^{\text{sim}}, M_i^{\text{sim}}\right)_{i \in \mathcal{C}}$ that solves the system of equations (6) and (FE) for each country i. Once we solve that system, any other equilibrium variable can be identified.

3.5 Sequential Equilibrium

Given the structure of the game, the sequential scenario takes the simultaneous game as a class of subgames for each vector of domestic investments. Therefore, due to the backward-induction procedure, the description of the solution is similar to that of the simultaneous case up to the domestic investments decisions. This includes the prices of both DNLs and DLs, as well as the solution of non-domestic investments. In addition, the Nash equilibrium at the market stage can be determined by evaluating the price-index function, (2), at the optimal variables, so that it is consistent with the optimal choices of firms for a given level of domestic investments. Besides, the free-entry conditions are still given by (FE).

A consequence of all this is that $\left(\mathbb{P}_i^{\text{sim}}\right)_{i \in \mathcal{C}}$ is completely determined by (FE) and independently of both $\left(M_i^{\text{sim}}\right)_{i \in \mathcal{C}}$ and the domestic investments of any DL. This entails that the simultaneous and sequential games share the same equilibrium price index for each i, which we denote by $\mathbb{P}_i^*$.

Incorporating this fact and denoting the optimal domestic price of a DL ω from i as a function of its domestic investments by $p_{ii}^{\omega}\left(z_{ii}^{\omega}; \mathbb{P}_i^*\right)$, its optimal investments solve the following problem:

$$\max_{z_{ii}^{\omega}} \pi_{ii}^{\omega} \left[p_{ii}^{\omega}\left(z_{ii}^{\omega}; \mathbb{P}_i^*\right), z_{ii}^{\omega}; \mathbb{P}_i^* \right]. \tag{7}$$

Thus, its optimal domestic investments are

$$z_{ii}^{\omega} = E_i \frac{\delta s_{ii}^{\omega} \left(1 - s_{ii}^{\omega}\right)}{\overline{f}_z \varepsilon \left(s_{ii}^{\omega}\right)} \left(\frac{\sigma}{\sigma - s_{ii}^{\omega} \varepsilon \left(s_{ii}^{\omega}\right)} \right),$$

which we can use to obtain the equilibrium of the whole game.

3.6 Characterization of Strategic Behavior

The next proposition states the main conclusions of the model by comparing the outcomes in the sequential and simultaneous case. This allows us to characterize the strategic motives of DLs to invest at home. For the statement of the proposition, we define a DL's domestic intensity as its domestic sales relative to its total sales (domestic sales plus exports).

Proposition 1. *Relative to the simultaneous equilibrium, the sequential equilibrium entails that each DL from $i \in \mathcal{C}$ garners greater total profits, overinvests at home, and increases its domestic market share. Also, their export revenues stay the same while their domestic sales become greater, so that each DL ends up with greater domestic intensity.*

Proposition 1 states that DLs behave more aggressively at home by overinvesting. This triggers a reduction in the profits of DNLs and hence deters their entry, thereby allowing DLs to garner greater domestic revenues. On the other hand, foreign DLs serving the market through exports are not impacted, which determines that the strategic move by DLs only affects DNLs.

To understand why foreign DLs are not affected, notice that the more aggressive behavior of DLs initially creates tougher domestic competition. This induces the exit of the least-productive firms in each country (i.e., the DNLs) and, eventually, both effects perfectly offset in terms of the competitive conditions. Thus, $\mathbb{P}_i$ does not change in any country i. Since this variable acts a single sufficient statistic for revenues and profits, foreign DLs end up with the same exports and profits abroad.

A corollary of this is that each DL ends up with greater domestic intensity and a higher domestic market share, since DLs increase their domestic revenues while their export revenues do not change. Additionally, since the profits at home increase and profits abroad remain the same, each DL garners greater total profits. Thus, even under the presence of several DLs acting more aggressively, overinvestments at home by each DL do not make DLs end up in a Pareto-dominated equilibrium where their profits become lower.

Notice that one implication of this result is that DLs never accommodate entry of DNLs.

This contrasts with what occurs in models with one incumbent and one potential entrant à la Fudenberg and Tirole (1984). The reason for this is that our model has a similar structure to that in Etro (2006; 2008), where entrants comprise an unbounded mass of DNLs governed by free-entry rules. Thus, DLs' attempts to accommodate entry with the goal of softening competition are futile, since they would induce additional entry of DNLs. Ultimately, DLs internalize this and find it optimal to behave more aggressively and capture domestic sales that would go to DNLs otherwise.

4 Numerical Exercise

To explore the deployment of strategic moves by DLs against DNLs, we face the challenge emphasized by the New-Industrial-Organization literature that strategic behavior is rarely, if ever, observable (Sutton, 1996). Nonetheless, it is possible to make use of the model in Section 3 and perform a numerical exercise to obtain some insights on the potential impact of this for market outcomes.

Specifically, we discipline the exercise through a calibration where DLs use their domestic investments strategically. After this, we retrieve the behavior in the simultaneous equilibrium and the outcomes arising in that scenario.[9]

This exercise makes it possible to present results regarding (i) the transfer of domestic market share from DNLs to DLs, (ii) the increase of domestic market share by each DL, and (iii) the variation in each DL's domestic intensity.

Next, we describe the main aspects of the approach and relegate its details to Appendix B.

4.1 Definitions and Procedure

To define domestic market shares, we follow the approach in Section 2. Thus, in particular, we consider a Danish firm-industry as a DL if it has a domestic market share greater than 3%. Moreover, we only consider industries with coexistence of DLs and DNLs for the analysis.

To describe the approach to compute the various effects presented the numerical exercise, we streamline notation and refer by x_{ω}^{sim} and x_{ω}^{seq} to any variable x of Danish DL ω in each equilibrium.

[9] Similar results would arise by calibrating the model to the simultaneous case and computing the outcomes in the sequential equilibrium.

The procedure is as follows. First, we take s_ω^{seq} from the data and retrieve s_ω^{sim} by using the procedure we describe below. This enables us to calculate strategic gains for each DL ω through differences in the domestic market share under each scenario. Moreover, given s_ω^{sim} and industry expenditures from the data, the revenues on the domestic market in the simultaneous case can be recovered. Thus, with the information on domestic sales in each scenario and with the export value (which does not vary between scenarios), we can measure each firm's domestic intensity in both scenarios.

In particular, to recover s_ω^{sim} we use how price and investment decisions are predicted to vary in the model between scenarios, along with the impact on market shares that these changes entail.

Formally, optimal solutions of prices and investments under each scenario have been expressed in terms of market shares. In turn, market shares are given by (3) and $\mathbb{P}_i^*$ is the same in the sequential and simultaneous cases. Therefore, dividing the expression for ω's domestic market share in each scenario, we obtain that

$$\frac{s_\omega^{\text{seq}}}{s_\omega^{\text{sim}}} = \frac{\left[p_\omega^{\text{seq}}\left(s_\omega^{\text{seq}}\right)\right]^{1-\sigma}\left[z_\omega^{\text{seq}}\left(s_\omega^{\text{seq}}\right)\right]^{\delta}}{\left[p_\omega^{\text{sim}}\left(s_\omega^{\text{sim}}\right)\right]^{1-\sigma}\left[z_\omega^{\text{sim}}\left(s_\omega^{\text{sim}}\right)\right]^{\delta}}, \tag{8}$$

from which we can recover s_ω^{sim} conditional on parameters σ and δ and a value for s_ω^{seq}. In Appendix B.1, we validate the procedure by showing that, given (σ, δ) and s_ω^{seq}, there always exists a solution s_ω^{sim} to (8) and this is unique.

Notice that information on DNLs and non-domestic firms is not needed for the calculations. Moreover, although market shares in (3) depend on φ_ω and $\overline{f}_z$, their values cancel out in (8) since these variables do not change between scenarios.

4.2 Parameter Calibration

Performing the numerical exercise requires values for σ and δ. Regarding σ, we make use of the estimates provided by Soderbery (2015), whose approach is based on Broda and Weinstein (2006) and improves upon it to account for small-sample biases. We aggregate these estimates at the industry level through product-expenditure weights.

As for δ, we choose a value such that the model can fit as close as possible the dispersion of Danish DLs' market shares not explained by prices in each industry. Specifically, we express (3) in logarithms such that the domestic market share of a DL producing variety ω

in industry n is

$$\ln s_n(\omega) = (1 - \sigma_n) \ln p_n(\omega) + \delta \ln z_n(\omega) - (1 - \sigma_n) \ln \mathbb{P}_n + \varepsilon_n(\omega), \qquad (9)$$

where $\varepsilon_n(\omega)$ is an error term and we take $\mathbb{P}_n$ as an industry fixed effect. Substituting the optimal investments predicted in the sequential model into (9) and working out the expression, we obtain a regression equation which we use to estimate δ. Using data of unit values as prices, we obtain $\delta = 0.872$. For further details, see Appendix B.2.

4.3 Results

Table 4 and Figure 4 present the results coming from a comparison of the sequential and simultaneous cases.

The results indicate that the total increase in domestic market shares by DLs as a group is on average 9%. Nonetheless, there is pronounced heterogeneity in these outcomes across sectors (Figure 4a) and industries (Figure 4b).

Moreover, the market shares of the top 3 DLs, which are respectively around 14%, 7%, and 6% in the sequential scenario would be 9%, 5%, and 5% in the simultaneous scenario. Figure 4c reveals that these gains can be substantially greater for some of the firms.

In terms of domestic intensity, the top DL has increases of around 4% and 6%, respectively, depending on whether all firms or just exporters are considered. As for the second and third top DLs, the increases are around 2% and 4%, on average. From Figure 4d, it is clear that there is also pronounced heterogeneity in terms of domestic intensity.

What factors lead to the different magnitude of changes across DLs? To delve into this, first notice that Proposition 1 makes it possible to predict that market-share gains and increases in domestic intensity are always positive. However, this is silent about their magnitudes. In fact, it can be shown that the strength of effects displays non-monotonicities in relation to the market shares and domestic intensity observed.

Nonetheless, the sign of the relations can be predicted for the range of values in the data, as demonstrated via simulations in Appendix C. This is because, on average, firms have market shares that are not disproportionately large, while home-bias is pronounced. Due to this, it can be proven that gains in market shares are increasing in the sequential scenario's market shares, while increases in domestic intensity are increasing in both market shares and export intensity. On the other hand, differences in σ do not play a significant role in the magnitude of effects.

Due to this, we obtain that industries exhibiting greater concentration in the data are also those where the predicted gains in market shares are more pronounced. Furthermore, these industries also predict greater increases in domestic intensity, but only if a Danish DL has diversified sales between domestic and export revenues. Otherwise, if a DL serves almost exclusively the domestic market, gains in domestic revenues do not have a substantial impact on its domestic-intensity variation.

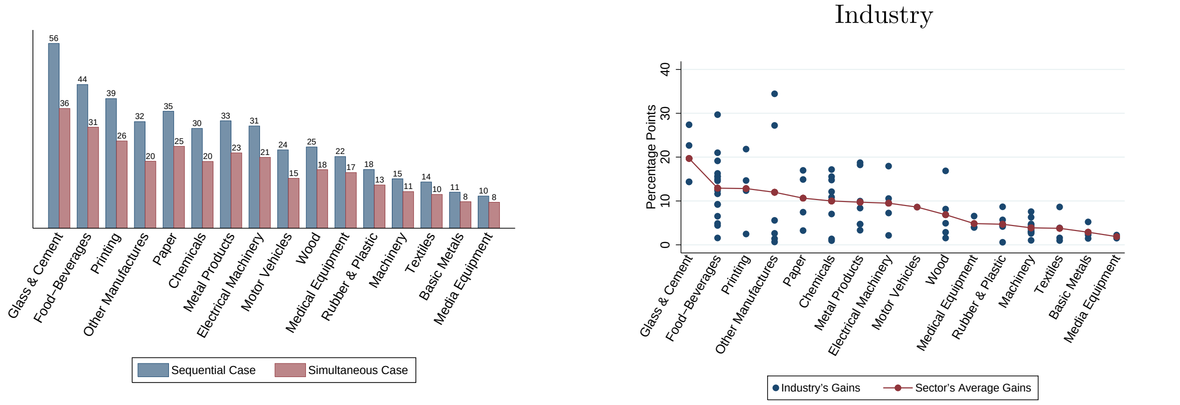
Table 4. *Estimated Impact of the Strategic Behavior - Differences between the Simultaneous and Sequential Scenario*

	Avg. Per Firm			Avg. Ind.	Aggregate Manufacture	
	Market Share Points	Domestic Intensity Points	Domestic Sales Increase	Domestic Concentration Points	Domestic Intensity Points	DLs Sales Increase
Glass & Cement	3.4	3.9	41.8	19.7	9.5	50.1
Food & Beverages	3.0	4.8	35.4	12.9	6.8	41.9
Printing	2.9	3.4	41.6	12.8	1.5	47.0
Other Manufactures	3.3	6.6	41.2	12.0	9.9	53.2
Paper	1.9	3.8	35.0	10.6	3.3	41.6
Chemicals	3.2	6.0	42.5	10.0	10.3	55.6
Metal Products	2.1	3.9	35.8	9.7	2.8	44.2
Electrical Machinery	3.7	5.2	38.6	9.5	6.0	41.5
Motor Vehicles	4.3	.	56.1	8.6	.	56.9
Wood	1.8	4.7	31.4	6.9	5.3	33.6
Medical Equipment	1.0	5.6	26.8	4.8	6.1	28.9
Rubber & Plastic	1.6	4.2	30.0	4.7	5.9	31.8
Machinery	1.5	4.2	31.3	3.9	7.3	34.7
Textiles	1.7	3.4	31.0	3.8	6.8	31.5
Basic Metals	1.6	5.4	33.1	2.9	6.7	37.8
Media Equipment	0.7	4.4	23.2	1.9	5.2	23.7
Sectors Average	2.4	4.6	35.9	8.4	6.2	40.9
All Industries	2.5	5.2	35.9	9.0	8.3	43.1

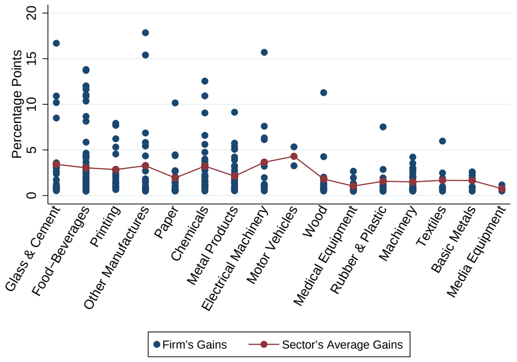
Note: Only industries with coexistence of DNLs and DLs are considered. The results labeled "points" represent percentage-point differences between the sequential and simultaneous scenarios, while "increase" represents percentage increases relative to the simultaneous case. Market shares are based on total sales of the industry and account for import competition. At the industry level, domestic concentration is defined as the increase in market shares accrued by all DLs. Domestic intensity is defined as a firm's domestic sales relative to its own total sales, with only exporters considered for calculations. Entries with "." reflect that all the firms in the sector serve the Danish market exclusively. For Aggregate Manufacture, the domestic intensity and DLs sales are measured by taking the total of manufacturing.

Figure 4. *Sequential vs. Simultaneous Scenarios*

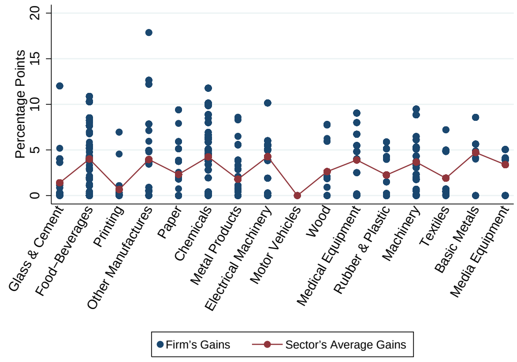
(a) Domestic Concentration - Levels **(b)** Domestic Concentration - Points Increase by Industry



(c) Firm's Domestic Market Share - Points Increase per Firm



(d) Firm's Domestic Intensity - Points Increase per Firm



Note: Figure 4a expressed in market-share levels. In the rest of the figures, outcomes are percentage-points differences between the sequential and simultaneous case. Market shares measured in terms of each industry's sales and account for import competition. Figures regarding firm's domestic intensity excludes firms that sell exclusively in the domestic market.

Finally, we show that the results we have obtained are not sensitive to the year chosen, which corresponds to 2005. This is accomplished by replicating the results for the years 2001-2007.

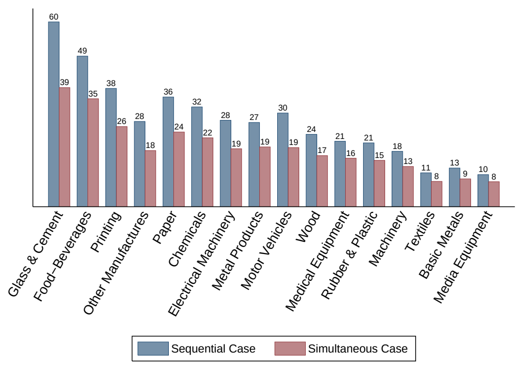
Table 5. *Estimated Impact per Year of the Strategic Behavior - Differences between the Simultaneous and Sequential Scenario*

	Avg. Ind.	Avg. Per Firm			Avg. Per Sector	
Year	Domestic Concentration Points	Market Share Points	Domestic Intensity Points	Domestic Sales Increase	Domestic Intensity Points	DLs Sales Increase
2001	10.9	3.1	4.4	36.2	6.5	43.4
2002	10.2	3.0	5.0	36.6	6.0	41.6
2003	10.0	3.0	4.7	38.0	7.0	43.3
2004	8.0	2.3	4.3	36.0	6.0	39.1
2005	8.4	2.4	4.6	35.9	6.2	40.9
2006	7.9	2.2	4.5	34.6	6.0	39.9
2007	8.3	2.3	4.8	35.0	6.2	40.8
Average	9.1	2.6	4.6	36.0	6.3	41.3

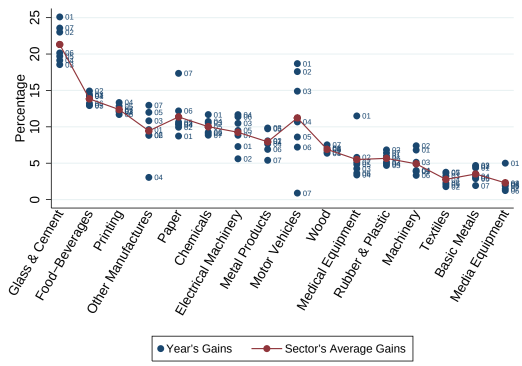
Note: Only industries with coexistence of DNLs and DLs are considered. The results labeled "points" represent percentage-point differences between the sequential and simultaneous scenarios, while "increase" represents percentage increases relative to the simultaneous case. Market shares are based on total sales of the industry and account for import competition. At the industry level, domestic concentration is defined as the increase in market shares accrued by all DLs. Domestic intensity is defined as a firm's domestic sales relative to its own total sales, with only exporters considered for calculations.

Figure 5. *Sequential vs. Simultaneous Cases - Years Average*

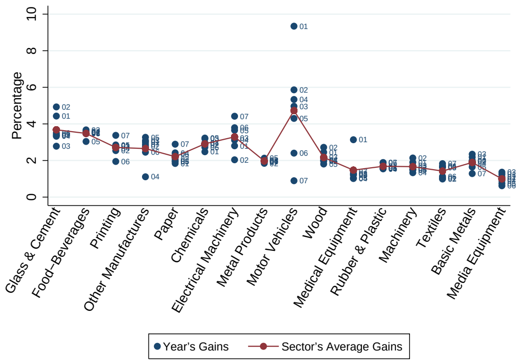
(a) Domestic Concentration - Levels (Average of Years)



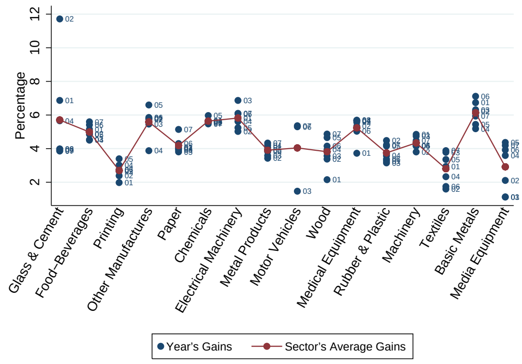
(b) Domestic Concentration - Average Points Increase by Sector



(c) Firm's Domestic Market Share - Average Points Increase by Sector



(d) Firm's Domestic Intensity - Average Points Increase by Sector



Note: Figure 5a expressed in years average of market-share levels. In the rest of the figures, outcomes are percentage-points differences between the sequential and simultaneous case. Market shares measured in terms of total sales value of the industry and account for import competition. Figures regarding firm's domestic intensity excludes firms that sell exclusively in the domestic market.

5 Conclusions

In this paper, we have analyzed the market structure of manufacturing industries in Denmark. This country exhibits typical features of a small open economy: it is highly internationalized, with firms engaging intensively in exporting activities and subject to pronounced import competition.

Our evidence points out a widespread presence of industries with coexistence of two types of domestic firms: a handful commanding high domestic market shares and numerous with insignificant domestic market shares. In particular, we have shown that industries exhibiting such market structure represent the great bulk of Danish manufacturing expenditures.

Furthermore, we have shown that the domestic firms with greatest domestic share have some distinctive features relative to firms with negligible shares. They have greater revenue per employee, are more capital intensive, and pay higher wages. Moreover, in terms of how internationalized their activities are, they are more prone to export and import. Nonetheless, they also exhibit a greater domestic intensity relative to firms with negligible domestic shares that export.

Finally, we have highlighted through a model how this type of market structure may provide domestic leaders with incentives to behave strategically against small firms. In our framework, leaders engage in strategic moves at home to crowd out the least-productive firms operating in the country, whereby they increase their total profits, domestic market shares, and domestic intensity.

Our paper leaves some questions for future work. First, it would be interesting to know if the ubiquity of leaders and negligible firms coexisting in the same market is a feature that extends to other small economies and, even, to large countries. Regarding the latter there is some scattered evidence that this might be the case.[10] Second, given the recent concerns about the increase in concentration (Autor et al. 2017; De Loecker and Eeckhout 2018), there is a need for more research on how markets function in the modern economy, as Berry et al. (2019) emphasize. In this regard, the dynamics of industries that exhibit coexistence of large and small firms could entail radically different implications relative to other types of market structures.

[10] See, in particular, Bronnenberg et al. (2009) for the USA and Gaubert and Itskhoki (2018) for France.

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Online Appendix - not for publication

The structure of these appendices is as follows. In Appendix A we provide all the derivations and proofs omitted in the main part of the paper. In Appendix B, we provide details on the procedure for the numerical exercise. In Appendix C we analyze the determinants for the magnitude of outcomes due to strategic behavior. In Appendix D we recalculate the results of the numerical exercise according to an alternative calibration of domestic sales.

A Derivations

We proceed as follows. First, in Appendices A.1 and A.2 we derive the solutions of the simultaneous and sequential scenarios. In Appendix A.3, we prove Proposition 1.

A.1 Simultaneous Solution

Consider DL ω from i in j. To derive the optimal solutions, it can be shown that using the definition of price index and market shares, $\frac{\partial \ln \mathbb{P}_j}{\partial \ln z_{ij}^{\omega}} = \frac{\delta}{1-\sigma} s_{ij}^{\omega}$, $\frac{\partial \ln \mathbb{P}_j}{\partial \ln p_{ij}^{\omega}} = s_{ij}^{\omega}$. Also, $\frac{\partial \ln s_{ij}^{\omega}}{\partial \ln z_{ij}^{\omega}} = \delta$ and $\frac{\partial \ln s_{ij}^{\omega}}{\partial \ln p_{ij}^{\omega}} = 1-\sigma$.

The first-order condition for prices requires the optimal price to satisfy $p_{ij}^{\omega} = m_{ij}^{\omega} c_{ij}^{\omega}$, where $m_{ij}^{\omega} := \frac{\varepsilon_{ij}^{\omega}}{\varepsilon_{ij}^{\omega}-1}$ is the markup, and $\varepsilon_{ij}^{\omega} = \sigma - s_{ij}^{\omega}(\sigma-1)$ is the price elasticity of demand. Therefore, after working out the markup expression, the optimal price as a function of the market share is

$$p_{ij}^{\omega}\left(s_{ij}^{\omega}\right) = \frac{\sigma}{\sigma-1}\left(1+\frac{1}{\sigma}\frac{s_{ij}^{\omega}}{1-s_{ij}^{\omega}}\right)c_{ij}^{\omega}, \tag{A1}$$

which corresponds to (4).

As for the optimal price of DNLs, the CES demand determines that markups are constant, since DNLs cannot affect the aggregate conditions of the industry in any country. Thus,

$$p_{ij}^{\mathcal{S}} := \frac{\sigma}{\sigma-1} c_{ij}^{\mathcal{S}}. \tag{A2}$$

Regarding the investments of DLs, they can be determined by the following optimization problem:

$$\max_{z_{ij}^{\omega}} \pi_{ij}^{\omega}\left(p_{ij}^{\omega}, z_{ij}^{\omega}, \mathbb{P}_j\right) := E_j\left(\mathbb{P}_j\right)^{\sigma-1}\left(z_{ij}^{\omega}\right)^{\delta}\left(p_{ij}^{\omega}\right)^{-\sigma}\left(p_{ij}^{\omega}-c_{ij}^{\omega}\right) - \overline{f}_z z_{ij}^{\omega}$$

$$\text{subject to } p_{ij}^{\omega} = p_{ij}^{\omega}\left(z_{ij}^{\omega}, \mathbb{P}_j\right),$$

where $p_{ij}^{\omega}\left(z_{ij}^{\omega}, \mathbb{P}_j\right)$ is the implicit solution to (A1). The first-order condition of this problem is

$$\frac{\mathrm{d}\pi_{ij}^{\omega}}{\mathrm{d}z_{ij}^{\omega}} := \frac{\partial \pi_{ij}^{\omega}}{\partial z_{ij}^{\omega}} + \frac{\partial \pi_{ij}^{\omega}}{\partial \mathbb{P}_j}\frac{\partial \mathbb{P}_j}{\partial z_{ij}^{\omega}} + \left(\frac{\partial \pi_{ij}^{\omega}}{\partial p_{ij}^{\omega}} + \frac{\partial \pi_{ij}^{\omega}}{\partial \mathbb{P}_j}\frac{\partial \mathbb{P}_j}{\partial p_{ij}^{\omega}}\right)\frac{\partial p_{ij}^{\omega}}{\partial z_{ij}} = 0. \tag{A3}$$

Since DL ω is already choosing its optimal prices, then $\frac{\partial \pi_{ij}^{\omega}}{\partial p_{ij}^{\omega}} + \frac{\partial \pi_{ij}^{\omega}}{\partial \mathbb{P}_j}\frac{\partial \mathbb{P}_j}{\partial p_{ij}^{\omega}} = 0$. Furthermore,

$$\begin{aligned}
\frac{\partial \pi_{ij}^{\omega}}{\partial z_{ij}} &:= \frac{\partial \pi_{ij}^{\omega}}{\partial Q_{ij}^{\omega}} \frac{\partial \ln Q_{ij}^{\omega}}{\partial \ln z_{ij}^{\omega}} \frac{Q_{ij}^{\omega}}{z_{ij}^{\omega}} - \overline{f}_z \\
&= \left(p_{ij}^{\omega} - c_{ij}^{\omega}\right) \delta \frac{Q_{ij}^{\omega}}{z_{ij}^{\omega}} - \overline{f}_z \\
&= E_j \frac{s_{ij}^{\omega}}{\varepsilon\left(s_{ij}^{\omega}\right)} \frac{\delta}{z_{ij}^{\omega}} - \overline{f}_z,
\end{aligned}$$

where the last line uses the fact that, at the optimal prices, $Q_{ij}^{\omega}\left(p_{ij}^{\omega} - c_{ij}^{\omega}\right) = E_j \frac{s_{ij}^{\omega}}{\varepsilon\left(s_{ij}^{\omega}\right)}$. Regarding the term $\frac{\partial \pi_{ij}^{\omega}}{\partial \mathbb{P}_j}\frac{\partial \mathbb{P}_j}{\partial z_{ij}^{\omega}}$, using the same fact and that $\frac{\partial \ln \mathbb{P}_j}{\partial \ln z_{ij}^{\omega}} = \frac{\delta}{1-\sigma} s_{ij}^{\omega}$,

$$\begin{aligned}
\frac{\partial \pi_{ij}^{\omega}}{\partial \mathbb{P}_j}\frac{\partial \mathbb{P}_j}{\partial z_{ij}^{\omega}} &= \left(\frac{\partial \pi_{ij}^{\omega}}{\partial \ln Q_{ij}^{\omega}} \frac{\partial \ln Q_{ij}^{\omega}}{\partial \ln \mathbb{P}_j}\right)\left(\frac{\delta}{1-\sigma}\frac{s_{ij}^{\omega}}{z_{ij}^{\omega}}\right) \\
&= (-1)\, E_j \frac{s_{ij}^{\omega}}{\varepsilon\left(s_{ij}^{\omega}\right)} \delta \frac{s_{ij}^{\omega}}{z_{ij}^{\omega}}.
\end{aligned}$$

Finally, by making use of all these results, we can reexpress (A3) as

$$\frac{\mathrm{d}\pi_{ij}^{\omega}}{\mathrm{d}z_{ij}^{\omega}} = E_j \frac{s_{ij}^{\omega}}{\varepsilon\left(s_{ij}^{\omega}\right)} \frac{\delta}{z_{ij}^{\omega}} \left(1 - s_{ij}^{\omega}\right) - \overline{f}_z = 0.$$

Working out the expression, we get DL ω's optimal expenditure on investments as a function of its market share,

$$z_{ij}^{\text{sim}}\left(s_{ij}^{\omega}\right) := E_j \frac{\delta s_{ij}^{\omega}\left(1 - s_{ij}^{\omega}\right)}{\overline{f}_z \varepsilon\left(s_{ij}^{\omega}\right)}. \tag{A4}$$

A.2 Sequential Solution

The optimal prices under this scenario can still be characterized by (A1) for DNLs and (A2) for DNLs. In addition, the investments by DL ω from i in $j \neq i$ are also still given by (A4). In all cases, we use the notation $p_{ij}^{\omega,\text{seq}}$ and $z_{ij}^{\omega,\text{seq}}$ to denote the solutions for this scenario.

In addition, the free-entry condition of DNLs is still given by (FE). As for the Nash equilibrium at the market stage, this requires that the price index given by (2) is consistent with optimal choices. Thus, for a given level of domestic investments for each DL ω, the condition for country i is

$$\begin{aligned}
\left(\mathbb{P}_i\right)^{1-\sigma} = &\sum_{k\in\mathcal{C}} M_k \left(p_{ki}^{\mathcal{S}}\right)^{1-\sigma} + \sum_{k\neq i} \sum_{\omega\in\Omega_{ki}^{\mathcal{B}}} \left[p_{ki}^{\omega,\text{seq}}\left(\mathbb{P}_i\right)\right]^{1-\sigma} \left[z_{ki}^{\omega,\text{seq}}\left(\mathbb{P}_i\right)\right]^{\delta} \\
&+ \sum_{\omega\in\Omega_{ii}^{\mathcal{B}}} \left[p_{ii}^{\omega}\left(z_{ii}^{\omega}, \mathbb{P}_i\right)\right]^{1-\sigma} \left(z_{ii}^{\omega}\right)^{\delta}.
\end{aligned} \tag{A5}$$

The solution of the subgame for some given domestic investments can characterized by values $(\mathbb{P}_i^{\text{seq}})_{i\in\mathcal{C}}$ and $(M_i^{\text{seq}})_{i\in\mathcal{C}}$ such that (FE) and (A5) hold for each country. In particular, this determines that the system is separable, in the sense that $(\mathbb{P}_i^{\text{seq}})_{i\in\mathcal{C}}$ can be pinned down independently of $(M_i^{\text{seq}})_{i\in\mathcal{C}}$ and by the system defined through (FE):

$$\sum_{k\in\mathcal{C}} \pi_{ik}^{\mathcal{S}}\left(\mathbb{P}_k^{\text{seq}}\right) = F_i,$$

which is also independent of the optimal domestic investments of any DL. Thus, $\mathbb{P}_i^{\text{sim}} = \mathbb{P}_i^{\text{seq}}$ in each country i and we denote this value by $\mathbb{P}_i^*$.

Consider a DL ω from i. Its optimal prices can be characterized in the same way as in the simultaneous case. Thus, its domestic investments are determined by the following optimization problem:

$$\max_{z_{ii}^{\omega}} \pi_{ii}^{\omega}\left(p_{ii}^{\omega}, z_{ii}^{\omega}, \mathbb{P}_i\right) \text{ subject to } \begin{cases} \mathbb{P}_i = \mathbb{P}_i^* \\ p_{ii}^{\omega} = p_{ii}^{\omega}\left(z_{ii}^{\omega}, \mathbb{P}_i\right) \end{cases}.$$

Introducing the two restrictions into the objective function, the optimization problem becomes

$$\max_{z_{ii}^{\omega}} \pi_{ii}^{\omega}\left[p_{ii}^{\omega}\left(z_{ii}^{\omega};\mathbb{P}_i^*\right), z_{ii}^{\omega};\mathbb{P}_i^*\right] := Q_{ii}\left[p_{ii}^{\omega}\left(z_{ii}^{\omega};\mathbb{P}_i^*\right), z_{ii}^{\omega};\mathbb{P}_i^*\right]\left[p_{ii}^{\omega}\left(z_{ii}^{\omega};\mathbb{P}_i^*\right) - c_{ii}^{\omega}\right] - \overline{f}_z z_{ii}^{\omega}.$$

The first-order condition of this problem is

$$\frac{\mathrm{d}\pi_{ii}^{\omega}}{\mathrm{d}z_{ii}^{\omega}} := \frac{\partial \pi_{ii}^{\omega}}{\partial z_{ii}^{\omega}} + \frac{\partial \pi_{ii}^{\omega}}{\partial p_{ii}^{\omega}}\frac{\partial p_{ii}^{\omega}}{\partial z_{ii}^{\omega}} + \frac{\partial \pi_{ii}^{\omega}}{\partial \mathbb{P}_i}\underbrace{\frac{\mathrm{d}\mathbb{P}_i^*}{\mathrm{d}z_{ii}^{\omega}}}_{=0} = 0.$$

Next, we provide expressions for each term. We have already shown that $\frac{\partial \pi_{ii}^{\omega}}{\partial z_{ii}^{\omega}} = \frac{s_{ii}^{\omega}}{\varepsilon\left(s_{ii}^{\omega}\right)}\frac{\delta}{z_{ii}^{\omega}} - \overline{f}_z$. Besides, regarding $\frac{\partial \pi_{ii}^{\omega}}{\partial p_{ii}^{\omega}}$, by the first-order condition of prices,

$$\begin{aligned} \frac{\partial \pi_{ii}^{\omega}}{\partial p_{ii}^{\omega}} &= -\frac{\partial \pi_{ii}^{\omega}}{\partial \mathbb{P}_i}\frac{\partial \mathbb{P}_i^*}{\partial p_{ii}^{\omega}} \\ &= -\left(\frac{\partial \pi_{ii}^{\omega}}{\partial \ln Q_{ii}^{\omega}}\frac{\partial \ln Q_{ii}^{\omega}}{\partial \ln \mathbb{P}_i}\right)\frac{\partial \ln \mathbb{P}_i^*}{\partial \ln p_{ii}^{\omega}} \\ &= -\left(E_i\frac{s_{ii}^{\omega}}{\varepsilon\left(s_{ii}^{\omega}\right)}(\sigma-1)\right)s_{ii}^{\omega}. \end{aligned}$$

Regarding $\frac{\partial p_{ii}^{\omega}\left(z_{ii}^{\omega},\mathbb{P}_i^*\right)}{\partial z_{ii}}$, using (A1),

$$\begin{aligned} \frac{\partial p_{ii}^{\omega}}{\partial z_{ii}^{\omega}} &= \frac{\partial p_{ii}^{\omega}}{\partial s_{ii}^{\omega}}\frac{\partial s_{ii}^{\omega}}{\partial z_{ii}^{\omega}} + \frac{\partial p_{ii}^{\omega}}{\partial s_{ii}^{\omega}}\frac{\partial s_{ii}^{\omega}}{\partial p_{ii}^{\omega}}\frac{\partial p_{ii}^{\omega}}{\partial z_{ii}^{\omega}} \\ &= \frac{\frac{\partial p_{ii}^{\omega}}{\partial s_{ii}^{\omega}}\frac{\partial s_{ii}^{\omega}}{\partial z_{ii}^{\omega}}}{1 - \frac{\partial p_{ii}^{\omega}}{\partial s_{ii}^{\omega}}\frac{\partial s_{ii}^{\omega}}{\partial p_{ii}^{\omega}}}. \end{aligned}$$

Given $\frac{\partial p_{ii}^{\omega}}{\partial s_{ii}^{\omega}} = \frac{1}{\varepsilon\left(s_{ii}^{\omega}\right)}\frac{s_{ii}^{\omega}}{1-s_{ii}^{\omega}}$, $\frac{\partial \ln s_{ii}^{\omega}}{\partial \ln z_{ii}^{\omega}} = \delta$, and $\frac{\partial \ln s_{ii}^{\omega}}{\partial \ln p_{ii}^{\omega}} = 1-\sigma$, we obtain

$$\frac{\partial \ln p_{ii}^{\omega}}{\partial \ln z_{ii}^{\omega}} = \frac{\delta s_{ii}^{\omega}}{\sigma - s_{ii}^{\omega}\varepsilon_{ii}\left(s_{ii}^{\omega}\right)}. \tag{A6}$$

All this determines that

$$\frac{\mathrm{d}\pi_{ii}^{\omega}}{\mathrm{d}z_{ii}^{\omega}} := E_i\frac{s_{ii}^{\omega}}{\varepsilon\left(s_{ii}^{\omega}\right)}\frac{\delta}{z_{ii}^{\omega}}\left(1-s_{ii}^{\omega}\right)\left(\frac{\sigma}{\sigma - s_{ii}^{\omega}\varepsilon\left(s_{ii}^{\omega}\right)}\right) - \overline{f}_z = 0,$$

so that DL ω's optimal expenditure on domestic investments can be characterized by

$$z_{ii}^{\text{seq}}\left(s_{ii}^{\omega}\right) := E_i\frac{\delta s_{ii}^{\omega}\left(1-s_{ii}^{\omega}\right)}{\overline{f}_z\varepsilon\left(s_{ii}^{\omega}\right)}\left(\frac{\sigma}{\sigma - s_{ii}^{\omega}\varepsilon\left(s_{ii}^{\omega}\right)}\right). \tag{A7}$$

A.3 Proof of Proposition 1

Before providing a proof for the proposition, we establish some preliminary results. Following the approach of the main part of the paper, for each equilibrium we denote any variable x of a DL ω from i by x_ω^{sim} and x_ω^{seq}.

Equation (8) allows us to obtain an expression that relates s_ω^{sim} and s_ω^{seq}. Basically, this follows by using that market shares are given by (3), and the fact that the same equilibrium price index $\mathbb{P}_i^*$ holds in the sequential and simultaneous scenario. Therefore, the quotient of DL ω's domestic market shares in each scenario is,

$$\frac{s_\omega^{\text{seq}}}{s_\omega^{\text{sim}}} = \frac{\left[p_{ii}^\omega\left(s_\omega^{\text{seq}}\right)\right]^{1-\sigma}\left[z_{ii}^{\text{seq}}\left(s_\omega^{\text{seq}}\right)\right]^\delta}{\left[p_{ii}^\omega\left(s_\omega^{\text{sim}}\right)\right]^{1-\sigma}\left[z_{ii}^{\text{sim}}\left(s_\omega^{\text{sim}}\right)\right]^\delta}. \tag{A8}$$

(A8) indicates that, since $\mathbb{P}_i^*$ is the same in both scenarios, differences in market shares are explained by the direct impact of investments and its indirect effect through prices.

By substituting in the optimal solutions for the optimal prices and the investments in each scenario, we obtain

$$\xi^{\text{sim}}\left(s_\omega^{\text{sim}}\right) = \xi^{\text{seq}}\left(s_\omega^{\text{seq}}\right), \tag{A9}$$

where

$$\xi^{\text{sim}}\left(s_\omega^{\text{sim}}\right) := \left(s_\omega^{\text{sim}}\right)^{\delta-1}\left(\frac{\varepsilon\left(s_\omega^{\text{sim}}\right)}{\varepsilon\left(s_\omega^{\text{sim}}\right)-1}\right)^{1-\sigma}\left(\frac{\left(1-s_\omega^{\text{sim}}\right)}{\varepsilon\left(s_\omega^{\text{sim}}\right)}\right)^\delta,$$

$$\xi^{\text{seq}}\left(s_\omega^{\text{seq}}\right) := \left(s_\omega^{\text{seq}}\right)^{\delta-1}\left[\frac{\varepsilon\left(s_\omega^{\text{seq}}\right)}{\varepsilon\left(s_\omega^{\text{seq}}\right)-1}\right]^{1-\sigma}\left[\frac{\left(1-s_\omega^{\text{seq}}\right)}{\varepsilon\left(s_\omega^{\text{seq}}\right)}\left(\frac{\sigma}{\sigma-s_\omega^{\text{seq}}\varepsilon\left(s_\omega^{\text{seq}}\right)}\right)\right]^\delta.$$

Based on this, we can prove the following lemma.

Lemma 1. $\frac{\mathrm{d}\xi^{sim}\left(s_\omega^{sim}\right)}{\mathrm{d}s_\omega^{sim}} < 0$.

Proof of Lemma 1. Applying logs and rearranging some of the terms, it is determined that

$$\frac{\mathrm{d}\ln\xi^{\text{sim}}\left(s_\omega^{\text{sim}}\right)}{\mathrm{d}s_\omega^{\text{sim}}} = \frac{(\sigma-1)^2}{\varepsilon\left(s_\omega^{\text{sim}}\right)} - \frac{(\sigma-1)^2}{\varepsilon\left(s_\omega^{\text{sim}}\right)-1} + \frac{\delta(\sigma-1)}{\varepsilon\left(s_\omega^{\text{sim}}\right)} - \frac{\delta}{1-s_\omega^{\text{sim}}} - \frac{1-\delta}{s_\omega^{\text{sim}}}.$$

The difference between the first and second term of the right-hand side (RHS) is negative, since trivially $\varepsilon\left(s_\omega^{\text{sim}}\right) > \varepsilon\left(s_\omega^{\text{sim}}\right)-1$. Moreover, by using that $\varepsilon\left(s_\omega^{\text{sim}}\right)-1 = \left(1-s_\omega^{\text{sim}}\right)(\sigma-1)$, we can reexpress the fourth term, $\frac{\delta}{1-s_\omega^{\text{sim}}}$, as $\frac{\delta(\sigma-1)}{\varepsilon\left(s_\omega^{\text{sim}}\right)-1}$. Therefore, the difference between the third and fourth terms of the RHS is negative too. Given that the fifth term of the RHS is positive and enters subtracting, we conclude that $\frac{\mathrm{d}\ln\xi^{\text{sim}}\left(s_\omega^{\text{sim}}\right)}{\mathrm{d}s_\omega^{\text{sim}}} < 0$. ■

Proof of Proposition 1. Consider DL ω from i. In the sequential scenario, its profits in each country $j \neq i$ are the same, since $\left(\mathbb{P}_j^*\right)_{j\in\mathcal{C}\setminus\{i\}}$ does not vary and acts a single sufficient statistic for profits. Moreover, the price index $\mathbb{P}_i^*$ is not affected by the domestic investments of DLs and, also, DL ω has the option of choosing z_ω^{sim}. Thus, since by comparing (A4) and (A7) it follows that $z_\omega^{\text{sim}} \neq z_\omega^{\text{seq}}$, a revealed-preference argument establishes that DL ω's domestic profits are greater. Thus, overall the profits of each DL from i are greater.

Next, we show that $s_{\omega}^{\text{seq}} > s_{\omega}^{\text{sim}}$ by using (A9). This follows because if $s_{\omega}^{\text{sim}} = s_{\omega}^{\text{seq}}$ then $\xi^{\text{sim}}\left(s_{\omega}^{\text{seq}}\right) < \xi^{\text{seq}}\left(s_{\omega}^{\text{seq}}\right)$ since $\frac{\sigma}{\sigma - s_{\omega}^{\text{seq}}\varepsilon\left(s_{\omega}^{\text{seq}}\right)} > 1$. Hence, using that $\frac{\mathrm{d}\xi^{\text{sim}}\left(s_{\omega}^{\text{seq}}\right)}{\mathrm{d}s_{\omega}^{\text{seq}}} < 0$ by Lemma 1, it necessarily has to happen that $s_{\omega}^{\text{seq}} > s_{\omega}^{\text{sim}}$.

To show that there is overinvestment at home by DLs, we need to prove that $z_{\omega}^{\text{seq}} > z_{\omega}^{\text{sim}}$. The domestic market share of ω is given by (3), so that expressing it as a function of investments z and using optimal prices, then

$$s_{ii}^{\omega}(z) = \frac{z^{\delta}\left[p_{ii}^{\omega}(z)\right]^{1-\sigma}}{\mathbb{P}_i^{1-\sigma}}.$$

Since the domestic price index is the same in the simultaneous and sequential equilibrium,

$$\frac{\mathrm{d}\ln s_{ii}^{\omega}}{\mathrm{d}\ln z} = (1-\sigma)\frac{\partial \ln p_{ii}^{\omega}}{\partial \ln z} + \delta,$$

and using (A6),

$$\frac{\mathrm{d}\ln s_{ii}^{\omega}}{\mathrm{d}\ln z} = (1-\sigma)\frac{\delta s_{ii}^{\omega}}{\sigma - s_{ii}^{\omega}\varepsilon_{ii}\left(s_{ii}^{\omega}\right)} + \delta.$$

To show that $\frac{\mathrm{d}\ln s_{ii}^{\omega}}{\mathrm{d}\ln z} > 0$, suppose not, so that $(1-\sigma)\frac{\delta s_{ii}^{\omega}}{\sigma - s_{ii}^{\omega}\varepsilon_{ii}\left(s_{ii}^{\omega}\right)} + \delta < 0$. Then, we can reexpress this inequality as

$$(\sigma - 1)\, s_{ii}^{\omega} > \sigma - s_{ii}^{\omega}\varepsilon_{ii}\left(s_{ii}^{\omega}\right),$$

and, by definition of the price elasticity then $\varepsilon_{ii}\left(s_{ii}^{\omega}\right) - \sigma = s_{ii}^{\omega}(1-\sigma)$, so that

$$\sigma - \varepsilon_{ii}\left(s_{ii}^{\omega}\right) > \sigma - s_{ii}^{\omega}\varepsilon_{ii}\left(s_{ii}^{\omega}\right),$$

which implies that $\varepsilon_{ii}\left(s_{ii}^{\omega}\right) < s_{ii}^{\omega}\varepsilon_{ii}\left(s_{ii}^{\omega}\right)$ and, so, a contradiction given that $s_{ii}^{\omega} < 1$. Therefore, $\frac{\mathrm{d}\ln s_{ii}^{\omega}}{\mathrm{d}\ln z} > 0$ for any z. Given that $s_{\omega}^{\text{seq}} > s_{\omega}^{\text{sim}}$, we know that

$$s_{\omega}^{\text{seq}} - s_{\omega}^{\text{sim}} = \int_{z_{\omega}^{\text{sim}}}^{z_{\omega}^{\text{seq}}} \frac{\mathrm{d}s_{ii}^{\omega}}{\mathrm{d}z}\mathrm{d}z > 0,$$

and, since $\frac{\mathrm{d}s_{ii}^{\omega}}{\mathrm{d}z} > 0$, then it is necessarily true that $z_{\omega}^{\text{seq}} > z_{\omega}^{\text{sim}}$.

The fact that the domestic intensity increases follows by using two facts. First, given that $\left(\mathbb{P}_j^{*}\right)_{j\in\mathcal{C}\setminus\{i\}}$ does not vary between scenarios, the market share of DL ω in any country $j \neq i$ is the same. Moreover, given that a CES demand implies constant expenditures and that we have shown that the domestic market share of ω is greater, then it necessarily has to be that the domestic revenues of ω are greater by using (3). ■

B Computation of the Numerical Exercise

In Appendix B.1, we establish that, given values of σ and δ and knowledge of a firm's market share in the sequential scenario, the market share of a firm in the simultaneous scenario can be recovered. In addition, we prove that this value always exists and is unique. Finally, in Appendix B.2 we provide details about the calibration for δ.

B.1 Existence and Uniqueness of the Computation

In the main part of the paper, we have indicated that can recover s_ω^{sim} by knowledge of s_ω^{seq}. Next, we show that this value exists and is unique.

Proposition 2. *The solution s_ω^{sim} to (A9) exists and is unique.*

Proof of Proposition 2. The result follows by proving that $\lim_{s_\omega^{\text{sim}} \to 0} \xi^{\text{sim}}\left(s_\omega^{\text{sim}}\right) = \infty$, $\lim_{s_\omega^{\text{sim}} \to 1} \xi^{\text{sim}}\left(s_\omega^{\text{sim}}\right) = 0$, and $\frac{\mathrm{d}\xi^{\text{sim}}\left(s_\omega^{\text{sim}}\right)}{\mathrm{d}s_\omega^{\text{sim}}} < 0$. First,

$$\lim_{s_\omega^{\text{sim}} \to 0} \xi^{\text{sim}}\left(s_\omega^{\text{sim}}\right) = \underbrace{\left(s_\omega^{\text{sim}}\right)^{\delta-1}}_{\to\infty} \underbrace{\left(\frac{\varepsilon\left(s_\omega^{\text{sim}}\right)}{\varepsilon\left(s_\omega^{\text{sim}}\right)-1}\right)^{1-\sigma} \left(\frac{1-s_\omega^{\text{sim}}}{\varepsilon\left(s_\omega^{\text{sim}}\right)}\right)^{\delta}}_{\in\mathbb{R}_{++}} = \infty,$$

where we have used the fact that $\delta < 1$. As for the case with $s_\omega^{\text{sim}} \to 1$, it requires that we rearrange some of the terms and use that the price elasticity can be expressed as $\varepsilon\left(s_\omega^{\text{sim}}\right) - 1 = \left(1 - s_\omega^{\text{sim}}\right)(\sigma - 1)$. This yields

$$\lim_{s_\omega^{\text{sim}} \to 1} \xi^{\text{sim}}\left(s_\omega^{\text{sim}}\right) = \underbrace{\left(s_\omega^{\text{sim}}\right)^{\delta-1}}_{\to 1} \underbrace{\left[\varepsilon\left(s_\omega^{\text{sim}}\right)\right]^{1-\sigma-\delta} (\sigma-1)^{\sigma-1}}_{\in\mathbb{R}_{++}} \underbrace{\left(1-s_\omega^{\text{sim}}\right)^{\sigma-1+\delta}}_{\to 0} = 0.$$

Finally, by Lemma 1, it follows that $\frac{\mathrm{d}\xi^{\text{sim}}\left(s_\omega^{\text{sim}}\right)}{\mathrm{d}s_\omega^{\text{sim}}} < 0$. ■

B.2 Calibration of δ

Here, we describe the procedure to obtain δ. Equation (3) expressed in logarithms determines that the market share of a DL producing variety ω in the industry n is,

$$\ln s_n(\omega) = (1 - \sigma_n) \ln p_n(\omega) + \delta \ln z_n(\omega) - \ln \mathbb{A}_n. \tag{B1}$$

Regarding each term in (B1), $\ln \mathbb{A}_n := (\sigma - 1)\mathbb{P}_n$ is treated as an industry fixed-effect. For p_n, we use information on unit values from the Prodcom dataset, as we describe below. Moreover, each σ_n corresponds to the estimates by Soderbery (2015), which are aggregated at the industry level by expenditure weights. For $z_n(\omega)$, we use the solution under the sequential scenario. Adding an error term, this implies that δ is obtained from a regression based on the following equation,

$$\ln \widetilde{s}_n(\omega) = \delta \ln z_n(\omega) - \ln \mathbb{A}_n + \varepsilon_n(\omega),$$

where $\ln \widetilde{s}_n(\omega) := \ln s_n(\omega) - (1 - \sigma_n) \ln p_n(\omega)$. Thus, δ is set as the value which fits the dispersion of market shares within industries not explained by prices or common shocks to all firms in the industry. Incorporating that some of the variables determining investments are industry specific, equation (B1) can be equivalently expressed in the following way,

$$\ln \widetilde{s}_n(\omega) = \Lambda_n + \delta \ln \xi_n(\omega) + \varepsilon_n(\omega), \tag{B2}$$

where $\xi_n(\omega) := \left[\frac{s_n(\omega)(1-s_n(\omega))}{\varepsilon[s_n(\omega)][\sigma_n - s_n(\omega)\varepsilon[s_n(\omega)]]}\right]$ and $\Lambda_n := \delta \ln\left(\frac{\delta\sigma_n}{f_z}\right) - \ln \mathbb{A}_n$. We perform the regression by using equation (B2).

As we have mentioned, we need information on prices for the estimation of δ. Moreover, (B2) is expressed at the firm-industry level, while the information on prices is at the CN8 level, which is more disaggregated. For this reason, firm prices are calculated as a weighted average of firm prices at the CN8 level, with weights given by the contribution of each CN8 product to the firm's revenue.

As is well known, unit values constitute an extremely noisy measure of prices. As the estimation of δ is based on a small number of observations given by the set of DLs, measurement error of particular observations makes the problem more severe. Thus, this problem needs to be addressed. Moreover, in the Danish data, some additional issues arise since, as it is happens in the Prodcom datasets of some European countries, firms are not obliged to report quantities.[11] Thus, the data include missing values and some of the quantities are reported using different units of measure.

To reduce the noise of the estimation, the data are cleaned in several ways following standard procedures as in, for instance, Amiti and Khandelwal (2013). Using the logarithm of unit values as prices, we perform the following steps:

- By CN8 product, we drop those prices within the category that fall below the 5th percentile or above the 95th percentile.
- By firm-CN8 product, we remove prices which are 150% greater or 66% lower than the previous or subsequent year relative to the reference year.
- We remove industries where at least one DL does not report quantities.
- We drop industries where at least one CN8 is expressed in non-comparable units.[12]

After this process, we end up with 65 industries out of the 92 industries with coexistence of DNLs and DLs. The information covers all the 16 sectors of the original sample and encompasses 213 firms. The results of the fit are presented in Figure 6.

[11] Whenever possible, these quantities are approximated by statistical agencies using imputations based on reports of the same good from other production units in the same quarter. Otherwise, no value is reported.

[12] Within industries, and even for a same product, some of the quantities reported are in different units of measure. For the cases in which units are expressed in different but comparable units, we express them in a same unit. For instance, if some CN8 is expressed in kilograms and other CN8 in tons, we express both in kilograms.

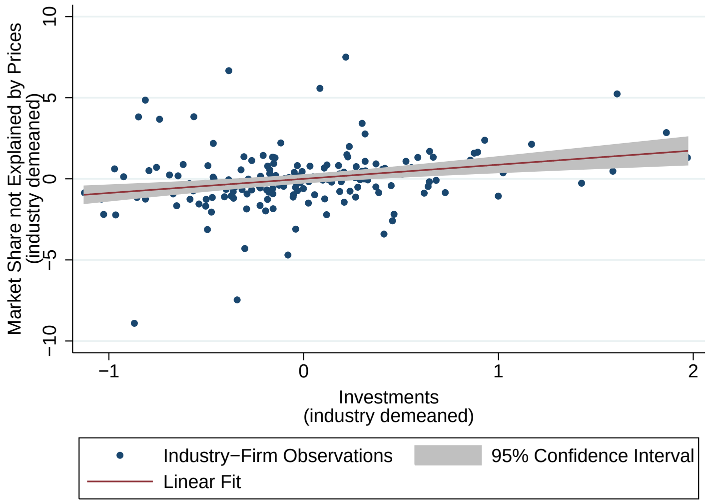
Figure 6. *δ Estimation and Fit*

(a) Estimation

	$\ln \widetilde{s}(\omega)$	
	(1)	(2)
$\ln \xi(\omega)$	0.872***	0.871***
	(0.243)	(0.288)
Industry FE	Yes	Yes
Sample	$> 3\%$	$> 5\%$
Observations	213	125
R-squared	0.987	0.994

Note: Sample indicates whether all the DLs with market share greater than 3% or 5% are considered.

(b) Fit



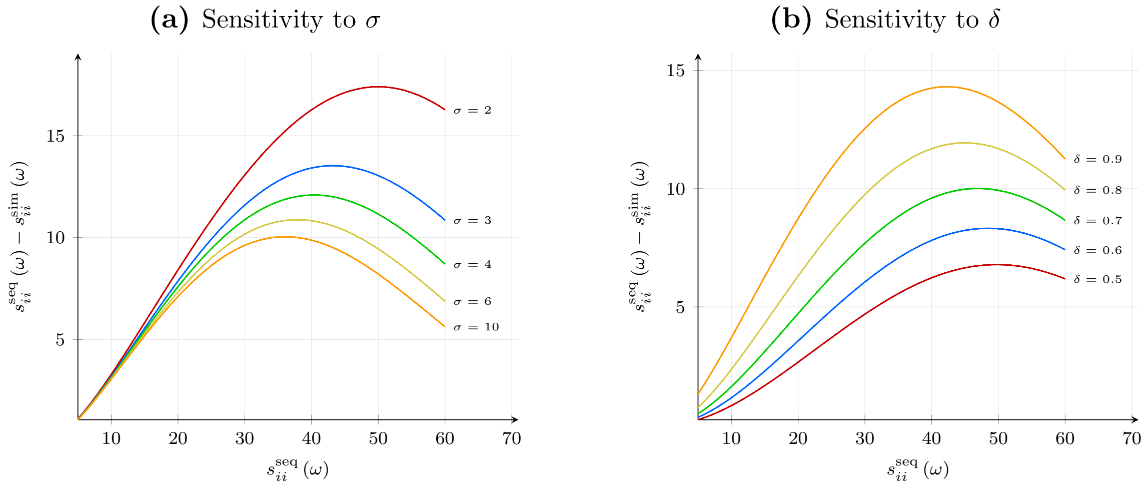
C Magnitude of the Strategic Gains

In this appendix, we illustrate through simulations how different variables affect the magnitude of effects due to strategic investments. Given the range of values in the Danish data, the conclusions of the analysis are twofold. First, the gains of market shares are mainly determined by the market share observed. Second, the increases in domestic intensity are affected by both the market shares and domestic intensity. On the contrary, differences in σ across industries have a reduced impact on both variables.

In all of the examples, we focus on DL ω from some country i. We begin by inquiring upon the determinants of gains in domestic market shares through the use of Figure 7. The figures show the relation between the market share that in the sequential equilibrium (horizontal axis) and the gains associated with it (vertical axis). Gains are expressed as percentage-point increases of market share in the sequential case relative to the simultaneous scenario. Figure 7a shows how gains vary for different values of σ, while Figure 7b does the same for δ.

The first conclusion obtained from both graphs is that, for a given value of market share, the lower the substitutability (i.e., low σ values) and the greater the effectiveness of demand-enhancing investments (i.e., high δ values), the greater the market-share gains. Additionally, Figure 7a reveals that differences in σ can potentially lead to a dispersion in gains, but only for firms with a large market share. However, in the Danish data only 5 out of 331 DLs have a market share exceeding 35% while the average value of the top DLs is around 14%. Consequently, for those range of values, differences in σ have a negligible impact on market-shares gains.

Figure 7. *Market Share Gains*

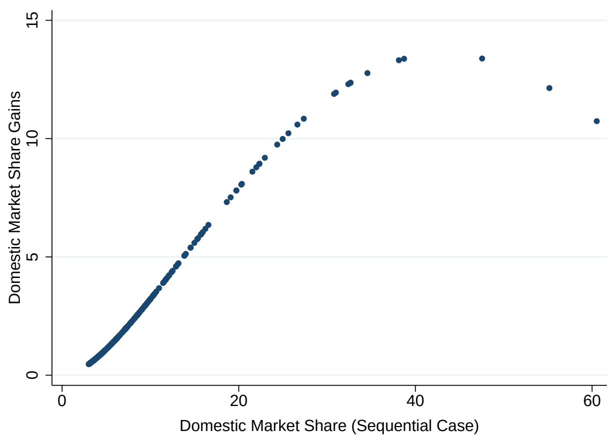


Note: In Figure 7a, $\delta = 0.872$. In Figure 7b, $\sigma = 3$.

From the graph we can also conclude that, even though the gains in market share are necessarily positive, they are not monotone: for low values of market share, they are increasing while, after a certain threshold, they start to decrease. As a consequence, the top leader does not necessarily correspond to the firm with the greatest gains.

Additionally, for the range of values observed in the Danish dataset, the overwhelming majority of firms have market shares that place them on the increasing part of the curve. This can be observed in Figure 8, which reproduces the market-share gains for a constant σ using the Danish data.

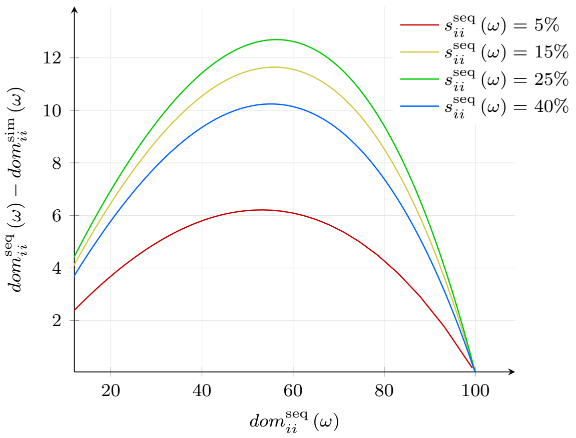
Figure 8. *Market Share Gains for the Danish Data*



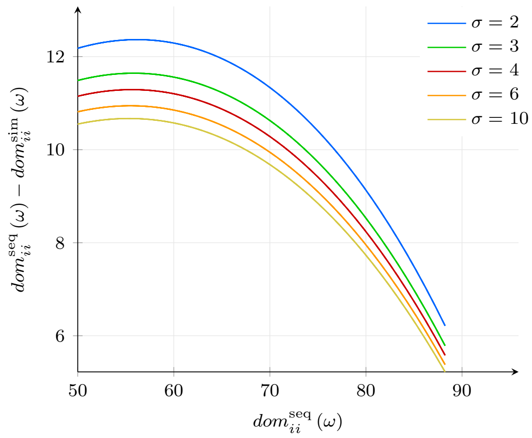
Regarding domestic intensity, we use Figure 9 to show how increases in domestic intensity depend on domestic market shares and domestic intensity in the sequential equilibrium.

Figure 9. *Domestic Intensity*

(a) Relation with Domestic Market Shares



(b) Relation with σ



(c) Constant Sigma

	Increases in Firm's Domestic Intensity
	(1)
Domestic Market Share	0.100***
	(0.382)
Domestic Intensity	-0.039***
	(0.011)
Industry FE	Yes
Sample Unit	Exp-Ind
Observations	160
R-squared	0.531

Note: In Figure 9a and Figure 9b, $\delta = 0.872$ and, along each curve, domestic intensity varies due to changes in the value of the firm's exports. In Figure 9a, $\sigma = 3$. In Figure 9b, $s_{ii}^{seq}(\omega) = 10\%$.

In both Figure 9a and Figure 9b, δ and the total expenditure in the domestic market, denoted E_i, are held constant. Along the horizontal axis, the domestic intensity in the sequential equilibrium varies by assigning different values to the firm's exports. This information, together with $s_{ii}^{\omega,\text{seq}}$ can be used to calculate the domestic-intensity variation. The procedure is as follows. First, given $s_{ii}^{\omega,\text{seq}}$, $s_{ii}^{\omega,\text{sim}}$ is determined by equation (A9). With the values of the domestic market share in each scenario, a firm's domestic revenue in each scenario is calculated through $s_{ii}^{\omega,\text{sim}} \times E_i$ and $s_{ii}^{\omega,\text{seq}} \times E_i$, respectively. Likewise, given a firm's exports and with the domestic revenues calculated, the domestic intensity in each scenario can also be calculated. While in Figure 9a this exercise is repeated for different values of $s_{ii}^{\omega,\text{seq}}$, the results in Figure 9b assume a specific value of $s_{ii}^{\omega,\text{seq}}$.

Consider one of the curves in Figure 9a, so that $s_{ii}^{\omega,\text{seq}}$ is kept fixed. By this, it can be appreciated that variations in domestic intensity are always positive but non-monotone in relation with the domestic intensity in the sequential equilibrium. Nonetheless, given the existence of a home bias at the firm level, the increases in domestic intensity mainly move along the decreasing part of the curve.

Furthermore, by comparing the curves for different market-share values, we can see that increases in domestic intensity have a non-monotone relation with domestic market shares. While increases for domestic market shares lower than 25% predict greater increases of domestic intensity, the opposite occurs if we move from a market share of 25% to one of 40%. Since for the average industry firms do not have disproportionately large market shares, in general a greater domestic market share observed determines a bigger domestic-intensity increase.

In Figure 9b, we also show that, for some given domestic market share observed in the data, increases in σ result in smaller increases in the domestic intensity. However, the impact of σ is quite small, since on average the home bias is quite pronounced in the data.

D Alternative Definitions of Domestic Sales

In any market, domestic sales are the value of a firm's total supply in the market. Thus, this includes goods produced by itself (locally or abroad) and also goods which are produced by other firms (bought domestically or imported) with the aim of reselling. For the baseline calculations, we used the total turnover reported in the dataset of physical production. This comprises sales of own goods (either produced, processed, or assembled by the firm), goods produced by a subcontractor established abroad (if the firm owns the inputs of the subcontracted firm), and resales of goods bought from other domestic firms and sold with any processing. Essentially, this excludes sales of goods imported which are produced by foreign firms not owned by the Danish firm.

In the main part of the paper, by using total turnover, we adopt a conservative position to calculate domestic sales to not either double count some of the imports, mistakenly consider expenditure on inputs as outputs, or overestimate the market share of some firms which mainly act as retailers selling several brands.

For this reason, next we recalculate the results of the numerical exercise by using two measures of sales that incorporate goods imported. Even though we have information on imports by DLs, they are not split into inputs and final goods. As a consequence, we need to take a stance on whether they are part of the total supply of the firm.

Since the information at our disposal is at the CN8 product level, this assumption means that if a firm imports a CN8 good and also produces it, this good has been assembled or reprocessed by it and, so, is included in the value of production that it reports. For the two alternatives we propose, we maintain the assumption that a firm's imports that do not belong to its industry are treated as inputs. On the other hand, several options exist regarding imports of a good belonging to an industry for which the firm reports positive production.

As a first scenario, we incorporate the import of that CN8 good to the firm's total supply if a firm produces or exports it. In this case, the results are in Table 6 and Figure 10. As a second scenario, we incorporate to the firm's total supply any import of a CN8 product that belongs to its industry. The results are in Table 7 and Figure 11.

As it can be appreciated from both cases, the results of the numerical exercise do not differ substantially relative to the baseline outcomes.

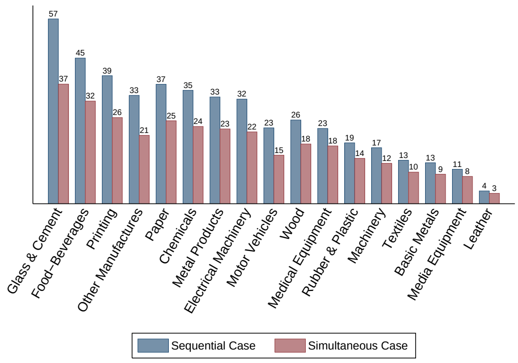
Table 6. *Estimated Impact of the Strategic Behavior - Differences between the Simultaneous and Sequential Scenario*

	Avg. Per Firm			Avg. Ind.	Aggregate Manufacture	
	Market Share Points	Domestic Intensity Points	Domestic Sales Increase	Domestic Concentration Points	Domestic Intensity Points	DLs Sales Increase
Glass & Cement	3.5	3.7	41.6	20.0	9.5	50.2
Food & Beverages	2.9	4.9	35	13.2	7	41.5
Printing	2.9	3.4	41.8	12.9	1.5	47.0
Other Manufactures	3.2	6.8	40.9	12.3	9.8	52.8
Paper	2.0	3.6	36.2	11.2	3.4	41.8
Chemicals	2.8	5.8	39.7	11.1	10.0	53.0
Metal Products	2.1	3.9	36.1	9.8	2.8	44.3
Electrical Machinery	3.6	5.2	38.3	10.1	6.3	43.3
Motor Vehicles	4.2	.	55.4	8.4	.	56.3
Wood	1.9	5.3	32.6	7.4	5.4	35.5
Medical Equipment	1.2	5.7	28.3	5.4	6.7	30.6
Rubber & Plastic	1.4	4.6	28.4	4.8	5.8	31.1
Machinery	1.8	4.7	32.7	4.8	8.0	38.1
Textiles	1.8	4.2	33.4	3.7	7.1	33.3
Basic Metals	2.0	6.4	37.4	3.5	6.7	39.9
Media Equipment	0.9	5.1	24.8	2.2	5.7	27.2
Leather	0.7	5.1	22.8	0.7	5.1	22.8
Sectors Average	2.3	4.9	35.6	8.3	6.3	40.5

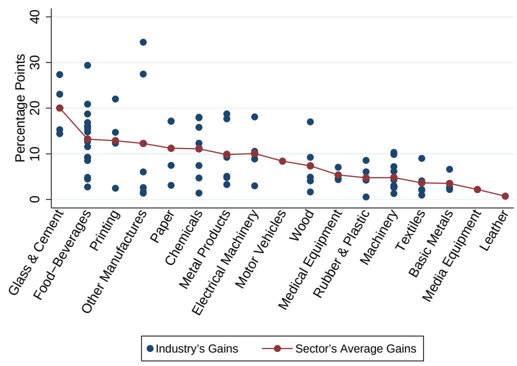
Note: Only industries with coexistence of DNLs and DLs are considered. The results labeled "points" represent percentage-point differences between the sequential and simultaneous scenarios, while "increase" represents percentage increases relative to the simultaneous case. Market shares are based on total sales of the industry and account for import competition. At the industry level, domestic concentration is defined as the increase in market shares accrued by all DLs. Domestic intensity is defined as a firm's domestic sales relative to its own total sales, with only exporters considered for calculations. Entries with "." reflect that all the firms in the sector serve the Danish market exclusively. For Aggregate Manufacture, the domestic intensity and DLs sales are measured by taking the total of manufacturing.

Figure 10. *Sequential vs. Simultaneous Scenarios*

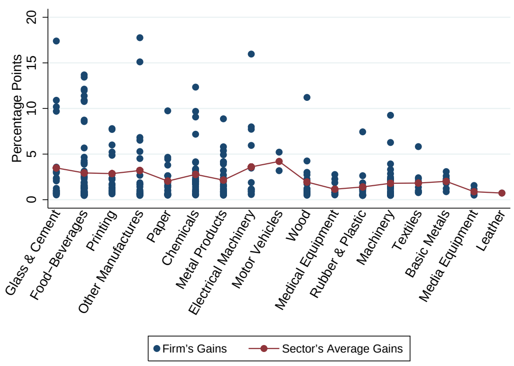
(a) Domestic Concentration - Levels



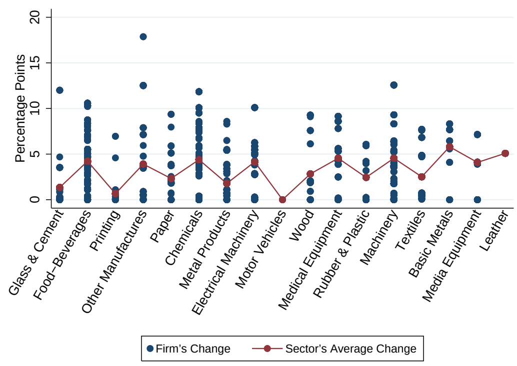
(b) Domestic Concentration - Points Increase by Industry



(c) Firm's Domestic Market Share Gains - Points Increase per Firm



(d) Firm's Domestic Intensity - Points Increase per Firm



Note: Figure 10a expressed in market-share levels. In the rest of the figures, outcomes are percentage-points differences between the sequential and simultaneous case. Figures regarding firm's domestic intensity excludes firms that sell exclusively in the domestic market. Market shares measured in terms of total sales value of the industry and account for import competition.

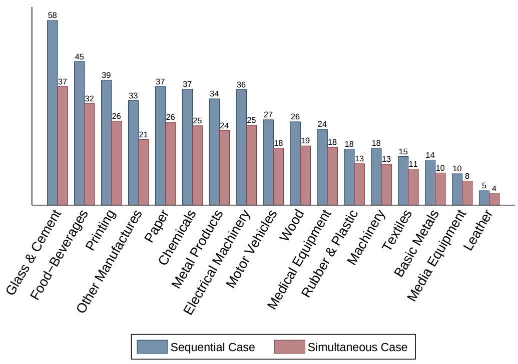
Table 7. *Estimated Impact of the Strategic Behavior - Differences between the Simultaneous and Sequential Scenario*

	Avg. Per Firm			Avg. Ind.	Aggregate Manufacture	
	Market Share Points	Domestic Intensity Points	Domestic Sales Increase	Domestic Concentration Points	Domestic Intensity Points	DLs Sales Increase
Glass & Cement	3.6	4.1	43.1	20.8	9.7	51.3
Food & Beverages	2.9	4.9	34.7	13.2	6.9	41.0
Printing	2.9	3.4	41.8	12.9	1.5	47.0
Other Manufactures	3.4	7.0	42.2	12.3	9.8	54.3
Paper	2.0	3.6	35.3	11.3	3.5	40.2
Chemicals	2.7	5.6	38.8	11.5	10.0	52.7
Metal Products	2.1	3.9	35.8	10.0	2.8	44.0
Electrical/Machinery	3.5	4.7	38.3	11.3	8.5	44.6
Motor Vehicles	3.0	3.4	44.5	8.9	1.5	49.8
Wood	2.0	5.3	33.1	7.6	5.4	36.4
Medical Equipment	1.2	5.9	29.0	5.7	6.8	31.4
Rubber & Plastic	1.5	4.6	30.0	4.6	6.2	32.4
Machinery	1.8	4.8	32.8	5.1	8.0	38.3
Textiles	1.5	3.8	30.3	4.0	6.6	31.1
Basic Metals	2.0	5.7	36.4	4.1	6.8	41.2
Media Equipment	1.1	5.8	28.0	2.3	5.8	31.8
Leather	0.9	5.7	25.7	0.9	5.7	25.7
Sectors Average	2.2	4.8	35.3	8.6	6.2	40.8

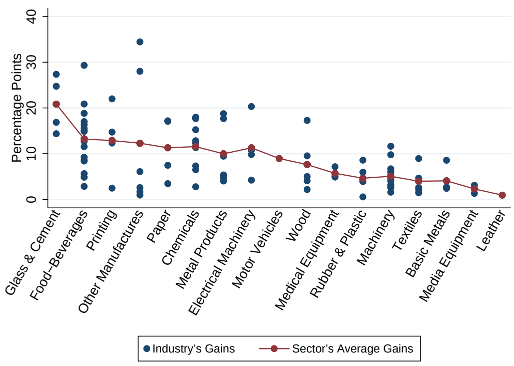
Note: Only industries with coexistence of DNLs and DLs are considered. The results labeled "points" represent percentage-point differences between the sequential and simultaneous scenarios, while "increase" represents percentage increases relative to the simultaneous case. Market shares are based on total sales of the industry and account for import competition. At the industry level, domestic concentration is defined as the increase in market shares accrued by all DLs. Domestic intensity is defined as a firm's domestic sales relative to its own total sales, with only exporters considered for calculations. For Aggregate Manufacture, the domestic intensity and DLs sales are measured by taking the total of manufacturing.

Figure 11. *Sequential vs. Simultaneous Scenarios*

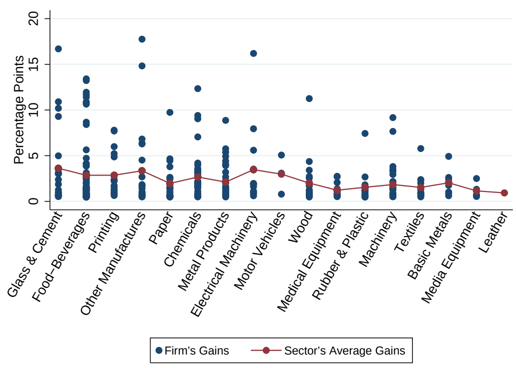
(a) Domestic Concentration - Levels



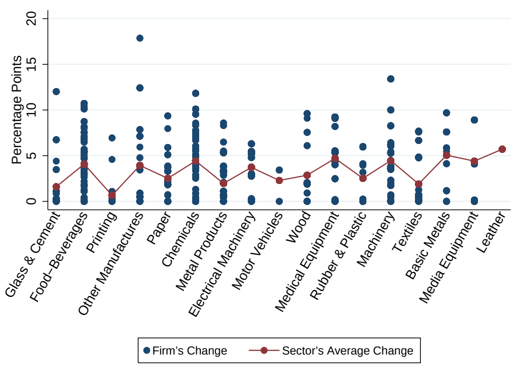
(b) Domestic Concentration - Points Increase by Industry



(c) Firm's Domestic Market Share Gains - Points Increase per Firm



(d) Firm's Domestic Intensity - Points Increase per Firm



Note: Figure 11a expressed in market-share levels. In the rest of the figures, outcomes are percentage-points differences between the sequential and simultaneous case. Figures regarding firm's domestic intensity excludes firms that sell exclusively in the domestic market. Market shares measured in terms of total sales value of the industry and account for import competition.