

Research note: Industrial Foundations in the Danish Register Databases¹

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Introduction

The purpose of this note is to collect descriptive evidence on the role of foundations-owned firms in Danish society. To this means, a sample of foundation-owned firms is identified in the register databases of the Business Authority Statistics Denmark (DST) and followed over the period 2007-2012. This time period was characterized by a financial crisis in 2008 which was followed by a recession in the subsequent years.

We aggregate the employment, turnover, value added, exports, and research expenses of firms owned by industrial foundations. As a next step, we calculate these firms' shares of total Danish activity for the given variable in question.

This exercise is purely descriptive. It aims at establishing evidence on the relevance of industrial foundations for the Danish economy. Before turning to the results, we describe the data in the next subsection of this research note.

Data

A first step in the data generating process was the identification of foundation-owned firms.

It needs to be acknowledged that this is not as straightforward a task as might be expected. This is because of firm owners typically not assuming 100 percent ownership in their subsidiaries. Also, ownership structures are often complex. This is especially true for larger and older companies - like many of the companies held by industrial foundations – that have a couple or sometimes many stakeholders, some of which are holding companies under the same organizational umbrella while others are not.

This implies that any algorithm selecting foundation-ownership on the basis of ownership information in the Danish registers is likely to over- or to underestimate the general economic activity of industrial foundation held firms. Also, not all foundations can be assumed to have the slightest business objective, like newspapers with a political agenda, social housing initiatives, and the like.

In the following, firms held by industrial foundations are identified as follows:

First, industrial foundations registered by the Danish Business Authority. This list is cleaned for foundations with clearly no business objective.

¹ Footnote: Financial support from the Research Project on Industrial Organizations (www.tifp.dk) Copenhagen Business School is gratefully acknowledged.

The Business Authority also has information on the ownership of companies. The combination of the industrial foundation register and the ownership information allows identification of approximately 1,000 companies owned by industrial foundations and being present in the Danish firm registers (having minimum activity thresholds). This is the sample which is behind the results of this research note.²

Also, we manually go through the list of foundation-owned companies, and delete holding companies, companies for which foundation-influence was considered weak, and companies with weak business orientation. The remaining 430 shortlisted companies are given special treatment in the following.³

As a next step in the data generation process, the foundation samples are merged with the DST register data.

We extract our register firm information from the Statistics Denmark (DST) database “General Firm Statistics”. We only consider firms in non-financial industries (i.e. without firms for which the industry variable `gf_gr19_db07` assumes “K”). And we only consider firms in the Danish private sector (i.e. firms for which variables `gf_funk` assumes value 80) are considered.

Firms are followed from 2007 until 2012, which is the last year for which there presently is firm information in the DST registers. Foundation owned firms were identified in 2010. So it needs to be kept in mind that there is sample attrition both before and after 2010 for foundation-owned companies due to organizational restructuring and firm transitions.

² In the internal jargon of the research project on industrial foundations, this population of firms was called the ‘summer 2014 sample’.

³ In the internal jargon of the research project on industrial foundations, this population of firms was called the ‘fall 2014/Thomas-sample’

Results

The number of employees

There are approximately 1.5 million employees in the private sector and in non-financial industries. Depending on the identification strategy of foundation-owned firms, these account for between roughly 4 and 8.5 percent of all employees.

Number of employees

Year	Non-foundation-owned companies			Foundation owned companies (narrow definition)		
	Non-foundation-owned companies	Foundation owned companies		Foundation owned companies (narrow definition)		
2007	1,693,366	139,579	7.6%	71,993		3.9%
2008	1,553,776	140,458	8.3%	67,534		4.0%
2009	1,391,781	127,114	8.4%	65,231		4.3%
2010	1,388,161	125,484	8.3%	62,785		4.1%
2011	1,406,537	126,449	8.2%	64,998		4.2%
2012	1,407,253	129,512	8.4%	66,905		4.4%

Turnover

Turnover (DST variable GF_OMS) is collected by the tax authorities in association with VAT registration. It is found that foundation-owned companies generate approximately between 7 and 14 of total turnover in the private sector (non-financial industries) economy.

Turnover (in DKK1,000,000)

Year	Non-foundation-owned companies			Foundation owned companies (narrow definition)		
	Non-foundation-owned companies	Foundation owned companies		Foundation owned companies (narrow definition)		
2007	2,835,542	365,991	11.4%	236,995		7.4%
2008	2,908,308	386,049	11.7%	246,287		7.5%
2009	2,513,940	330,679	11.6%	210,402		7.4%
2010	2,567,763	387,049	13.1%	261,278		8.8%
2011	2,772,628	422,050	13.2%	272,775		8.5%
2012	2,852,226	450,079	13.6%	296,626		9.0%

Value added

Value added is calculated as the difference between turnover (GF_OMS) and purchases (GF_KOB). Both pieces of information are from VAT registration. The samples of foundation-owned companies account for between 12 and 19 percent of total private sector (non-financial industries) value added.

Value added (in DKK1,000,000)

Year	Non-foundation-owned companies			Foundation owned companies (narrow definition)	
2007	987,302	219,631	18.2%	148,540	12.3%
2008	987,302	230,971	19.0%	157,163	12.9%
2009	950,179	194,385	17.0%	148,541	13.0%
2010	898,898	205,762	18.6%	157,163	14.2%
2011	932,945	203,919	17.9%	140,178	12.3%
2012	972,930	214,741	18.1%	145,430	12.2%

Labour productivity

Labour productivity is calculated as value added over the number of employees. One can either generate this figure for each individual firm or on basis of the aggregate numbers summarized in the previous tables. The first table (Labour productivity. Weighted averages) follows the second strategy and simply divides total value added of firms in the given category – foundation- and non-foundation owned – by the aggregate numbers of staff (DST-variable GF_inklejer).

The second table (Labour productivity. Averages) summarizes labour productivity averages for individual firms. For this table, outliers with more than DKK5 million and less than DKK-500,000 were winsorized at DKK 5 million and DKK-500,000, respectively.

It is found that foundation-owned firms have very much higher labour productivity compared to other firms in the private sector economy. The weighted

Labour productivity. Weighted averages

Year	Non-foundation-owned companies		Foundation owned companies (narrow definition)	
2007	583,041	1,573,525		2,063,256
2008	635,421	1,644,413		2,327,169
2009	682,707	1,529,218		2,277,154
2010	647,546	1,639,747		2,503,193
2011	663,292	1,612,658		2,156,651
2012	691,368	1,658,078		2,173,679

Labour productivity. Averages

Year	Non-foundation-owned companies	Foundation owned companies	Foundation owned companies (narrow definition)
2007	416,686	828,802	843,390
2008	442,019	828,607	800,085
2009	442,233	934,635	938,032
2010	447,336	901,395	957,749
2011	459,899	893,573	899,450
2012	478,315	972,665	954,071

Exports

Information on exports (GF_EKSP) is collected in association with firms' VAT registration. Total exports of foundation-owned (non-financial) companies are between 20 and 26 percent of total exports.

Exports (in DKK1,000,000)

Year	Non-foundation-owned companies	Foundation owned companies		Foundation owned companies (narrow definition)	
2007	591,737	178,492	23.2%	158,348	20.6%
2008	638,747	185,558	22.5%	165,933	20.1%
2009	542,289	155,473	22.3%	138,224	19.8%
2010	607,970	211,045	25.8%	189,127	23.1%
2011	698,955	238,259	25.4%	213,823	22.8%
2012	729,005	248,925	25.5%	221,322	22.6%

Foundation-owned firms generate on average between 12 and 16 percent of their turnover outside Denmark. Numbers suggest these figures to be increasing over time.

Exports shares. Averages

Year	Non-foundation-owned companies	Foundation owned companies	Foundation owned companies (narrow definition)
2007	0.03	0.12	0.14
2008	0.03	0.12	0.14
2009	0.03	0.12	0.14
2010	0.04	0.13	0.15
2011	0.04	0.15	0.16
2012	0.04	0.15	0.16

We also consider total exports of foundation owned firms over total turnover of foundation owned firms. It is found that the largest share of the turnover of foundation-owned companies is generated by exports.

Exports shares. Weighted averages

Year	Non-foundation-owned companies		Foundation owned companies		Foundation owned companies (narrow definition)	
2007		0.21		0.49		0.67
2008		0.22		0.48		0.67
2009		0.22		0.47		0.66
2010		0.24		0.55		0.72
2011		0.25		0.56		0.78
2012		0.26		0.55		0.75

R&D expenses

There is no register collecting all research expenses for all firms. The most comprehensive information is the DST R&D register, having information on approximately 4,300-4,550 firms over the period 2008-2010. This sample is not representative for the population of Danish firms; instead, it is biased towards larger companies.

The following comparison remains valid on the assumption that selection into the DST R&D database is not biased towards or against foundation-owned companies.

With the given limitations in mind, there is evidence of foundation-owned companies financing more than a third of all R&D expenses registered in the DST R&D database.

R&D expenses (DST variable 'u_total', in DKK 1,000,000). Sample: DST R&D database

Year	Non-foundation-owned companies			Foundation owned companies		
2008		16,401	9,779	0.37	8,803	0.34
2009		17,419	10,257	0.37	9,277	0.34
2010		16,822	10,466	0.38	9,342	0.34

Concluding remarks

The difficulties of a strict definition of foundation ownership in mind, the findings of this research note strongly suggest foundation-owned firms playing a significant role in the Danish economy. This is especially true for turnover and value added figures of foundation-owned firms being at between 10 and 15 percent of the Danish totals.

Foundation owned firms have higher turnover and labour productivity shares compared to their number of employees. This naturally implies high labour productivity in Danish foundation-owned firms. However the result for labour productivity might be due to Statistics Denmark only considering employees in Denmark, while turnover and value added figures might be influenced by international activities.

Finally, numbers suggest that more than a fifth of total Danish exports and more than one third of total registered research expenses are generated by foundation-owned firms. In these respects, the role of foundation-owned firms for Denmark must be assumed to be not just significant but crucial.