



On Going Globalization: Do Multinationals Perform Differently than Non-Multinationals in Dutch Manufacturing Industries?

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On-going globalisation: Do multinationals perform differently than non-multinationals in Dutch manufacturing industries

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Abstract

Due to globalisation, the impact of multinationals on national economies has grown over time. For example, the inward foreign affiliates statistics (FATS) show that the percentage of value added of the Dutch economy that is foreign controlled is increasing (CBS, 2015, Statline). Most likely multinationals will have an even bigger impact on the economy in the near future due to on-going globalisation, so it is important to monitor and understand the socio-economic impacts of activities of multinationals on the host economy. By means of this information, policy makers are better equipped to construct well designed policies to foster economic development. This paper explores if multinationals perform differently than non-multinationals in Dutch manufacturing industries. There are already many studies showing that there are differences between foreign and domestic controlled enterprises. But it is not that often researched if this is caused by an enterprise's "foreignness" or by the fact that it is a multinational. To answer this question we will discern three groups: foreign multinationals, domestic multinationals and domestic nationals. This study will focus on three variables of enterprise performance, namely job creation, production and value added. It will examine the impact of globalisation on growth in terms of jobs, production and value added in manufacturing industries by answering three different research questions: Did multinationals grow faster or slower than non-multinational companies (production, jobs value added)? We also examine whether the input structure of multinationals differs significantly from non-multinationals (wages versus profits)? Both with respect to growth as well as to the wage to profit ratio we wondered whether there is a significant economic difference between "foreign companies" and Dutch companies' (based on ultimate control)? After the work of Piketty there is more attention for the distribution of wages and profits. Is there a significant difference between the compensation of employees of the people working in multinational companies and of those in non-multinational companies? Additional sub-question: is there a difference between "foreign companies" and "Dutch companies" (based on ultimate control)? This study presents descriptive statistics on the issues mentioned above. On the basis of a time series 2008-2013 we will answer the research questions and formulate policy relevant conclusions.

1. Introduction

Multinationals outperform non-multinationals. It is a stylized fact that multinationals are larger, more productive, more technology intensive, more trade intensive and pay their employees higher wages than local firms (see for instance Bernard & Jensen; Fortanier, 2008; Doms & Jensen, 1998). As a result multinationals can bring much good to an economy. They introduce new technologies, provide knowledge transfer and foster job creation. In the business economy multinationals constituted 2 percent of the Dutch enterprise population, generate almost 55 percent of value added, two third of turnover and more than 40 percent of all jobs In 2013 (CBS, 2015). Despite the economic crisis of recent years, these ratios remained fairly constant.

In 2009 the Dutch economy experienced an almost unprecedented decline in trade and economic growth. Export volumes fell by almost 10 percent in 2009, but bounced back relatively quickly. By 2011 Dutch exports were already back at pre-crisis level. However, between 2008 and 2013 Dutch economic growth fell short of that in

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most other EU countries and other trading partners. Benefiting from this larger demand in other economies, internationally active enterprises experienced a smaller decline in their number of jobs than enterprises without international activities (Smit and Jaarsma, 2014a, 2014b). Internationally active enterprises such as international traders or multinationals in the Dutch business economy seemed better equipped to face the economic crisis; especially in 2011 and 2012 rate of job loss was much higher at domestically oriented enterprises (Smit and Jaarsma, 2014a/2014b).

As stated, multinationals generally outperform non-multinationals in terms of exports, productivity and sales (Raff & Wagner, 2013; Wagner 2011; Doms & Jensen, 1998). Only the most productive and efficient enterprises are equipped to deal with the risks and costs of doing business abroad, hence they self-select into international activity such as exporting goods or opening a foreign affiliate. Whether multinationals also display higher *growth rates* than “local firms”; e.g. in terms of exports, production, labour productivity, value added, and employment and labour share (share of value added that is destined for the production factor labour) is more obscure and is at the core of our research.

Earlier research has shown that in many respects, nationally owned multinationals do not differ from foreign owned multinationals. For instance Bruls (2014), Bruls and Lemmers (2014), Doms and Jensen (1998) show that not the “foreignness” of an enterprise is most relevant in explaining differences in enterprise performance, but whether an enterprise is (part of) a multinational or not. Where the parent company is located - at home or abroad - seems to be less relevant. Filtering out this effect – or determining a lack thereof – is a second objective of this paper. In order to investigate this, a relatively new dataset which includes extensive information on affiliates and subsidiaries abroad has been constructed. This allows for a clear distinction between foreign multinationals, Dutch multinationals and Dutch enterprises without foreign subsidiaries (domestics).

We focus in this study on manufacturing for three reasons:

- Impact of multinationals is relatively large in manufacturing in the Netherlands.
- Discussion on job loss due to involvement of more multinationals is quite severe in this industry
- Technology spillovers via multinationals can potentially have a large effect on jobs in the manufacturing sector.

This paper is organised as follows. In section 2 we will frame our research questions and analyses with some relevant studies and literature. The specifics on the data used, the composition of our dataset and the statistical analyses can be found in section 3. Section 4 will present some basic descriptive statistics on the economic performance of foreign multinationals, Dutch multinationals and domestic enterprises in manufacturing sectors. We will show to what extent they fared differently in the past years of economic crisis and downturn. In section 5 we present our ANOVA and regression analysis results. The main conclusions and recommendations for further research are summarised in section 6.

This study is positioned as a so called hypothesis-generating paper, a starting point for further research into the true underlying factors. It is of course possible that we only identify correlations, and that the underlying factors explaining the differences are not the “multinational-ness” itself but quite different factors. Factors which have not been incorporated into the models used to analyse the differences.

2. Literature and research questions

In times of economic crisis it is sometimes feared that multinationals could create instability to an economy. Because multinationals are able to relocate and move production, knowledge and technology quickly elsewhere, they are often regarded with some scepticism. Their international network makes them potentially less dependent on local inputs and local markets (Godart et al, 2011) which is confirmed by their higher propensity to trade internationally and by the size of their trade compared to that of non-multinationals. Multinationals are therefore regarded to be potentially more “footloose” than domestic firms. They also face substantial “shareholder” pressure, which has not always been beneficial for firm stability and continuity (Boot, 2009).

Doing business abroad brings along risks and costs. Only the most productive and efficient firms are able to overcome these costs and bear the risks involved. There is an overwhelming body of empirical evidence for this theory of self-selection (see for instance Wagner, 2005). The same rationale applies to setting up a foreign affiliate. It is not a trivial decision. For example, the choice to serve a foreign market through a foreign subsidiary rather than through exports (proximity-concentration trade-off) requires substantial research and investments. In an early study, McAleese and Counahan (1979) state that these sunk costs will actually ensure that multinationals will behave like domestic enterprises – in the sense that they do not ‘up and leave’ at the first sign of economic headwind - because they cannot undo their foreign investment in the short term. The authors show that there was no difference in employment growth at multinationals and non-multinationals during the Irish recession of the early 70s. But after the recession, multinationals showed stronger growth in employment. Godart, Görg and Hanley (2011) also look at Irish enterprises and examine whether foreign multinationals have developed differently during the crisis than domestic firms. They see that the probability of “exit” or enterprise mortality was many times higher during the crisis than in normal economic times. Before the crisis, the probability of a foreign enterprise exit was much smaller than for domestic firms. However, during crisis both types of enterprises were equally likely to exit. This indicates that employees of multinational enterprises were equally likely to lose their job as employees of domestic enterprises. Where the parent was located – in the EU or in a non-EU country – was not relevant.

It is well established that internationally active firms are larger – in terms of output and jobs – more productive, more capital intensive, more active in R&D than non-traders. Whether they also display higher *growth rates* in terms of production, value added, employment and labour share (share of value added that is destined for the production factor labour) is not clear cut.

The “learning by exporting” hypothesis suggests that enterprises that export somehow benefit from this experience and become even more productive. The same rationale could apply to not only exporters but also to other types of internationally active firms such as multinationals; is there some experience or benefit they enjoy from international business that local firms miss out on which makes them grow faster? Does this apply to other economic variables such as production, value added and jobs as well? This is what we try to establish in this paper.

There is relatively little empirical evidence for this “learning by doing” hypothesis with respect to developed economies. See for instance Rojas-Romagosa (2010) for evidence on large Dutch exporting firms. In this paper we will not re-test the “learning by exporting” hypothesis but instead focus on growth in production, jobs, value added in multinationals compared to non-multinationals.

Doms and Jensen (1989) show in their study of multinationals in the United States that the superior performance of multinational enterprises (American and foreign) compared to non-multinationals is more due to their being “multinational” rather than due to being “foreign-owned”. They investigated this with respect to a number of variables, including the average wage, use of technology and productivity, and came to the conclusion that US multinationals perform the best, followed by foreign multinationals and then the US domestic enterprises. Bruls (2014) and Bruls and Lemmers (2014) demonstrated that Dutch multinationals and foreign multinationals are not statistically different from each other in terms of wage-adjusted productivity and profits.

In this article we build further on this line of literature and investigate whether Dutch employment, production and value added at multinational enterprises in manufacturing developed similarly to that of purely domestic enterprises. We also make the additional distinction between Dutch multinationals and foreign owned multinationals. We also investigate if the input structure of multinationals is significantly different from non-multinationals (value added versus production, wages vs. profits and high paid jobs versus total jobs) in 2013. Here we make also the additional distinction between Dutch multinationals and foreign owned multinationals.

3. Data and methodology

We combine datasets from several sources within Statistics Netherlands to investigate the economic performance of multinationals, foreign multinationals and local firms. Our starting point is data collected by the Structural

Business Statistics (SBS). This is a dataset that contains information on production, value added, compensation of employees for enterprises in the Netherlands and includes a set of basic firm characteristics, such as firm size and economic activity. We selected those enterprises from the Survey SBS that were active in manufacturing during the observed time period 2008-2013. Manufacturing enterprises are defined according to their NACE-2 classification; enterprises with a 2 digit NACE classification between 10 and 33 are characterized as manufacturing enterprises. Subsequently we subdivided manufacturing enterprises into:

1. Manufacturing of “basic necessities” (NACE 10-15 and NACE 31-33)
2. “Resource intensive” manufacturing (NACE 16-25)
3. Manufacturing of machines and electronics (NACE 26-30)

Enterprises that manufacture basic necessities include those that produce food, beverages, tobacco, textiles and clothing, leather and related products. Industries that produce furniture, miscellaneous products and the maintenance and repair of machinery and equipment is also categorized as “basic necessities”. We have defined resource intensive industries as those that manufacture products that heavily rely on natural resources and basic materials. These include the industries that produce (products of) e.g. paper, wood, chemicals, plastics and petroleum products. Lastly we grouped together those enterprises that produce machinery, electronic equipment and other high-tech apparatus. The rationale behind this subdivision into three types of manufacturing firms is that we suspect that certain industries were less impacted by the economic crisis in the past years than others. We expect that the (foreign as well as domestic) demand for basic products such as food and beverages declined less than that for e.g. investment goods such as machinery and equipment as well as resource intensive products such as refined petroleum products.

In this study two different *types* of models have been tested. First we tested models including dummies for the three mentioned groups of manufacturers; (manufacturing of “basic necessities”, “resource intensive” manufacturing and manufacturing of machines and electronics. Secondly we present models where we add extra information on type of activity on a NACE 2-digit level (using dummy variables on NACE 2-digit level) and use dummy variables for being foreign multinational (1 or 0) and for being a Dutch multinational (1 or 0). The results of the models do not differ that much.

Subsequently we employed data from the Employment register (SSB) to obtain data on number of jobs per enterprise. Subsequently, the enterprises in the dataset are characterized according to their international trade status. We distinguish between enterprises with international trade in goods and enterprises without international trade of goods, with a further distinction between

- 1) importers of goods and
- 2) exporters of goods.

The remaining enterprises are characterized as non-traders.

Lastly, we added a classification of the (international) control structure in order to determine multinational activity. Information on the ultimate controlling institute of an enterprise, and whether the enterprise itself has interests or subsidiaries abroad, is derived from the Foreign Affiliates Statistics (FATS) and corporate tax data on foreign participations (see the methodological note in Lemmers et al. 2014). The FATS provides information on the geographical location of the ultimate controlling institute (UCI) of an enterprise. When the ultimate controlling institute of an enterprise is located abroad, than the enterprise and all its associated business units are characterized as “foreign-owned”. If the ultimate control is established in the Netherlands, the enterprise is characterized as “Dutch controlled”.

Information on corporate income taxes on foreign participation provides insight into the investment relationship between Dutch enterprises and enterprises abroad (Lemmers et al 2014). Using this data we were able to deduce which enterprises in the Netherlands have a substantial interest in a foreign company. We distinguish between minority participations (<50 percent) and subsidiaries (>50 percent). Combining the information from the FATS and corporate income taxes, we distinguish three types of enterprises:

- 1) Domestic enterprises,
- 2) Dutch multinationals, and
- 3) foreign multinationals.

Dutch enterprises with a foreign parent are by definition part of a foreign multinational and are characterized as such. The other two categories are all enterprises of which the ultimate control located in the Netherlands but with different international activities. In the simplest case, there are no subsidiaries or other controlling relationships in other countries, and we characterize those enterprises as *domestic*. If a Dutch company does have foreign investments but no majority control, we characterize those enterprises as *domestic*. If the foreign investments do indicate majority control, the enterprise is characterized as a Dutch multinational.

Lastly, for hypothesis testing we excluded the outliers in the ensuing dataset (outliers are based on extreme ratios of share of labour in value added in 2013).

The resulting dataset contains 8021 enterprises in 2013. The composition of the dataset is shown in table 1. The vast majority of enterprises are *domestic*, i.e. not part of a multinational.

Table 1: Composition dataset used for hypothesis testing (based on publication year 2013)

2013	
	Enterprises
Foreign multinationals	1164
Dutch multinationals	1214
Domestics	5643

The first hypothesis we will test in this paper is whether or not multinationals grew faster or slower than non-multinationals between 2008 and 2013. Here, growth is defined in terms of production, value added and employment, so we tested multiple growth variables. We also want to know whether “foreign companies” outperform “Dutch companies” in this respect. We expect that multinationals experienced faster growth than non-multinationals but that the location of ownership (abroad or at home) is less relevant in explaining growth differences. We started out by testing the following regression models

(1)

$$\ln\left(\frac{prod2013}{prod2008}\right) = \alpha + \beta_1 Multinational + \beta_2 \ln(prod2008) + \beta_3 Foreign Investment + \beta_4 Importer2013 + \beta_5 Exporter2013 + \beta_{6a} sizeclass1 + \beta_{6b} sizeclass2 + \beta_7 industry A + \beta_8 industry B + \epsilon$$

We use ‘ln’ here in order to scale developments of small en large enterprises in order to have a more evenly distributed regression analysis.

(2)

$$\ln\left(\frac{value added 2013}{value added 2008}\right) = \alpha + \beta_1 Multinational + \beta_2 \ln(value added 2008) + \beta_3 Foreign Investment + \beta_4 Importer2013 + \beta_5 Exporter2013 + \beta_{6a} sizeclass1 + \beta_{6b} sizeclass2 + \beta_7 industry A + \beta_8 industry B + \epsilon$$

(3)

$$\ln\left(\frac{jobs_{2013} + 1}{jobs_{2008} + 1}\right) = \alpha + \beta_1 Multinational + \beta_2 \ln(jobs_{2008}) + \beta_3 Foreign\ Investment + \beta_4 Importer_{2013} + \beta_5 Exporter_{2013} + \beta_{6a} sizeclass1 + \beta_{6b} sizeclass2 + \beta_7 industry\ A + \beta_8 industry\ B + \epsilon$$

where *Multinational* is a categorical variable that can take one of three values; foreign multinational, Dutch multinational or domestic company. $\ln(prod_{2008})$ is a continuous variable and is the natural logarithm of the production value of a company in 2008, i.e. a proxy for the starting size of an enterprise. $\ln(valueadded_{2008})$ and $\ln(jobs_{2008})$ are constructed analogously. *Industry A* is a dummy variable that controls for the manufacturing activity of a company and can take two values; 1 for industries producing basic necessities and zero for all other activities within manufacturing. *Industry B* is a dummy variable that controls for the manufacturing activity of a company and can take two values; 1 for industries producing resource intensive products and zero for all other activities within manufacturing. The size of an enterprise in terms of employment is measured by the dummy variable *sizeclass1* and can have two values; 1 for enterprises having less than 50 employees and zero for all other enterprises. The size of an enterprise in terms of employment is also measured by the dummy variable *sizeclass2* and can have two values; 1 for enterprises having between 50 and 249 employees and zero for all other enterprises. *Foreign Investment*, *Importer* and *Exporter* are three internationalization variables that take on the value “1” respectively when an enterprise had foreign investments (<50 percent minority stake), imports of goods or exports of goods.

The second hypothesis we will test in this paper is whether multinationals have a different output or input structure in 2013 than non-multinationals have. Output structure and input structure can be defined in different ways, In this paper we have focused on value added per unit production (output structure) and sum of loans per unit value added (input structure).

Is the output structure, value added per unit production, of multinationals significantly different from non-multinationals (value added versus. production)? Additional sub-question: is there a difference between "foreign companies" and Dutch companies' (based on ultimate control)?

(4)

$$\frac{value\ added}{production} = \alpha + \beta_1 Multinational + \beta_2 Importer_{2013} + \beta_3 Exporter_{2013} + \beta_{6a} sizeclass1 + \beta_{6b} sizeclass2 + \beta_5 industry\ A + \beta_6 industry\ B + \epsilon$$

Is the output structure (here distribution of income), of multinationals significantly different from non-multinationals (compensation of employees vs. capital services plus taxes/subsidies on production)? Additional sub-question: is there a difference between "foreign companies" and "Dutch companies" (based on ultimate control)?

(5)

$$\frac{sum\ of\ wages}{value\ added} = \alpha + \beta_1 Multinational + \beta_2 Importer_{2013} + \beta_3 Exporter_{2013} + \beta_{6a} sizeclass1 + \beta_{6b} sizeclass2 + \beta_5 industry\ A + \beta_6 industry\ B + \epsilon$$

The third hypothesis we will test in this paper is whether multinationals pay better than non-multinationals. Is there a significant difference in employee compensation between multinational companies and in non-multinational companies? Are multinationals attracting all the talent or not? Additional sub-question: is there a difference between "foreign companies" and Dutch companies' (based on ultimate control)?

(6)

$$\frac{\text{high paid jobs}}{\text{jobs}} = \alpha + \beta_1 \text{Multinational} + \beta_2 \text{Importer2013} + \beta_3 \text{Exporter2013} + \beta_{6a} \text{sizeclass1} + \beta_{6b} \text{sizeclass2} + \beta_5 \text{industry A} + \beta_6 \text{industry B} + \epsilon$$

We use a data register that includes all jobs for which a salary or wages have been earned. Jobs with a salary higher than the 81st percentile of the Netherlands are characterized as high paid (Jaarsma & Smit, 2015).

Besides the regressions models as presented in 1) through 6) we also tested these six models with 2-digit NACE dummies instead of the aggregated sector dummies. This did not change the results of our models dramatically but does provide extra information on sectoral differences. Hence we present the extended regression model in paragraph 5.

4. Descriptive results

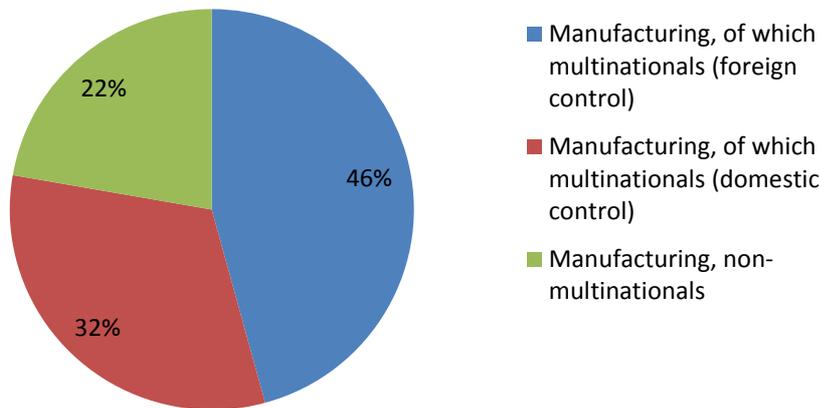


Figure 2- Production in manufacturing, distribution, 2013

In 2013, multinationals accounted for 78 percent of total production in manufacturing. As a consequence, domestic enterprises account for only 22 percent of total production. Foreign controlled multinationals account for almost half of total production in manufacturing. Based on these numbers one can state that multinationals play a significant role in manufacturing. We need to emphasize that the descriptive results need to be interpreted with care. Some major enterprises can have a large impact on the macro figures presented in figure 2, 3, 4 and 5. Also note that the presented ratios in this paragraph are based on aggregated macro-figures, in other words the percentages are not an arithmetic mean of micro ratios. Also note that in this analysis we have not yet corrected for differences in characteristics like size class, activity, international activity; this is the objective of the next paragraph. This should be kept in mind in interpreting these descriptive results.

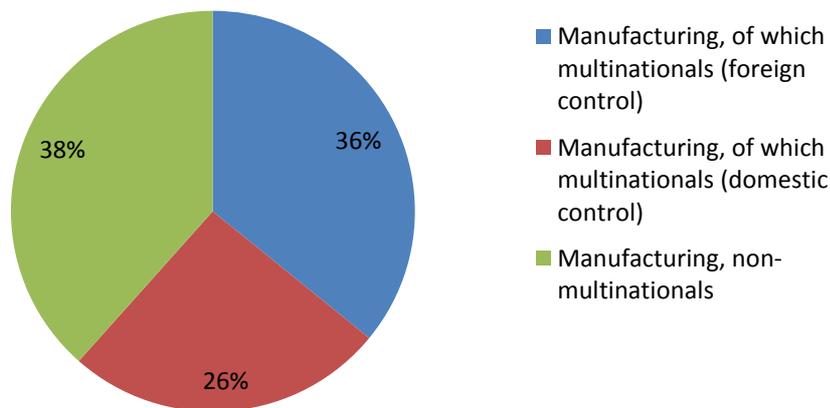


Figure 3- Compensation of employees in manufacturing, distribution, 2013

Multinationals account for 62 percent of compensation of employees in manufacturing. As a consequence, domestic enterprises account for 38 percent of compensation of employees (based on Structural Business Statistics). Foreign controlled multinationals account for 36 percent of compensation in manufacturing.

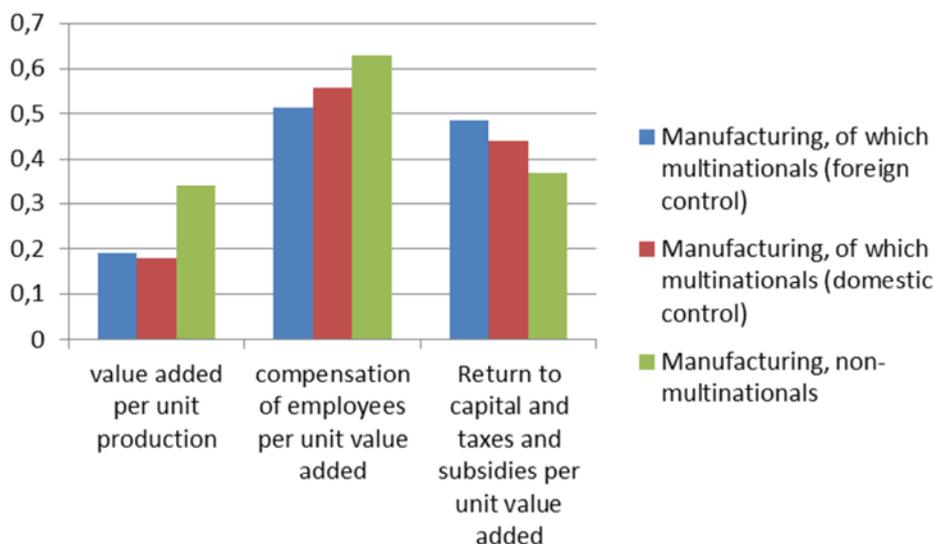


Figure 4- Structure ratios in manufacturing, distribution,(2013)

In Dutch manufacturing, value added per unit production for multinationals is lower than the value added per unit production for domestic enterprises. On average multinationals generate less value added per unit production than domestic producers. Whether this result holds up after correcting for other relevant characteristics, such as enterprise size and sector, is presented in the following paragraph.

On the other hand, the distribution of value added to capital and labour is on macro-level quite different in between multinationals and domestic enterprises. On the macro-level domestic enterprises tend to allocate relatively more to labour and less to capital than multinationals. Whether this result holds up after correcting for other relevant characteristics, such as enterprise size and sector, is presented in the following paragraph.

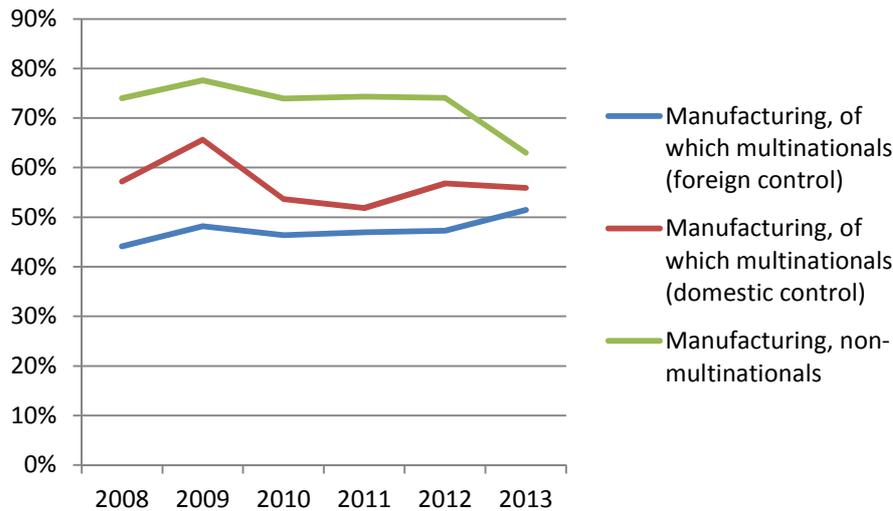


Figure 5- Compensation of employees per unit value added, in manufacturing, distribution,

In the period 2008-2013 the ratio [compensation of employees] per [unit value added] is lower for both types of multinationals (foreign controlled as well as domestic control) than for domestic enterprises. This suggests that non-multinationals pay a higher share of their created value added to their employees than multinationals. In the next section we will test whether this finding holds up when we compare similar enterprises.

5. Regression analysis results

5.1 Growth in 2008-2013

The first hypothesis we tested in this study is whether or not multinationals grew faster or slower than non-multinationals between 2008 and 2013. Growth is defined in terms of production, value added and employment, so we test multiple growth variables. We also test whether “foreign companies” outperform “Dutch companies” in this respect. It is our expectation that multinationals experienced faster growth than non-multinationals between 2008 and 2013 and that the location of ownership (foreign or domestic) is less relevant in explaining growth differences.

(I) Type	(J) Type	Mean Difference (I-J)	Mean Difference (I-J)	Mean Difference (I-J)
		In production growth	In value added growth	In jobs growth
Foreign multinational	Domestic	,156*	,247*	-,027
	Dutch multinational	0,059	,119*	,005
Domestic	Foreign multinational	-,156*	-,247*	,027
	Dutch multinational	-,097*	-,128*	,033
Dutch multinational	Foreign multinational	-0,059	-,119*	-,005
	Domestic	,097*	,128*	-,033

*significant (5 percent)

Table 6: Production, value added and job growth in 2008-2013, pairwise comparison

The economic activity of an enterprise, import and export of goods and size class turn out to be important explanatory variables for production growth. Being a multinational is statistically significant but economically

marginal. Only a small part of the differences in production growth are ‘explained by’ this factor. Foreign multinationals do not perform significantly better than Dutch multinationals. Domestic enterprises perform worse than multinationals (both foreign controlled as well as Dutch controlled multinationals). Dutch multinationals seem to perform significantly better than domestic companies. Size class and the level of production in 2008 explain most of the differences in production growth.

The economic activity of an enterprise, export and import of goods and size class turn out to be important explanatory variables for *growth* in value added. The effect of being a multinational is significant but marginal here as well. Only a small part of the differences in value added growth is explained by this factor. Foreign multinationals seem to perform significantly better (or less bad) than domestic enterprises and Dutch multinationals. Domestic enterprises perform worse than multinationals (foreign and Dutch multinationals). Size class and the level of value added in 2008 explain most of the differences in value added growth.

Type of economic activity of an enterprise, export and import of goods, foreign direct investment and size class turn out to be important explanatory variables for job growth. Being a Dutch multinational is here not significant. Being a foreign multinational is here significant, but has marginal impact. Size class and the level of jobs in 2008 explain most of the differences in job growth.

We want to emphasize here that correlation is something different than causality. More in depth research is needed to explore why multinationals perform differently in manufacturing.

Combined with the pairwise comparison analysis, three experimental findings can be formulated:

-production of multinationals in manufacturing seems to have decreased less sharply than production of domestic enterprises in the period 2008-2013

-value added of multinationals in manufacturing seems to have decreased less sharply than value added of domestic enterprises in the period 2008-2013

-employment of foreign multinationals in manufacturing seems to have decreased more sharply than employment of domestic enterprises in the period 2008-2013

		Standardized Coefficients			Standardized Coefficients			Standardized Coefficients	
		<i>production growth</i>			<i>value added growth</i>			<i>job growth</i>	
Model		2008-2013			2008-2013			2008-2013	
1									
	foreign multinational	0,08	*	0,11	*	-0,04	*		
	Dutch multinational	0,06	*	0,07	*	-0,03			
	Importer	0,04	*	0,03	*	0,04	*		
	Exporter	0,12	*	0,11	*	0,10	*		
	Sizeclass_1	-0,70	*	-0,89	*	-0,62	*		
	Sizeclass_2	-0,34	*	-0,49	*	-0,27	*		
	Dum_10	0,19	*	0,09	*	0,09	*		
	Dum_11	0,03	*	0,02		0,01			
	Dum_12	0,00		-0,02		0,00			
	Dum_13	0,01		-0,01		-0,03	*		
	Dum_14	-0,03	*	-0,05	*	-0,01			
	Dum_15	0,02		0,01		0,00			
	Dum_16	-0,02		-0,05	*	-0,05	*		
	Dum_17	0,02		0,00		-0,01			
	Dum_18	-0,02		-0,02		-0,01			

Dum_19	0,08	*	0,03		0,04	*
Dum_20	0,06	*	0,01		0,00	
Dum_21	0,05	*	0,06	*	0,03	*
Dum_22	0,02		0,00		0,01	
Dum_23	-0,03		-0,08	*	-0,08	*
Dum_24	0,00		-0,01		-0,03	*
Dum_26	0,02		0,02		0,02	
Dum_27	-0,01		-0,01		0,00	
Dum_28	0,05	*	0,04		0,06	*
Dum_29	-0,03		-0,03	*	-0,02	
Dum_30	0,04	*	0,01		-0,01	
Dum_31	-0,05	*	-0,05	*	-0,05	*
Dum_32	0,08	*	0,14	*	0,04	*
Dum_33	0,03		0,04	*	0,03	
LN_var_2008	-0,64	*	-0,74	*	-0,61	*
Foreign shareholding (no daughter)	0,02		0,02		0,04	*
int_19_foreign_multinational	-0,01		-0,02		0,02	
int_20_foreign_multinational	0,03		0,06	*	0,02	
int_28_foreign_multinational	-0,03		-0,02		-0,01	

Table 7: Hypothesis testing for production growth , value added growth and job growth in 2008-2013

5.2. Differences in structure in 2013

Turning now to our second research question, regarding structural differences in input and output of multinationals compared to non-multinationals, we tested two regression models. The first focuses on the output structure of multinationals compared to non-multinationals, measured as production versus value added and wages versus profits)? As an additional sub-question we also test whether there is a difference between "foreign companies" and Dutch companies' (based on ultimate control)? After the work of Piketty there is more public awareness and attention for the distribution of wages and profits.

(I) Type	(J) Type	Mean Difference (I-J)	Mean Difference (I-J)	Mean Difference (I-J)
		<i>value added per unit production</i>	<i>compensation of employees per unit value added</i>	<i>share high paid jobs</i>
Foreign multinational	Domestic	-0,288*	-,076*	,167*
	Dutch multinational	-0,165	-,056*	,093*
Domestic	Foreign multinational	0,288*	,076*	-,167*
	Dutch multinational	0,122	,020	-,074*
Dutch multinational	Foreign multinational	0,165	,056*	-,093*
	Domestic	-0,122	-,020	,074*

*significant (5 percent)

Table 8: Structure ratios in 2013, pairwise comparison

Being a foreign multinational turns out to be negatively correlated with differences in value added per unit production. Foreign multinationals seem to have a significantly lower value added per unit production ratio than domestic enterprises and Dutch multinationals. Domestic enterprises have a significantly higher value added per unit production ratio than foreign multinationals; which corresponds to the findings in graph 5. Employees of domestic firms receive a larger portion of the value added created than employees of any type of multinational, even when corrected for sector, firm size and other characteristics.

		Standardized Coefficients		Standardized Coefficients		Standardized Coefficients	
		<i>value added per unit production</i>		<i>compensation of employees as share of value added</i>		<i>share high paid jobs in total jobs</i>	
		2013		2013		2013	
1							
	foreign multinational	-0,04	*	-0,03	*	0,3	*
	Dutch multinational	-0,01		-0,02		0,2	*
	13_Importer	0,00		0,01		0,0	
	13_Exporter	0,03	*	-0,01		0,0	*
	Sizeclass_1	-0,02		-0,07	*	-0,3	*
	Sizeclass_2	-0,01		0,02		-0,2	*
	Dum_10	-0,02		-0,08	*	-0,1	*
	Dum_11	0,00		-0,04	*	0,0	
	Dum_12	0,00		0,00		0,0	
	Dum_13	-0,05	*	0,00		-0,1	*
	Dum_14	0,00		0,01		-0,1	*
	Dum_15	0,00		-0,03	*	0,0	*
	Dum_16	0,00		0,03	*	-0,1	*
	Dum_17	0,00		0,00		0,0	
	Dum_18	0,00		0,03	*	0,0	
	Dum_19	0,00		-0,01		0,0	
	Dum_20	0,01		-0,05	*	0,0	
	Dum_21	0,01		-0,05	*	0,0	*
	Dum_22	0,00		0,00		-0,1	*
	Dum_23	0,00		0,06	*	0,0	
	Dum_24	-0,01		0,01		0,0	
	Dum_26	-0,04	*	-0,01		0,0	
	Dum_27	0,00		0,02		0,0	
	Dum_28	-0,01		0,02		0,1	*
	Dum_29	0,00		0,00		0,0	*
	Dum_30	0,00		0,00		0,0	
	Dum_31	0,00		0,01		-0,1	*
	Dum_32	0,01		0,02		-0,2	*
	Dum_33	0,02		0,02		0,1	*
	int_19_foreign_multinational	0,00		-0,03		0,0	*
	int_20_foreign_multinational	0,00		-0,07	*	0,1	*
	int_28_foreign_multinational	0,01		-0,02		0,0	*

Table 9: Hypothesis testing for value added per unit production , labour as a share of value added and share of high paid jobs in total jobs, 2013

The economic activity of an enterprise and the size class seems to be important explanatory variables for differences in loan quotes, in other words the share of labour in value added. The effect of being a multinational or not seems to be significant. Foreign multinationals seem to have a significantly lower wage share than domestic enterprises and Dutch multinationals. Domestic enterprises have a significantly higher wage share than foreign multinationals. This observation is quite remarkable. Multinationals generate on average less value added per unit production. The small amount of value added created by multinationals is relatively to larger extent attributed to capital instead of labour. This potentially can be explained by the capital-intensiveness of the activities of the multinationals.

We also investigated if there is a significant difference between the compensation of employees working in multinational companies and of those in non-multinational companies. It seems that share of high paid jobs is significantly higher at foreign and domestic multinationals than at domestic enterprises, even if we control for type of activity and size class. Multinationals on average seem to pay more than their domestic counterparts in the Netherlands for the year 2013 in manufacturing. Foreign multinationals active in oil (NACE 19), chemicals (NACE 20) and in other machinery and equipment (NACE 28) also have a larger share of high paid jobs in total jobs. Size class also seems to have a significant effect on the share of high paid jobs. Based on data of manufacturing it seems that larger enterprises on average have a larger share of high paid jobs in total jobs than smaller enterprises.

Again we want to emphasize that correlation is something different than causality. A large share of high paid jobs at multinational enterprises might be because multinationals want to attract the most talented people, compensate them for more demanding work but it might also be the case that the most talented people are the most productive and help an enterprise expand and grow. More in depth research is needed to explore why multinationals seemingly have a different input structure than domestic firms in manufacturing.

From the previous pairwise comparison, three experimental findings can be formulated:

-in 2013 foreign multinationals in manufacturing seem to have generated significantly less value added per unit production than domestic enterprises.

-in 2013 multinationals in manufacturing seem to have a significantly lower wage share, defined as wage costs per unit value added, than domestic enterprises.

-in 2013 multinationals in manufacturing seem to have a significantly higher share of higher paid jobs in total jobs than domestic enterprises.

5. Conclusions and recommendations

In this tentative study, where we have controlled for different relevant characteristics of enterprises, it seems that multinationals in manufacturing perform differently than domestic enterprises with otherwise similar traits.

From the pairwise comparison six experimental findings can be formulated:

1. production of multinationals in manufacturing seems to have decreased less sharply than production of domestic enterprises in the period 2008-2013
2. value added of multinationals in manufacturing seems to have decreased less sharply than valued added of domestic enterprises in the period 2008-2013
3. employment of foreign multinationals in manufacturing seems to have decreased more sharply than employment of domestic enterprises in the period 2008-2013
4. in 2013 foreign multinationals in manufacturing seem to have generated significantly less value added per unit production than domestic enterprises.
5. in 2013 multinationals in manufacturing seem to have a significantly lower wage share, defined as wage costs per unit value added, than domestic enterprises.
6. in 2013 multinationals in manufacturing seem to have a significantly higher share of higher paid jobs in total jobs than domestic enterprises.

These findings resulted from tests on micro data level for enterprises in manufacturing in the period 2008-2013. Although significant, the economic impact of the effects are rather small. Other factors seem to play a significant role in explaining differences in production growth, value added growth and employment growth, like size of the enterprise and type of activity. Nevertheless, there is significant evidence that multinationals are different from local firms in terms of growth. Again we want to emphasize here that correlation is something different than causality; whether this difference in growth is caused by the fact that they are a multinational or vice versa is not tested. More in depth research is needed to explore the performance of multinationals in manufacturing. It is therefore recommended that experienced econometrists have a look on the simple parsimonious models used to bring this experimental research one step further.

As mentioned earlier the effect of being a multinational is often statistically significant different from a non-multinational but overall the differences are quite marginal economically. Only a small part of the differences are explained by this factor. The models yield a low R squared ratio. This is an indication that the factors in the model do not explain a large part of the variance. Although it was not the objective of this paper to identify all factors responsible for production, employment and value added growth, we still recommend caution in interpreting the results. Extra research in this field is necessary in order to identify extra economic factors explaining differences in the variables investigated.

The impact of multinationals on national economies such as the Netherlands has grown over time (CBS, 2015, Statline²). Most likely, multinationals will have an even bigger impact on the economy in the future due to on-going globalisation, so therefore it is important to monitor and understand the socio-economic impacts of activities of multinationals on the economy. The results of this experimental research seem to suggest that multinationals perform different than non-multinationals in Dutch manufacturing industries during the economic crisis. In crisis years multinationals seem to perform better than non-multinationals. Time series data for enterprises in manufacturing seem to suggest that multinationals in manufacturing in general have more than average an incentive to maximize return to capital by laying off employees in the period 2008-2013 than non-multinationals. For a proper comparison between multinationals and non-multinationals it would be wrong to consider the two as static groups. One group might grow more just by buying already existing enterprises from the other group. In this paper we use micro data to circumvent this problem. In the case of a significant event (a merger, acquisition, etcetera), at least in theory, an extra characteristic should be included in the analysis to control for such an event. In testing the hypotheses on growth we included only identical statistical units over time. It would be interesting to quantify the impact of huge events on macro figures to the extent possible (confidentiality).

We analysed similar statistical units over time in this study. In other words we only included survivors in the analysis. This approach has another disadvantage. Domestic companies could be better “survivors” than “multinationals” are. This potentially could lead to a bias in the results if multinationals are more critical and decide to stop business activities earlier when things are going in the wrong direction. See for more information on this topic CBS (2012). More research is needed in order to quantify this potential bias in the results.

Being a multinational or not is determined on the level of the enterprise group. Economic information is for the purpose of this study collected on analysed on the level of the business unit (kind of activity unit). Certain characteristics, like for example size class, are analysed on the level of the business unit and not on the level of the enterprise. Does a small business unit belonging to a big enterprise perform differently than a small company not belonging to a big enterprise? What if we impose the size class of the corresponding enterprise in hypothesis testing? Does this result in different regression results? It is recommended to investigate these kind of questions in future research.

² <http://statline.cbs.nl/Statweb/publication/?DM=SLNL&PA=81358NED&D1=3-4,9-10&D2=0&D3=2&D4=a&VW=T>

Nowadays there is a lot more attention for the distribution of wages and profits (after the work of Piketty). These capital gains are footloose and can be redistributed to foreign economies and therefore – in the end – not be part of disposable income of Dutch residents. A change in disposable income can be very important for the development of consumption and therefore for economic growth of the Dutch economy. Although it seems that the share of labour income in total value added is on average lower at multinationals it also seems that multinationals in manufacturing seem to have a significantly higher share of higher paid jobs in total jobs than domestic enterprises. At first instance this seems to be quite contradictory. This observation could potentially be explained by the assumption that multinationals are on average more capital intensive. Typical employees at multinationals in Dutch manufacturing could be highly skilled and highly educated employees managing and operating very complicated well-advanced manufacturing sites. The labour intensity of these activities is relatively low but due to the high complexity the few employees involved are paid relatively well. Connected to this explanation is that multinationals outsourced more of the labour intensive stages of their production, either to other countries (which partly explains their higher imports) or to domestic suppliers (e.g. cleaning, reception, security) to focus on their core business. Further research on the possible different value chains and the different type of work (business functions) at multinationals and non-multinationals is necessary. A first start has been made by Fortanier and Miao (forthcoming).

It is therefore also recommended to add information on the level of gross fixed capital formation into the model. Gross fixed capital formation can be a proxy for capital intensiveness of an enterprise. Information on gross fixed capital formation is available in the Structural Business Statistic so here are opportunities.

This study is positioned as a hypothesis -generating paper, a starting point for further research into the true underlying factors for the differences between multinationals and non-multinationals. If we assume that multinationals will have even a larger share in the total economy in the future and if we assume that the wage share of 2013 keeps constant we can predict more inequality in flows attributed to labour and capital in the future. For this reason it is interesting to monitor wage shares of multinationals and domestic enterprises more frequently over time. It is recommended to monitor *and* understand this wage share (compensation of employees as a share of value added) at least once every 5 years in manufacturing. This flow of information and linked analyses can help policy makers to construct well designed policies for these developments.

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