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Firm Performance and Business Environment

How Important and Predicative Are Municipality Rankings for Firms´ Performance in Norway?

Hans Jakob Collett Humlevik

Supervisor: Aksel Mjøs

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NORWEGIAN SCHOOL OF ECONOMICS

1. Abstract

A number of empirical papers have concluded that there is a significant correlation between a firm's business environment - encompassing factors such as education, labour, demographics and health – and its financial performance. It has been argued that an improvement of the business environment in a region also improves its economic strength by increasing local firms' performance.

This master thesis tests if such a relationship is evident also in Norway. I use two large datasets on firm performance and municipality rankings to create models that control for several layers of fixed effects. Firstly, I investigate the relationship between business environment and individual firm performance. Secondly, I look at the municipality level aggregated performance of firms. Lastly, I analyse the connection between a firm's moving behaviour and the change in its business environment. To gain further insights on the topic, the paper additionally splits the tested firms into industry and size groups.

In general, I do not find a significant relationship between local business environment and firm performance, which is in disagreement with most of the relevant literature. However, for small firms and firms within two industry groups, evidence of a relationship is observable. Additionally, investigation of the role played by the fixed effects reviles that the region fixed-effect, including factors such as the business environment but also other factors, plays a major role for the performance of small and medium sized firms. Moreover, I found that the business environment significantly affects a firm's moving decision. In fact, this relationship holds true for most firms in the dataset.

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2. Introduction

It appears to be a general agreement that a firm's business environment - encompassing factors such as education, labour, demographics and health – has a significant effect on its financial performance. This relationship has been the ground for major political actions in both developing and developed countries, and the argument that one should improve the business environment to increase an area's economic strength is well known. Simply stated, the underlying hypothesis is that firms that face a "better" business environment will also perform better.

Several publications, such as Hausman, Rodrik, and Velasco (2004), have furthermore argued that the quality of the business environment vary widely across regions and countries. If such a variation in the business environment is evident also within Norway, this opens up for an empirical investigation of the correlation between the local business environment and firm performance.

The following master thesis investigates this empirical setting and tests the relationship between business environment and firm performance in Norway using two types of data. The first type comprises a large firm level dataset covering all Norwegian enterprises and groups in the period 1992-2015. The dataset contains yearly accounting and company information for 240 000 to 290 000 companies in the period of investigation. The second dataset is two-split and comprises of annual municipality rankings for all Norwegian municipalities in the period 2010-2016. The first part is published by The Confederation of Norwegian Enterprise (NHO), and ranks all municipalities on five separate enterprise-focused measurements. The second part is published by Kommunal Rapport (KR) and ranks municipalities on 12 community-focused measurements.

Relevant literature analysing the effect of business environment on firm performance mostly test the relationship on a country level using the Business Environment and Enterprise Performance Survey (henceforth BEEPS). As far as my knowledge, no relevant literature tests this relationship on a municipality level. Furthermore, as the BEEPS has only been conducted

five times since 1999[1], and mostly with different respondents each time, the current literature has very limited access to panel data and thus focus mostly on cross sectional data analytics.

With this respect, the data made available for this thesis opens up for an interesting discussion on the effect on local Norwegian business environment and its relationship to firm performance. In particular, this thesis wishes to use the two main Norwegian municipality rankings as proxies for the local business environment and test these rankings against different measurements of firm performance. I will look at both individual and aggregated firm performance, and will in addition investigate the relationship between the business environment and a firm´s moving behaviour.

The thesis is structured as follows. Part 3 will introduce the relevant literature on business environment and firm performance. Part 4 will thereafter describe the data used in this paper before part 5 will introduce the method used to identify the relationship between business environment and firm performance. Part 6 will discuss the results and part 7 concludes.

[1] In addition, most literature only use the 2002 and 2005 survey.

3. Literature Review

The relationship between business environment and firm performance has been widely analysed in a large and growing empirical literature, using data on country, industry and firm level. However, despite this large volume of relevant literature, there are substantial gaps in their empirical findings and conclusions. Commander and Svejnar (2011) explain this inconsistency in results by the fact that the measurement of business environment has encountered major methodological challenges that may have generated biased estimates.

Firstly, a large amount of the literature relies on country level proxies for business environment such as governance (Kaufmann, 2003), competitiveness (World Economic Forum, 2005), strength of the legal system (Durnev & Kim, 2005) and the level of economic freedom (Heritage Fundation, 2004). Commander and Svejnar (2011) argue that these datasets of aggregated proxies contain very little or no variation across time, thus making it hard to distinguish the business environment proxies from country-, sector- or firm-specific effects.

This problem was addressed by authors such as Rajan and Luigi, (1998) and Pagés and Micco, (2007). By using data on an industry level, they could control for country and industry fixed effects, and thus reduce the problem of omitted variable bias. However, these studies rely on the benchmark country, the US, having optimal value of the business environment.

Finally, and more recently, a wide range of studies based on firm level datasets have emerged, taking advantage of the cross-firm difference in performance and perceived business environments. While these papers have a major advantage over the more aggregated studies using data on a country or industry level, they do also face some empirical challenges. Firstly, most of the relevant studies are based survey data (the majority of these use the BEEPS[2]), thus relying on the firms themselves to report accurate data on business environments and performance. However, when asked about their perception of their own business environment, it is reasonable to assume that some respondents form their answer based on their own financial performance. For example, it might be the case that highly performing companies

[2] Business Environment and Enterprise Performance Survey

perceives their business environment as better than lower performing companies in the same environment.

Commander and Svejnar (2011) try to address this problem by regressing a firm's performance on the perceived business environment from other respondents in the same industry and country, and thus excusing the response from the dependent firm.

A second challenge when using survey data is the level of accuracy of performance data. While Commander and Svejnar (2011) do not address this issue, Batra, Kaufmann and Andrew (2003) test the level of accuracy is a similar survey[3]. They asked firms in the survey to provide an estimate of the share of revenue that firms like their own do not report in the survey. Based on these responds, Batra, Kaufmann and Andrew (2003) find that firms chose to hide 19 % or their annual revenue. While based on a different survey than what most of the relevant literature is based on, it can indicate that firms in general tend to underreport their earnings.

A third problem with most survey datasets, and in particular the BEEPS, is the low amount of time series data. While the BEEPS has been conducted five times since 1999, most of the relevant literature only use data from the 2002 and 2005 surveys. Furthermore, as only a limited number of the companies participate in both the 2002 and 2005 survey, the amount of time series data is limited. This makes it difficult for the relevant papers to control for firm fixed effects even though they hold firm level data.

These methodical challenges have resulted in mixed results when testing the relationship between business environment and firm performance. While a large portion on the country- and industry-level literature conclude with a significant relationship between business environment and firm performance, some of the more recent papers, such as Commander and Svejnar (2011), argue that this relationship loses its significance when controlling for country, year and sector fixed effects.

[3] Batra, Kaufmann and Andrew (2003) uses the World Business Environmental Survey (WBES)

4. Data

4.1 Data Sources

4.1.1 Municipality Data Sources

Municipality data comes from The Confederation of Norwegian Enterprise's (NHO) *Kommune NM* and Kommunal Rapport's (KR) *Kommunebarometeret*. Both reports rank all Norwegian municipalities annually using slightly different variables and measurements. *Kommunebarometeret* is more comprehensive, while *Kommune NM* focus more on business related factors.

TABLE 1: List of NHO and KR rankings

	Kommunal Rapport	**NHO**
Rankings	Elementary school	Industry and commerce
	Elderly care	Labour market
	Child welfare	Demographics
	Kindergarten	Competence
	Health	Municipality economy
	Social support	**Total**
	Culture	
	Economy (municipality)	
	Costs	
	Environment and resources	
	Administrative procedures	
	Water, drainage and renovation	
	Total	

KR's *Kommunebarometeret* reflects 141 key factors within 12 different sectors. Data comes from Statistics Norway´s Kostra database with supplementary data collected from Statistics Norway, The Norwegian Directorate for Education and Training, The Norwegian Directorate of Health, Norwegian Institute for Public Health and Norwegian Cultural Index from Telemark Research Institute. The current year ranking indicates last year's municipal performance, with some inputs from the year before last. This practise has been coherent since the start in 2010 and rankings are therefore comparable over time.

Kommunebaromteret reports both 12 individual sector-rankings and 1 *total* ranking covering all sectors. The *total* ranking weighs each underlying sector unequally. Kommunal Rapport considers the two sectors elementary school and elderly care as most important, giving them a weighting of 20 percent each, while the sectors economy, child care and kindergarten all gets a weighting of 10 percent each. The least important sectors all have a weighting of 2.5 percent each. The sectors considered least important do also suffer from some missing data.

The 12 individual sectors are elementary school, elderly care, child welfare, kindergarten, health, social support, culture, (municipality) economy, (municipality) costs, environment and resources, administrative procedures and water, drainage and renovation

I consider the data from *Kommunebarometeret* to be of high quality due to requirements imposed by the underlying governmental data sources.

Menon Economics, on behalf of The Confederation of Norwegian Enterprises (NHO), releases *Kommune NM* annually. The report builds upon 20 key factors within the five sectors industry and commerce, labour market, demographics, competence and municipality economy. NHO uses data from Statistics Norway and the Norwegian Welfare and Labour Administration (NAV).

The sector indication for industry and commerce expresses growth in private businesses and contains four sub-indicators. The sub-indicator *industry variation* measures the robustness in the industry with respect to the spread over several sectors. A high value implies a well-diversified local industry that is robust against market movements. *Income level* serves as an indicator for the private purchasing power in the given municipality, while *private employment* reflects the relative size of the private sector. *Municipality's purchase of private services* indicates the municipality´s privatisation and use of the local industries´ supply.

Labour market covers *employment rate*, *sickness absence, impasse share* and *unemployment rate*, which all expresses the health of the local employment market. *Labour market integration* covers the degree of cross-municipality commuting and interaction.

The sector demographics includes *population growth* and *net immigration.* High level of population growth can indicate an attractive labour market and business environment. *Young compared to old* empresses the aging of the local population.

Competence measures the competence level in the municipality, with the sub-indicators *minimum four years of higher education, technical and scientific education* and *the supply of labour with qualifying examination.*

Lastly, municipality economy measures different aspects of a municipality's incomes and costs. *Administration expenses* estimates the balance of net costs to the administration per inhabitant. High *municipality income* and high *municipality ability to pay* indicates good financial management. *Property tax* on commercial property reflect higher tax pressure and counts negatively to the score. *Aging*, an indicator of the share of population above 80 years in 20 years, predicts the future burden of the elder boom.

NHO weights all sub-indicators equally in the main indicator, and all main indicators equally in the Total ranking. Each municipality gets an annual ranking on each sub-indicator with a score from 1 (best) to 429 (worst).

I have supplemented the dataset with a centralization index from the Norwegian Institute for Urban and Regional Research. The index ranks all municipalities based on their location relative to large Norwegian cities. Additionally, the report also includes data on the annual number of bankruptcies and start-ups, collected from Statistics Norway's database.

4.1.2 Firm Level Data Sources

Firm level data is collected form SNF's[4] and NHH's[5] Database of Accounting and Company Information for Norwegian Companies. The database contains company and consolidated accounts for all Norwegian enterprises and groups for the years 1992 to 2015. SNF annually receives data from the Brønnøysund Register Centre via Bisnode D&B Norway AS and Menon Business Economics. The database has received additional company information such as address, industry codes, municipality code etc. from various sources.

The formatting of the incoming data has been inconsistent with differences in variable names and reporting standards and the dataset has therefore required comprehensive reorganisation and quality insurance by NHH and SNF. The variables in the database have been reorganised in accordance with the structure of the Accounting Act and relabelled to ensure constancy in the data. The dataset includes some new accounting based variables.

The 2015 data set has been reviewed and expanded by Aksel Mjøs, dr.oecon., associate professor at the Department of Finance at NHH and is perceived to be of high quality.

In addition to the Database of Accounting and Company Information for Norwegian Companies, I have also supplemented the dataset with numbers on the delivery of products and services from companies to Norwegian municipalities, provided by Kommunal Rapport.

[4] Institute for Research in Economics and Business Administration

[5] Norwegian School of Economics

4.2 Sample Selection

As both NHO and KR firstly published municipality rankings in 2010 and the latest firm level dataset includes companies up to 2015, the period 2010-2015 is set as the natural testing period. I have removed firms with annual revenue below NOK 100,000 or above NOK 100,000,000 from the dataset. I have additionally dropped firms with missing revenue numbers. Firms that went bankrupt, or that stopped reporting in the testing period, are included although this leads to an unbalanced dataset. Firms registered with municipality number 2111 (Spitsbergen) or 9998 (Foreign) are removed as there are no municipality rankings for these areas. I have also excluded firms with municipality number 0 or missing numbers.

In order to avoid pure financial holding companies, regulated firms, sectors with significant governmental involvement like farming and health care and public services companies, I have excluded the following industries: agriculture, forestry, electricity generation and distribution, water management, financial services, insurance, the government sector, education, health care, waste management, political and religious groups, cultural services and non-governmental organisations (NGOs).[6] The motivation behind this is to only include active commercial companies most likely affected by their local business environment.

To gain further insight in the later analysis, I have also created a set of new variables based on existing data. Table 2 presents all variables used with description and formulas. Total revenue, total assets, EBITDA and EBITDA margin are all standard variables from the original firm level dataset. A new employee variable that offspring from payroll expenses was created to replace the original number. The motivation behind this is that firms calculate employees based on the number of people enlisted in the organization, not by the number of full-time equivalents (FTEs). The new number assumes an average per-employee cost of NOK 700,000 and I believe that the new adjusted employee number is more representative of the true firm size. Total and local competitors represents the number of firms within the same 5-digit sector-code minus one, and is calculated on both a municipality level (local competitors) and country level (overall competitors). Value added is the sum of the operating profits, the depreciation costs and the labour costs, and represents the value a firm adds to the society. The number of

[6] I have followed the same procedure as Hetland & Mjøs (2017)

bankruptcies and start-ups[7] per municipality comes from Statistics Norway. The centralisation index scores all municipalities on a 1-10 scale based on their proximity to larger metropolitan areas. Percentage amount of revenue from municipalities represents the share of a firm's total revenue that offspring from the delivery of products to municipalities. Aggregated total assets and employees is equal to the sum of all firms' annual employees and total assets per municipality.

I have additionally developed dummies on ownership, size and industry. The ownership and industry dummies are relatively straight forwards with respect to the firm's majority owner and industry classification. Firms without information on ownership are not included. The size dummies indicates the number of employees (FTEs) and is three-split. Small firms have 10 or less employees, medium firms 11-49 employees and large firms has 50 or more employees.

TABLE 2: Description of variables

Variable	Description [Formula in parenthesis]	Type
Total revenues	Comprises all income the company receives during the period. [salgsinn + adinn]	000' NOK.
Employees	Estimate based on Payroll expenses. [lonnsos/700]*	Nr people
Total assets	Fixed assets plus current assets [anl + oml]	000' NOK.
Age	Time since establishment [current year - est. year + 1]	Years
Total competitors	Number of firms within same 5-digit industry code [Unique nr of orgnr within same main industry code (SN2007) - 1]	Nr firms
Local competitors	Number of firms within same 5-digit industry code per municipality [Unique nr of orgnr within same main industry code (SN2007) and same kommnr - 1]	Nr firms
Value added	Operating result + Depreciation + Cost of labor [driftsrs + nedskr + lonnsos]	000' NOK.
Number of firms	Number of firms per municipality and year. [Count unique nr of orgnr within same kommnr and year]	Nr firms
EBITDA	Earnings before interest, tax, depreciation, and amortization. [driftsrs + avskr + nedskr (+nedskranl)]	000' NOK.
EBITDA Margin	EBITDA as a share of totinn in decimals. [ebitda/totinn]	Percent(decimal)
Move	Dummy = 1 if the firms has changed municipality number. [Dummy = 1 if kommnr-L1.kommnr is not 0]	Dummy
Bankruptcies	Number of Bankruptcies per municipality and year. [Collected from SSB]	Nr firms per 1000
Bankruptcies (%)	Number of Bankruptcies per municipality and year as a share of total firms. [Bankruptcies/number fo firms*1000]	Percent(decimal)
Start-ups	Number of start-ups per municipality and year. [Collected from SSB]	Nr firms per 1000
Start-ups (%)	Number of Start-ups per municipality and year as a share of total firms. [start-ups/number of firms * 1000]	Percent(decimal)

[7] Only start-ups that survived the first year of operation is included

Table 2 continued:

Centralisation index	NIBR´s index ranking all municipalities from 1-10 based on their centralization where 1 is most central.	1-10 index
% of revenue from municipalities*	A percentage showing how large amount of a firms total revenue that origin from municipalities. [revenue from municipality/total revenue]	Percent(decimal)
Ownership (Government)	Dummy = 1 if more than 50 % of the firm is owned by the government, 0 otherwise. [= 1 if eierstruktur = 5]	Dummy
Ownership (Foreign)	Dummy = 1 if the firm is owned by a foreign person/company, 0 otherwise. [= 1 if eierstruktur =9]	Dummy
Ownership (Listed)	Dummy = 1 if the firm is publically listed, 0 otherwise. [= 1 if eierstruktur = 1]	Dummy
Ownership (Cooperation)	Dummy = 1 if the firm is owned by a cooperation, 0 otherwise. [= 1 if eierstruktur = 7]	Dummy
Ownership (Private)	Dummy = 1 if the firm is owned by a private person or a private company, 0 otherwise. [= 1 if eierstruktur = 2 or 3 or 4 or 6]	Dummy
Aggregated Total Assets	Sum of total assets per municipality and year. [sum total assets per kommnr and year]	000' NOK.
Aggregated Total Employees	Sum of employees per municipality and year. [sum employees per kommnr and year]	000' NOK.
Size(Small)	Dummy = 1 if the firm has 10 or less employees, 0 otherwise. [= 1 if ansatte < 11]	Dummy
Size(Medium)	Dummy = 1 if the firm has 11 - 49 employees, 0 otherwise. [=1 if ansatte >10 & < 50]	Dummy
Size(Big)	Dummy = 1 if the firm has 50 or more employees, 0 otherwise. [=1 if ansatte >49]	Dummy
Industry(Commerce)	Dummy = 1 if the firm is in the Commerce sector. [= 1 if bransjek_07 >= 45000 & < 49000]	Dummy
Industry(Logistics)	Dummy = 1 if the firm is in the Logistics sector. [= 1 if bransjek_07 >= 49000 & < 58000]	Dummy
Industry(Secondary)	Dummy = 1 if the firm is in the Secondary sector. [= 1 if bransjek_07 >= 5000 & < 45000]	Dummy
Industry(Other)	Dummy = 1 if the firm is in other industries. [= 1 if bransjek_07 >= 84000]	Dummy

*This methodology follows the one used by Aksel Mjøs (NHH) in collaboration with Menon Economics

4.3 Summary Statistics

4.3.1 Firm Statistics

TABLE 3: Firm Level Summary Statistics in 2010 and 2015

Variable	2010**			2015		
	Obs*	Mean	Std. Dev.	Obs*	Mean	Std. Dev.
Total revenues (000' NOK)	111,252	9,986	18,734	138,470	8,889	27,155
Employees	105,953	6.33	15.51	136,376	7.65	18.81
Total assets (000' NOK)	111,252	17,217	662,653	138,470	15,674	231,362
Age	111,252	12.04	11.65	138,470	12.20	11.92
Total competitors	111,252	296	340	138,470	423	495
Local competitors	111,252	12.46	32.29	138,470	18.90	51.85
Value added (000' NOK)	111,252	2,985	10,981	138,470	3,094	22,415
EBITDA (000' NOK)	111,252	846	9,651	138,470	944	23,178
EBITDA Margin	111,247	4%	188%	138,463	4%	536%
Bankruptcies	111,239	170	284	138,470	175	285
Bankruptcies (%)	111,239	4%	2%	138,470	3%	4%
Start-ups	105,994	107	3494	128,321	127	4430
Start-ups (%)	105,994	3 %	2 %	128,321	2%	4%
Centralisation index	109,788	3.96	2.69	134,989	3.98	2.73
% of revenue from municipalities***				138,463	3%	46%
Ownership (Government)	111,252	1%	10%	138,470	1%	9%
Ownership (Foreign)	111,252	8%	27%	138,470	4%	20%
Ownership (Listed)	111,252	0%	2%	138,470	0%	2%
Ownership (Cooperation)	111,252	1%	8%	138,470	1%	8%
Ownership (Private)	111,252	90%	30%	138,470	94%	23%
Aggregated Total Assets (Billion NOK)	111,252	159.84	283.00	138,470	162.00	293.00
Aggregated Total Employees	111,252	16,377	27,130	138,470	20,612	34,203
Size (Small)	111,252	92%	26%	138,470	92%	26%
Size (Medium)	111,252	8%	27%	138,470	8%	27%
Size (Big)	111,252	0%	6%	138,470	0%	7%

*Number of observations is always in absolute values

**All financial number are indexed to 2015 values

***2016 revenue from municipalities over 2015 total revenue

Table 3 summarizes some of the variables in the dataset conserving firms and their performance in 2010 and 2015. Accounting numbers are in thousand NOKs. Concerning size, most firms (92 %) falls under the *small* category, having 10 or less employees. This is also clear when considering that the mean number of employees was 6.33 in 2010 and 7.65 in 2015. It is worth noting that we can find a significantly higher standard deviation related to the number of employees and revenues in 2015 than in 2010. While total revenue has decreased throughout the period, both value added and EBITDA has increased. The EBITDA-margin, however, has remained the same.

We can furthermore observe a large increase in competitors on both the local and national level. The centralization index shows that most firms are located relatively central with a mean of four and standard deviation of 2.7. Data on firms' delivery of products and services to municipalities are only available for 2016. However, as 2016 firm performance data is currently unavailable, the 2015 numbers serves as a proxy for the percent of total revenue related to the delivery of goods to municipalities.

Ownership variables shows that most firms (90 %) are privately owned (wholly or majority owned by a person or private company), with 8 % owned by a foreign entity and 1 % owned by a cooperation. Another 1 % is majority owned by the Norwegian state. Only 0.05 % of the included companies are publically listed. Note that we have excluded firms with total revenues of more than 100 million NOK and that this most likely has removed several listed companies.

Aggregated total assets and employees (the sum of total assets and employees per municipality) has also increased from 2010 to 2015.

As we can observe relatively large variations on several firm characteristics in 2010 and 2015, this might indicate that we have some nation-wide drivers across the years that we should account for. In order to control for this potential yearly driver, I will introduce year fixed effects in forthcoming models.

Table 4: Mean of company characteristics ordered by geography

	Østviken	Innlandet	Vest-viken	Sørlandet	Vestlandet	Trøndelag	Nord Norge
Total Revenue (000' NOK)	9822	8970	8813	8288	9776	9220	8870
Employees	6.09	6.59	5.87	5.72	6.63	6.60	6.45
Total assets (000' NOK)	21944	7587	8389	10013	15028	12296	8112
Age	12.75	12.44	12.43	11.60	12.77	12.65	12.50
Local competitors	33.39	1.15	2.57	3.41	7.63	6.57	1.65
Value added (000' NOK)	3383	2799	2804	2610	3476	3206	2784
EBIDA (000' NOK)	942	705	717	617	991	936	705
EBITDA Margin	2%	8%	7%	6%	6%	3%	8%
Move	2%	1%	2%	1%	1%	1%	1%
Nr of firms	11905	379	875	1085	2246	2145	541
Centralization index	2.07	6.11	4.64	5.28	4.50	4.75	6.05
Bankruptcies	405.95	12.67	29.07	38.52	83.68	65.28	18.94
Bankruptcies (%)	4%	3%	3%	3%	3%	3%	3%
Ownership							
Private	90%	94%	94%	96%	95%	94%	94%
Cooperation	0%	1%	1%	0%	1%	1%	1%
Foreign	8%	3%	4%	3%	3%	3%	3%
Government	1%	1%	1%	1%	1%	2%	2%
Listed	0%	0%	0%	0%	0%	0%	0%
Size							
Small	92%	93%	93%	94%	91%	92%	94%
Medium	9%	8%	8%	7%	10%	8%	7%
Big	1%	0%	0%	0%	1%	0%	0%
Industry							
Commerce	23%	25%	25%	23%	22%	22%	24%
KIBS*	35%	22%	27%	27%	30%	27%	23%
Logistics	7%	11%	9%	9%	9%	11%	12%
Secondary Industry	18%	28%	26%	28%	25%	25%	26%
Other	7%	7%	6%	6%	7%	8%	8%

*Knowledge Intensive Business Services

As shown in table 3 above, we can observe relatively large variations on several firm characteristics across the two years 2010 and 2015. In order to see if we can find significant variation in firm characteristics also across regions, I created a number of regional means over the 5-year testing period using firm data. Table 4 presents the results. Note that number of firms, competitors and bankruptcies are on a municipality level.

Firstly, and not surprisingly, we can observe that municipalities in the region around Oslo (Østviken) has the highest amount of firms, with municipalities in regions surrounding Bergen (Vestlandet) and Trondheim (Trøndelag) having the second highest number of firms. We can

furthermore see that firms in these regions tends to be bigger when looking at total revenue, EBITDA, value added and total assets, but that the average number of employees remains relatively flat throughout the country. The same is true for the mean firm age, which remains the same for all regions. EBITDA-margin is considerably lower for firms in Østviken and Trøndelag, while firms in Østviken and Vest-Viken tends to move more compared to others. We can also observe that firms in the Østviken region to go bankrupt more often than the rest.

When looking at firm ownership we can observe relatively few differences throughout the country, except from foreign ownership, which is significantly higher for firms in the Østviken region. Indicators of firm size shows that most firms in Norway (92-94 %) have 10 or fewer employees with 0-1 % of the included firms having more than 50 employees.

Within the industry-characteristics, there are relatively few variations in the percentage amounts of firms in the commerce- (stores etc.), logistics- (including shipping) and *others* sectors. However, it appears to be a trend that the regions with a high amount of knowledge intensive business services (KIBS) are also the regions with the lowest level of secondary industry. Østviken has, for example, 35 % KIBS and only 18 % secondary industry. Innlandet, on the other hand, only has 22 % KIBS, but 28 % Secondary Industry.

While there are several similarities between firms across regions, we can observe a trend where the regions surrounding the biggest cities sticks out compared to the rest of the country. To account for this, all models in the analysis will use the centralisation index introduced earlier as a control variable. However, we can also find some variables, like the EBITDA-margin, that vary across regions, but that seems unrelated to metropolitan areas. In order to control for this regional effect and ensure robust analysis, future models will include a region fixed effect estimator in addition to the year fixed effect estimator mentioned above.

4.3.2 Municipality Statistics

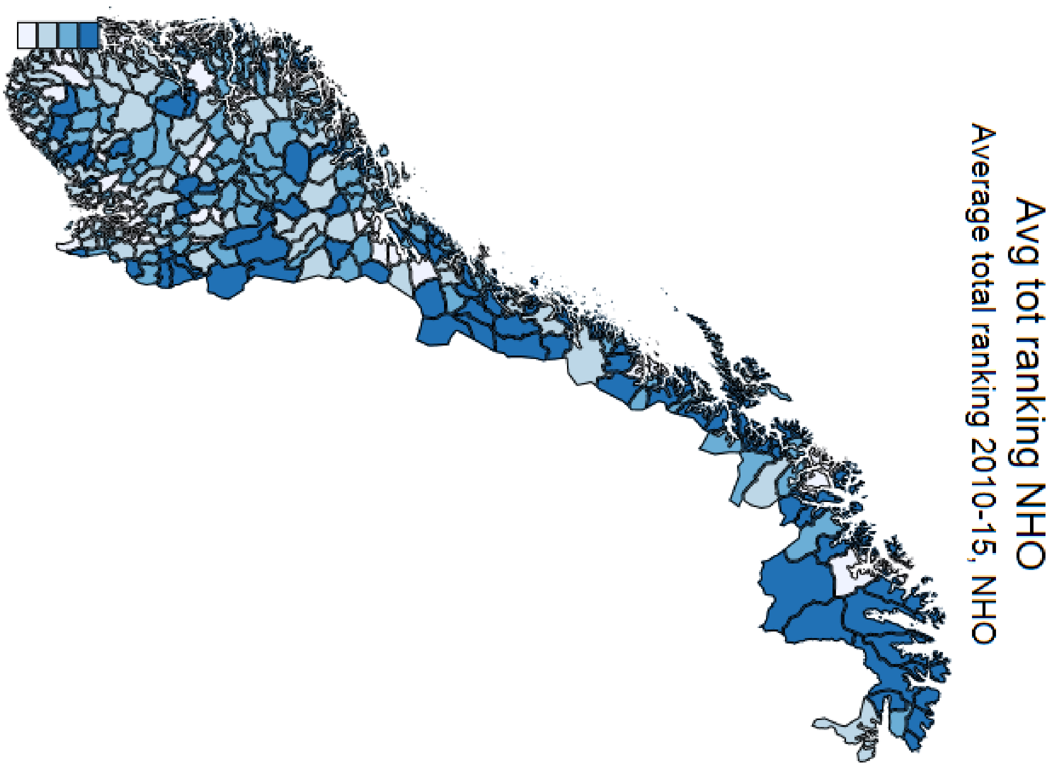

Figure 1: Average Ranking NHO

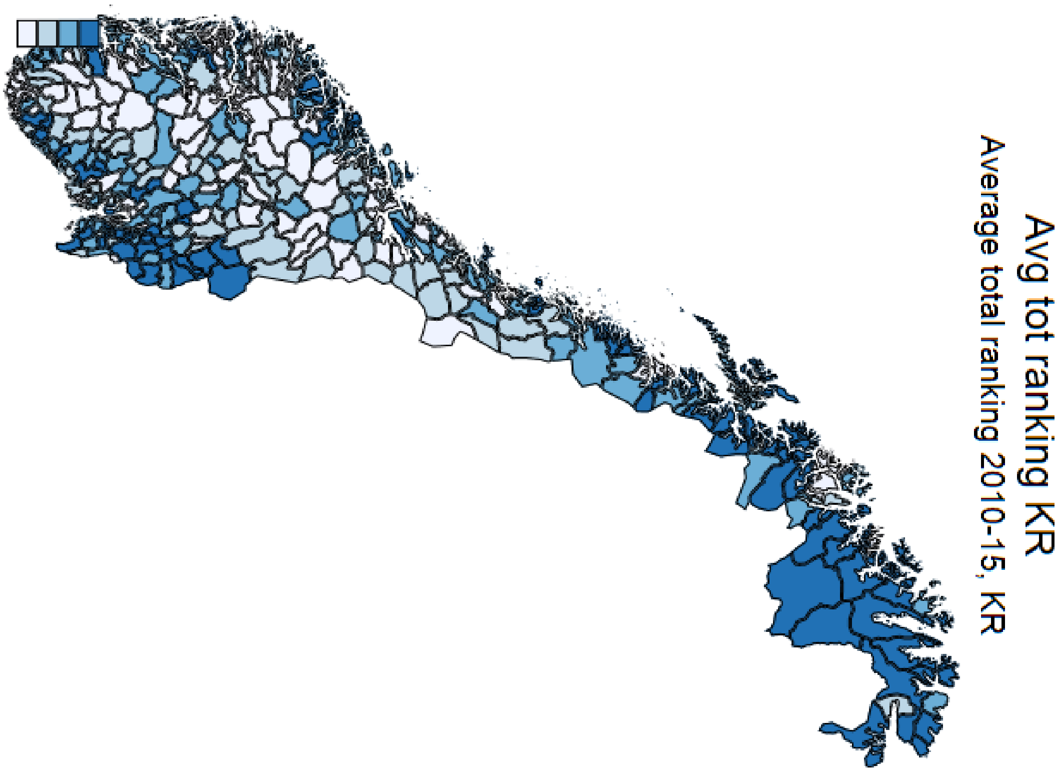

Figure 2: Average Ranking NHO

Figure 1 and 2 illustrates the five-year average ranking of all municipalities as published by NHO and KR. The figure illustrates four percentiles of the overall (*total*) ranking by both publishers averaged over the years 2010-2015. The lowest 25 % scoring municipalities are marked in dark blue, and the best 25 % municipalities are marked in white. Both publishers rank municipalities in the northern part of Norway relatively low throughout the period. Similarly, they both rank municipalities close to the Oslo area high. However, there are some clear differences in the central areas of Norway. Here, NHO ranks municipalities lower than KR does, and some municipalities are even on completely different parts of the scale depending on the publisher. It is clear that NHO's ranking is more dependent on centralisation. This can be due to the high focus on demographics and labour markets in NHO's ranking.

Despite the fact that there are some differences across the two rankings, we can observe a trend within the rankings where municipalities located in the same geographical area ranks within the same percentiles. This indicates that there exists regional factors that a municipality cannot affect and further supports the use of models controlled for regional fixed effects.

TABLE 5: Correlation matrix for NHO sub rankings

	Industry and Commerce	**Labour market**	**Demographics**	**Competence**	**Municipality economy**
Industry and Commerce	1.00				
Labour market	0.55	1.00			
Demographics	0.64	0.57	1.00		
Competence	0.56	0.47	0.51	1.00	
Municipality economy	0.72	0.52	0.77	0.50	1.00

Table 5 shows the internal correlation between the different NHO sub-rankings. KR's correlation matrix is in table A1 in the appendix. Most correlations between the KR rankings are relatively low and only a few sub-rankings have a correlation above 0.25. NHO's sub-rankings, on the other hand, do experience high levels of correlation between all categories. This indicates that we should read the outputs with care when implementing all sub-rankings combined. All future models will therefore include both individually and combinational implemented ranking variables.

Table 6: Overall, Between and Within Variation in KR and NHO Rankings

KR			NHO		
Variable		Std. Dev.	Variable		Std. Dev.
Elementary School	overall	109.15	Industry and commerce	overall	103.62
	between	102.86		between	99.69
	within	38.14		within	26.85
Child welfare	overall	111.28	Labour market	overall	118.68
	between	101.52		between	116.59
	within	51.36		within	23.06
Kindergarten	overall	104.17	Demographics	overall	100.61
	between	96.51		between	97.63
	within	42.9		within	21.15
Health	overall	115.5	Competence	overall	113.8
	between	104.79		between	111.82
	within	57.37		within	21.22
Social support	overall	101.1	Municipality economy	overall	94.87
	between	95.16		between	91.79
	within	37.43		within	19.36
Culture	overall	110.9			
	between	107.12			
	within	31.4			
Economy (municipality)	overall	113.34			
	between	100.86			
	within	59.69			
Elderly care	overall	109.89			
	between	100.72			
	within	48.63			
Costs	overall	100.29			
	between	92.62			
	within	41.49			
Environment and resources	overall	111.33			
	between	99.54			
	within	57.13			
Administrative procedures	overall	96.8			
	between	84.07			
	within	54.22			
Water, drainage and renovation	overall	89.44			
	between	81.15			
	within	42.19			

Table 6 report overall-, between- and within- variation in all sub-rankings published by NHO and KR. In order for the later fixed effects models to work, there should be some variation both across firms at time *t*, and within firms across time. The table clearly shows that there are significant variations within all rankings. As expected, we can observe higher between-variations than within-variations. This indicates that most of the variation happens between

municipalities. However, there is also notably variation in a given municipality's ranking over the five-year period. While this within-variation allows for models adjusted for fixed effects, it might also be an indicator showing that the rankings are overly volatile. As most of the rankings reflect major characteristics in an area, such as demographics and education, it is natural that any changes will demand both significant resources and time. Thus, if there are major jumps in rankings over a short time period, this can be due to differences in measurements rather than in the underlying characteristic. In order to control for this, I will include a model with a 3-year moving average as the independent variable later in the paper.

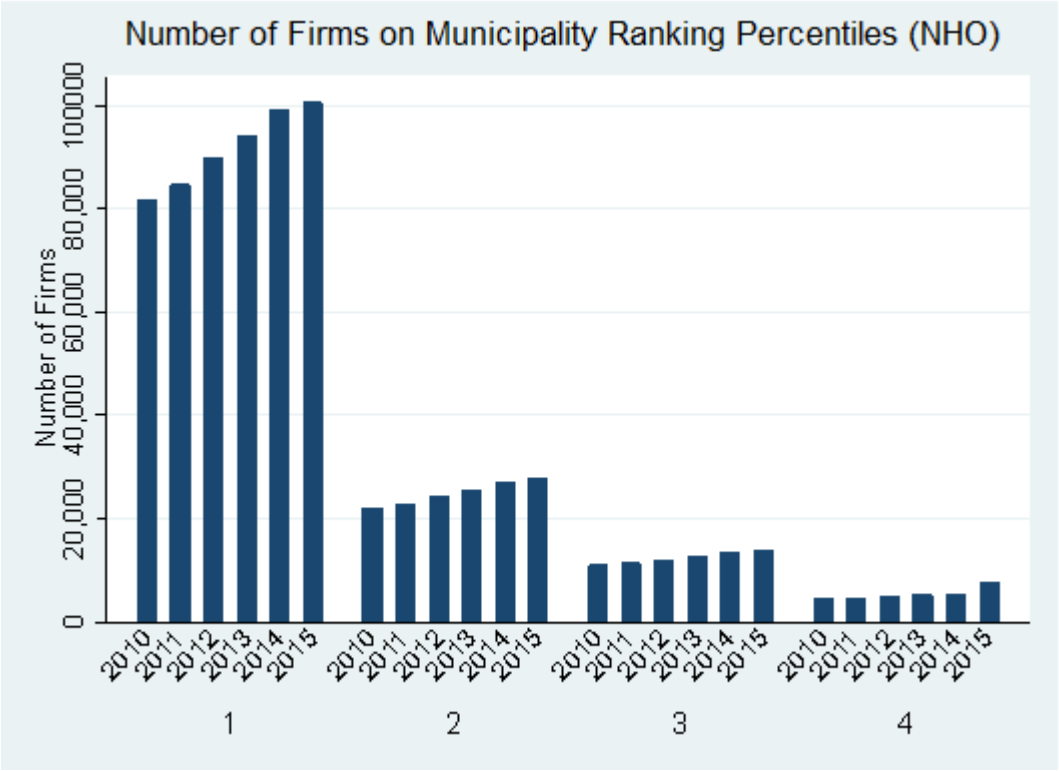

Figure 3: Number of firms on NHO percentiles

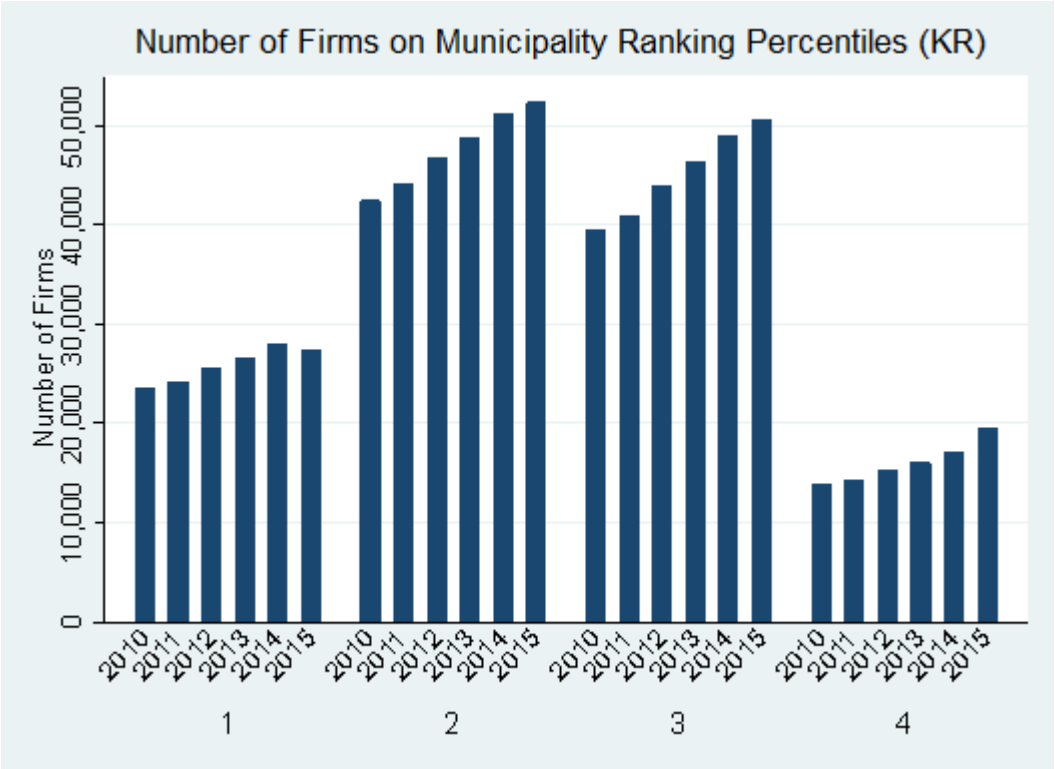

Figure 4: Number of firms on KR percentiles

In order to see if a municipality's total ranking can indicate where firms are located, I have created two graphs showing the annual number of firms per municipality in the four different ranking percentiles. The results are presented in figure 3 and 4.

Each percentile represents the average performance for municipalities over the 5-year period on NHO's and KR's *total* ranking. This means that the top 25 % performing municipalities on the average *total* ranking are located in percentile *1* in the graph. The worst 25 % performing municipalities are located in percentile *4*. The number of firms on the y-axis shows the combined number of firms for all municipalities in the representative percentile.

As we can observe in figure 1 and 2, we can also here find relatively large differences between the two publications. While there is a clear majority of firms in the first percentile for the NHO ranking, we can find the highest number of firms in the second and third percentile for the KR ranking. We can furthermore observe that the number-of-firm growth in the first percentile is relatively low when using the KR rankings (15.8 %), while it remains high when using the NHO rankings (22.6 %). This further strengthens the earlier findings suggesting that the NHO ranking is more firm oriented while the KR ranking focuses on the overall life quality in the

municipalities. The findings also indicates that we have a high correlation between the number of firms and the NHO ranking, while the correlation with the KR ranking is significantly lower.

Having looked at the summary statistics on a firm and a municipality level, we can clearly find sufficient variation in both indicators of firm performance and business environment. This opens up for further empirical investigation and allows forthcoming models to control for several layers of fixed effects. We have additionally found evidence suggesting that we have both year- and region-specific effects in the dataset that can affect the results of forthcoming models. It is also evident that indicators of firm performance is dependent on other factors, such as centralisation, and that we must control for this in order to ensure robust models. The next part of the paper will consider all these findings and introduce models that will help us to identify the relationship between a firm's business environment and its performance.

5. Identifying the Relationship

This section will present the methodology used to test the relationship between the business environment, represented by the municipality rankings, and firm performance. Firstly, the analysis will use a set of panel data regressions to test the relationship between the business environment and individual firm performance. I will here start with regressions using random effects in order to reflect the models used in relevant literature, before I will introduce firm, year and region fixed effects to account for the findings in part 4.

The second part of this section will test the effect of business environment on aggregated firm performance. This part will follow much of the same process as for individual firm performance, but use municipality level aggregated measurements of performance. Using aggregated values will allow the models to control for firms that change municipality in the period and reduce the effect of individual firm volatility. These models will also reflect some of the more aggregated literature while still allowing us to control for several layers of fixed effects.

Lastly, the section will look at the relationship between a firm's moving behaviour and the business environment in the destination municipality. This has not been analysed in relevant literature and can give insights into the considerations firms take when in a moving process. While also this section will look at individual firms, it will exclude all firms that are located in the same municipality throughout the testing period.

All models will include all sub-rankings and the *total* ranking from both the NHO and KR publications as proxies for the business environment. The models will first implement each sub-ranking individually, and thereafter introduce all ranking variables combined. The motivation behind this is the high correlation found between several of the sub-rankings in part 4. This approach will allow us to analyse the business environment variables both isolated and combined, and is consistent with the approach in relevant literature. To save space, the models report all individually entered variables in one column labelled *Individual*.[8]

[8] This approach remains the same for all tables expect table 7, 8 and A2.

5.1 The Effects of Business Environment on Individual Firm Performance

To regress the effects of business environment on individual firm performance, the analysis starts by using total revenue as a proxy for firm performance. This is in line with relevant literature that mostly use revenue growth as the dependent variable in models with clustered standard errors. I will thereafter include models using value added and EBITDA-margin as dependent variables. All regressions controls for firm-specific variables introduced in section 3.2. Some regressions also control for firm, region and year fixed effects. Specifically, the regression equations used offspring from:

(1)

$$Total\ rev. = \alpha + \beta_1 Total\ Assets + \beta_2 Emplyees + \beta_3\ Local\ Competitors + \beta_4\ Age + \beta_5\ Centralisation + \beta_6\ Government + \beta_7\ Foreign + \beta_8\ Listed + \beta_9\ Cooperation + \beta_{10}\ (NHO/KR) Ranking\ variables + \varepsilon$$

In equation 1, β_1 to β_9 represents the coefficients for the control variables, while β_{10} represents the coefficient related to the business environment factors, indicated by the rankings. α reports the constant variable and ε is the error term. A natural question that arises in this equation is how to best control for the potential endogeneity issues. In particular, good performing companies can lead to better business environments and thus drive rankings in the relevant municipalities up. To control for some of this endogeneity issue, I will use one-year lagged effects on rankings, total assets, employees and local competitors in all models.

This section will start with the bassline regression using random effects, before it will split all firms by size and introduce fixed effects and moving average models. Lastly, I will lastly look at different measurement of firm performance and include a section that splits firms by their industry.

5.1.1 Baseline Regressions

TABLE 7: Baseline regression with firm, region and year fixed effects.

VARIABLES	Tot Rev	Tot Rev	Tot Rev	Tot Rev	Tot Rev
	(1)	(2)	(3)	(4)	(5)
Log L1.Total assets	1,917***	1,917***	1,917***	1,922***	1,921***
	(27.37)	(27.37)	(27.37)	(27.51)	(27.51)
Log L1.Emplyees	2,099***	2,098***	2,098***	2,108***	2,108***
	(36.11)	(36.11)	(36.11)	(36.32)	(36.32)
Log L1.Local competitors		-87.83**	-87.84**	-96.46***	-95.54***
		(34.76)	(34.76)	(35.09)	(35.09)
Age			-1.658e+12	-836.8	-846.8
			(4.577e+12)	(9.668e+07)	(9.668e+07)
Centralisation index				-37.00	-37.53
				(28.73)	(28.73)
Ownership (Cooperation)					1,970*
					(1,041)
Ownership (Foreign)					2,255***
					(483.0)
Ownership (Listed)					5,013***
					(1,672)
Ownership (Private)					1,268***
					(436.6)
Observations	510,080	510,080	510,080	506,182	506,182
R-squared	0.917	0.917	0.917	0.917	0.917

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1
All numbers are in thousand NOK.

Table 7 reports the baseline regression used in the paper without the explanatory variables capturing the effect of the business environment. These regressions use the full dataset and controls for firm, region and year fixed effects.[9] The motivation behind this is the large variation between regions and years observed earlier. Column 1 reports the base estimate with only log values of last year's total assets and employees as explanatory variables. As expected, both variables have large, positive and highly significant coefficients. When including the log value of last year's number of local competitors, we find that an increase in competition has a

[9] The model employ Sergio Correia´s STATA *reghdfe* routine for the calculation of high dimensionality fixed effects

significant negative effect on total revenues. The variable related to age and centralisation is not significant at any level. The fact that the centralisation index lacks significance is somewhat surprising giving our observations in part 4. However, further analysis of the implemented regional fixed effect shows that this effect captures the impact of the centralisation index.

Column 5 includes the ownership dummies, where government ownership serves as the reference and is therefore excluded. Hence, other ownerships reflect the differential effect relative to government ownership. In this specification, the other variables remain their statistical and economical significance. It is interesting to note that all coefficients are positive and significant at a 1 or 10 % level. This indicates that all forms of ownership yields higher revenue compared to governmental ownership, all else equal. The economic effect is particularly large for publically listed companies. It is worth noting that the r-squared is very large and that this baseline model can explain much of the variation in total revenues.

When running the same model with value added as the dependent variable, the results are highly similar. The only noteworthy difference is that the foreign ownership dummy now becomes insignificant. The baseline regression with EBITDA-margin as the dependent variable, on the other hand, shows that only the variables related to total assets and employees remains significant. These models are not reported in the paper.

TABLE 8: NHO rankings regressing Total Revenue without firm, region and year fixed effects

VARIABLES	Tot. Rev	Tot. Rev	Tot. Rev	Tot. Rev	Tot. Rev	Tot. Rev	Tot. Rev
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Industry and commerce	-1.478***						-2.223***
	(0.282)						(0.348)
Labour market		-2.454***					-3.449***
		(0.278)					(0.372)
Demographics			-2.952***				-4.637***
			(0.355)				(0.543)
Competence				-0.0482			-0.928**
				(0.342)			(0.407)
Economy (Municipality)					-1.768***		-2.277***
					(0.436)		(0.542)
Total						-3.330***	-6.655***
						(0.463)	(1.099)
Constant	-16,007***	-15,843***	-15,976***	-16,036***	-16,054***	-16,087***	-15,557***
	(325.2)	(325.9)	(325.2)	(325.2)	(325.2)	(325.2)	(328.8)
Observations	552,709	552,709	552,709	552,709	552,709	552,709	552,709
R-squared	0.3852	0.3851	0.3853	0.3851	0.3851	0.385	0.3857
Number of firms	167,598	167,598	167,598	167,598	167,598	167,598	167,598

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

All numbers are in thousand NOK.

Having estimated the baseline performance equation, the paper proceeds to introducing variables measuring the effect of the local business environment and test its effect on firm performance. Table 8 provides a first pass at including the effect of the municipality rankings. Column 1-5 report the NHO sub-rankings individually, column 6 then report the *total* (or overall average) ranking before column 7 report all the sub-rankings entered simultaneously. In line with a large part of the relevant literature, none of the models in table 8 includes firm, region or year fixed effects[10]. The motivation behind this is to allow future analysis of the role played by the different fixed effects. As we can observe in table 8, all rankings have negative and significant coefficients. This is true when both entered individually and combined. The negative coefficient implies that as the municipality gets a lower number on the ranking, thus performing better, firms in that municipality tend to increase total revenue. For example, this model would suggest that all else equal, if a municipality increases its total NHO ranking

[10] Modelled using a *xtreg* command with random effects

number by one (lower performance), the average total revenue for firms in that municipality would go down by NOK 3,330. While it is important to remember the high correlation that was found between all NHO sub-rankings in part 4, these findings seem to confirm much of the relevant literature stating that business environment do have a significant effect on firm performance.

Much of the above findings are also observable when running KR's rankings in the same models, this is, without firm, region or year fixed effects. Table A2 in the appendix report these findings. It is worth noting that kindergarten, health, social support and administrative procedures all have a negative effect on firm performance (positive coefficient). This indicates that if a municipality increases the performance in these rankings by one, the average total revenue of firms in that municipality decreases. However, as we have not yet included any fixed effects, we should interoperate these findings with care. While not reported in the paper, the control variables related to input, competition and ownership do not change notably throughout the model.

5.1.2 Introducing Firm, Region and Year Fixed Effects

TABLE 9: NHO rankings regressing Total Revenue with firm, region and year fixed effect

	SMALL		MEDIUM		BIG	
	Individual	Combined	Individual	Combined	Individual	Combined
VARIABLES	Tot Rev	Tot Rev	Tot Rev	Tot Rev	Tot Rev	Tot Rev
	(1)	(2)	(3)	(4)	(5)	(6)
Industry and commerce	-0.153	-0.104	-2.705	-3.054	-10.55	-8.475
	(0.218)	(0.273)	(3.163)	(2.546)	(34.84)	(39.82)
Labour market	-1.261***	-1.108***	-8.238**	-8.887***	-14.61	-8.453
	(0.271)	(0.346)	(3.914)	(3.079)	(35.66)	(48.34)
Demographics	-0.424	-0.179	-3.916	-5.757	-15.55	-2.761
	(0.300)	(0.435)	(5.286)	(3.664)	(41.47)	(65.78)
Competence	-0.489	-0.173	4.677	1.003	-1.530	6.439
	(0.354)	(0.391)	(4.711)	(4.251)	(64.42)	(73.53)
Economy (Municipality)	0.322	0.497	1.149	-1.232	-13.67	-0.866
	(0.362)	(0.420)	(4.935)	(4.286)	(57.04)	(68.47)
Total	-1.336***	-0.448	-3.376	-12.64**	-40.51	-27.33
	(0.442)	(0.907)	(10.78)	(5.197)	(64.95)	(135.8)
Observations	456,920	456,920	48,776	48,776	2,398	2,398
R-squared	0.919	0.919	0.824	0.824	0.935	0.935

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Individually implemented variables are all reported in one line (Individual), observations and R-squared is therefore approximate in Individual. Control variables are not reported.

Table 9 and 10 replicates the same model as in table 8 and A2, but now includes firm, region and year fixed effects. The motivation behind these fixed effects are the observations from the summary statistics section and basic macroeconomics. Considering both the findings in table 3 and the economic volatility in the testing period, it is highly likely that the dataset contains year specific effects that can affect the output of the regression models. Furthermore, as some areas in Norway are likely more vulnerable to certain economic factors, such as the change in the oil price, the model additionally includes region fixed effects. Table 4 and figure 1 and 2 in part 4.2 also found evidence supporting this assumption. The models use the seven main geographical regions in Norway (Østviken, Innlandet, Vestviken, Sørlandet, Vestlandet, Trøndelag and Nord-Norge) to estimate regional fixed effects. This approach, with year and region fixed effects, is similar to the one used by Commander and Svejnar (2011). In addition, and in contrast to much of the relevant literature, the model does, thanks to the large dataset, also control for individual firm fixed effects. This use of firm fixed effects is motivated by the results when running a Durbin-Wu-Hausman test for random and fixed effects models. The

output here clearly states that we can reject the null hypothesis suggesting that random effects is the preferred model.

In order to control for both year, region and firm fixed effects in such a large dataset, I have employed Sergio Correia´s *reghdfe* routine. This command allows us to run regressions with a high dimension of fixed effects, but without having to implement individual dummies for years and regions. In order to run similar models with the *xtreg* command using firm fixed effects, I would have to implement dummies for both year and regions. As the models use the within regression estimator, any time invariant effect will be omitted from the results.

In order to gain further insights into how business environments affect firms' performance, I have additionally split all firms into the three groups small, medium and big based on the previous estimate of employees (FTEs). I have attached an uncompromised model covering all firms (not divided by size) in table A3 and A4 in the appendix. While not reported here, all control variables remain their statistical and economical significance when looking at all firms combined and when looking at small firms exclusively. When analysing medium and big sized firms, on the other hand, the situation related to the control variables changes. Now, only the two input variables employees and total assets remain statistically and economically significant. Such a change might indicate that competition and ownership mainly affects smaller firms. This is true for both the NHO models and the KR models.

Even though we can only observe minor changes in relation to the input, competition and ownership variables for small firms, the picture changes dramatically with respect to the business environment. While most of the rankings remain their negative coefficient when we control for fixed effects in the NHO model, only two, labour market and *total*, seams to hold their statistical significance for small firms. As no other sub-rankings other than labour market is significant at any point, this may indicate that this is also the only factor that drives up the significance of the *total* ranking. Column 2 in table 9 shows that the labour market coefficient is significant also when all variables are implemented simultaneously.

When looking at medium sized firms, we can find many of the same findings as with small firms. It is, however, interesting to note that the coefficient for the labour market ranking is notably higher for medium sized firms than for small firms. Hence, the model suggests that an increase in the labour market ranking would have a seven to eight times bigger effect on medium sized firms than small firms. This finding can be explained by the rationale that firms

with more employees are more affected by sick leave, employment rate and labour integration (factors driving the labour market ranking) than firms with only a few employees.

When the model excursively looks at big firms with 50 or more employees, the labour market coefficient looses its significance totally. This is also true for the total ranking, and again support the hypotheses that the labour market factor drives the effect of the *total* ranking. However, the fact that the labour market effects big firms with more employees less than small and medium sized firms is surprising, and contradicts the rationale discussed above. While I will discuss it more in part 6, this can relate to the fact that bigger firms often have operations across different municipalities and is therefore less affected by individual municipality factors.

TABLE 10: KR rankings regressing Total Revenue with firm, region and year fixed effect

	SMALL		MEDIUM		BIG	
	Individual	Combined	Individual	Combined	Individual	Combined
VARIABLES	Tot. Rev.	Tot. Rev.	Tot. Rev.	Tot. Rev.	Tot. Rev.	Tot. Rev.
	(1)	(2)	(3)	(4)	(5)	(6)
Elementary School	0.0989	0.132	-0.840	-2.726	-18.75	-18.44
	(0.165)	(0.263)	(1.819)	(2.946)	(20.19)	(29.77)
Elderly care	0.0747	0.0133	-1.181	-2.134	-12.23	-11.16
	(0.121)	(0.178)	(1.298)	(1.925)	(13.62)	(18.66)
Child welfare	0.0597	0.152	-1.144	-1.275	-10.16	-9.417
	(0.117)	(0.159)	(1.319)	(1.775)	(15.00)	(18.64)
Kindergarten	-0.151	-0.286	-0.221	0.0399	-7.346	-9.275
	(0.139)	(0.188)	(1.629)	(2.160)	(20.01)	(25.39)
Health	0.0952	0.143	1.817	2.034	-0.197	0.509
	(0.109)	(0.132)	(1.179)	(1.431)	(11.76)	(13.94)
Social support	0.394**	0.348*	1.685	-0.164	10.91	5.444
	(0.158)	(0.199)	(1.803)	(2.269)	(21.80)	(25.96)
Culture	-0.595***	-0.679***	-3.598	-4.898*	-17.77	-37.24
	(0.199)	(0.228)	(2.279)	(2.633)	(26.62)	(31.24)
Economy	0.0640	-0.00585	-0.510	-0.0241	5.254	13.87
	(0.105)	(0.158)	(1.142)	(1.716)	(11.68)	(17.07)
Costs	0.226	0.214	-1.793	-2.272	-14.96	-33.20
	(0.152)	(0.221)	(1.627)	(2.434)	(15.61)	(25.05)
Environment and resources	-0.136	-0.0282	-0.0662	-0.0458	-9.791	-5.124
	(0.103)	(0.118)	(1.130)	(1.307)	(11.53)	(13.08)
Administrative procedures	0.0230	0.102	-1.083	-1.444	9.967	11.34
	(0.108)	(0.118)	(1.179)	(1.305)	(12.56)	(14.31)
Water, Drainage and Renovation	0.200	0.222	-0.333	-0.332	-5.754	-2.695
	(0.148)	(0.167)	(1.655)	(1.862)	(18.19)	(21.37)
Total	0.182	-0.162	-1.271	1.747	-7.554	12.97
	(0.125)	(0.322)	(1.344)	(3.542)	(13.29)	(32.64)
Observations	456,920	412,076	48,776	44,661	2,389	2,281
R-squared	0.919	0.918	0.824	0.821	0.919	0.918

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Individually implemented variables are all reported in one line (Individual), observations and R-squared is therefore approximate in Individual. Control variables are not reported.

Table 10 reports the same models as in table 9, but using the KR rankings as independent variables. The control variables related to inputs, competition and ownership follow the same pattern as for the NHO model. In contrast to the NHO model, however, we cannot observe any consistent findings throughout the small and medium sized firms. When looking at small firms in column 1 and 2, only the variable reflecting culture remains negative and statistical significant at the 1 % level, both when entered individually and combined. The coefficient related to social support is significant at the 5 % level when entered individually, but is

positive. This would suggest that an increase in the social support ranking would decrease small firms' performance in that municipality. The paper finds no rationale to support this relationship. It is, however, more likely that an increase in the cultural factor can have a positive impact on the performance of small firms. Although the impact is small, an increase in total yearly revenue of approximately NOK 600 if culture improves by one ranking number remains an interesting finding.

When looking at medium and big sized firms, we cannot observe any significant relationships between the indicators of business environment and firm performance. It is worth nothing, however, that even though the effect is not statistical significant, the size of the coefficients increases with firm size, indicating a larger economical effect.

Further examination of the role played by the firm, region and year fixed effects shows that region and year specific effects knock out much of the significance for small and medium sized firms. This holds true for both the NHO and KR models and indicates that the effects discussed in part 4.3 actually can explain some of the variation in firm performance. Regional and yearly effects, however, relates less to the performance of the biggest firms in the dataset. For these businesses, the firm fixed effect is more important.

5.1.3 Using 3-year Moving Average Values

As mentioned in the descriptive statistic of municipality data, a certain level of within variation in the rankings is crucial to allow models controlled for fixed effects. However, large volatility in rankings can also serve as an indicator of random variation that does not reflect the true variation in a municipality's business environment. In order to control for this potential measurement error, I have implemented models using the average municipality ranking as the independent variable.

One option here is to use a 5-year average municipality ranking to reduce the effect of random variation as much as possible. This solution, however, would remove all time-variation in the dataset and make it impossible to control for firm specific fixed effects. As have been seen earlier in the paper, and if we use a 5-year average model, the inability to control for firm fixed effect has a major impact on the results. Close to all variables, in both the NHO and KR model, come out as significant if we use a full 5-year average on the rankings. This holds true even

when we control for region and industry fixed effects. Note that it naturally does not make sense to control for year fixed effects in such a model.

Another option is therefore to use a moving average model. This would ensure some time variation in the dataset and thus allow the model to control for certain levels of firm specific effects. In order to even out random volatility and still keep some time variation, I have therefore implemented a model using a three-year moving average of the municipality rankings. Like in previous models, this model also controls for firm, region and year fixed effects, and splits firms into small, medium and big based on their number of employees. Table 11 and 12 reports the results. Control variables (not reported) follow the same pattern described in the fixed effect model using non-average values of municipality rankings. This means that close to all control variables remain statistically and economically significant for small and medium sized firms, while only the input variables related to total assets and employees are significant for big firms. As we cannot create a robust moving average model in year 2010 and 2011 (using year t-2, t-1 and t values of ranking variables), we lose some observations compared to other models.

TABLE 11: Average NHO rankings regressing Total Revenue with firm, region and year fixed effects

	SMALL		MEDIUM		BIG	
	Individual	Combined	Individual	Combined	Individual	Combined
VARIABLES	Tot. Rev.	Tot. Rev.	Tot. Rev.	Tot. Rev.	Tot. Rev.	Tot. Rev.
	(1)	(2)	(3)	(4)	(5)	(6)
Avg.Industry and commerce	-1.080**	-0.789	-4.397**	-4.506*	-4.935	2.106
	(0.495)	(0.634)	(1.988)	(2.591)	(22.87)	(27.01)
Avg.Labour market	-0.936*	-0.303	-3.170	-2.932	-16.37	-9.151
	(0.562)	(0.728)	(2.314)	(2.953)	(25.08)	(31.76)
Avg.Demographics	-1.473***	-1.154	-1.361	-1.581	2.464	16.13
	(0.549)	(0.855)	(2.314)	(3.590)	(23.80)	(36.62)
Avg.Competence	-1.396**	-0.795	-1.808	-0.173	-5.813	2.317
	(0.586)	(0.685)	(2.561)	(2.978)	(31.16)	(34.23)
Avg.Economy (municiplaity)	0.349	1.208	-0.456	0.272	-10.86	-3.471
	(0.649)	(0.787)	(2.592)	(3.148)	(28.46)	(33.60)
Avg.Total	-2.479***	-0.860	-5.569*	1.303	-19.39	-29.26
	(0.795)	(1.888)	(3.381)	(7.840)	(37.66)	(81.32)
Observations	286,006	286,006	56,314	56,314	3,722	3,722
R-squared	0.920	0.920	0.950	0.950	0.955	0.955

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Individually implemented variables are all reported in one line (Individual), observations and R-squared is therefore approximate in Individual. Control variables are not reported.

As can be seen in table 11, all variables except municipality economy is significant at either a 1, 5 or a 10 % level when implemented individually for small firms. In addition, they all hold their negative coefficient indicating an improvement in small firms' performance as the three-year average municipality rankings improves. In contrast to the non-average model, however, labour market is now the second to least significant factor both in form of standard deviation and value of the coefficient. While remembering the high correlation among the NHO sub-rankings found in part 4, it is noteworthy that all coefficients lose their significance when implemented combined.

When looking at the medium sized firms, there are also here differences compared to the non-average model. While the labour market coefficient loses its statistical significance, industry and commerce now becomes the only significant factor at a 5 % level. This holds true also when implemented combined, even though it drops to a 10 % level. While I will further discuss the results in part 6, it is worth noting that both the labour market and the industry and commerce coefficient most likely suffer from reverse causality.

Like in the non-average model, I am not able to find any significant relationships when solely looking at the biggest firms in the dataset. Among these larger firms, we can furthermore observe that the coefficients start to become positive, and thus lose their economic significance.

TABLE 12: Average KR rankings regressing Total Revenue with firm, region and year fixed effects

	SMALL		MEDIUM		BIG	
	Individual	Combined	Individual	Combined	Individual	Combined
VARIABLES	Tot. Rev.	Tot. Rev.	Tot. Rev.	Tot. Rev.	Tot. Rev.	Tot. Rev.
	(1)	(2)	(3)	(4)	(5)	(6)
Avg.Elementary School	-0.118	-0.305	-3.671*	3.392	-26.59	-4.396
	(0.277)	(0.528)	(1.909)	(3.358)	(35.42)	(88.56)
Avg.Elderly care	-0.0579	0.113	-1.047	-0.662	-22.35	-13.91
	(0.212)	(0.389)	(1.432)	(2.377)	(21.98)	(48.28)
Avg.Child welfare	0.0336	0.542	-2.892**	-2.965	-12.62	-25.30
	(0.208)	(0.394)	(1.442)	(2.423)	(23.63)	(52.49)
Avg.Kindergarten	-0.659**	-0.528	-0.434	4.136	-12.34	28.50
	(0.270)	(0.471)	(1.972)	(3.045)	(37.57)	(75.77)
Avg.Health	0.0103	-0.529*	0.905	0.309	-1.333	14.28
	(0.199)	(0.316)	(1.379)	(1.986)	(20.47)	(41.22)
Avg.Social support	0.680**	0.760	-0.0598	-2.784	27.77	-1.253
	(0.319)	(0.557)	(2.256)	(3.528)	(44.12)	(92.44)
Avg.Culture	-0.897**	-1.597**	-9.824***	-2.661	-68.12	-51.52
	(0.367)	(0.644)	(2.667)	(4.158)	(48.29)	(93.20)
Avg.Economy	0.0545	-0.264	-0.815	1.094	-3.504	41.35
	(0.177)	(0.397)	(1.207)	(2.475)	(17.99)	(56.15)
Avg.Costs	-0.0580	-1.030*	-3.264*	-1.770	-18.49	-23.72
	(0.266)	(0.564)	(1.812)	(3.437)	(27.78)	(72.75)
Avg.Environment and resources	-0.430**	-0.837**	0.707	-2.443	-13.83	1.353
	(0.201)	(0.331)	(1.369)	(1.987)	(21.52)	(38.48)
Avg.Administrative procedures	0.0237	0.348	-1.443	2.781	26.93	53.15
	(0.252)	(0.352)	(1.630)	(2.172)	(24.55)	(42.52)
Avg.Water, Drainage and Renovation	0.0865	0.476	-2.326	-2.330	-21.25	7.807
	(0.292)	(0.454)	(1.972)	(2.757)	(32.86)	(59.89)
Avg.Total	-0.0349	0.556	-1.495	-1.978	-6.735	-25.74
	(0.169)	(0.575)	(1.217)	(3.611)	(17.92)	(89.29)
Observations	317,391	166,935	34,949	20,657	1,510	960
R-squared	0.941	0.958	0.917	0.948	0.949	0.916

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Individually implemented variables are all reported in one line (Individual), observations and R-squared is therefore approximate in Individual. Control variables are not reported.

Table 12 reports the results when running the three-year moving average model with KR's rankings as indicators of the business environment. We can also here observe somewhat different results compared to the non-average model. Culture, which was the only significant variable in the non-average model, remains its significance, but now also environment and resources becomes significant when both entered individually and combined for small firms.

When entered individually, social support and kindergarten gets significant coefficients. It is worth noting that the coefficient for social support turns out as positive for small firms.

Like every other model previously run in this paper, most variables drop some significance when the firm size increases. For medium sized firms, for example, only culture and child welfare turn out as negative and significant, an effect that disappears when all variables are entered combined. Also like in previous models, we are not able to oversee any significant effects with relation to the biggest firms in the dataset.

Even though we can observe some differences in the moving average models compared to the non-average models, it is interesting to note that the underlying trend remains the same. Smaller firms seems more affected by their business environment than medium sized firms. We are still not able to find any significant relationship related to the biggest firms in the dataset.

5.1.4 Using Value Added and EBITDA Margin the as Dependent Variable

While most of the relevant literature only looks at revenue as the indicator of firm performance, the available dataset for this paper allows us to robust-check our findings using other measurements of firm performance. I have therefore created two separate models that use value added and the EBITDA-margin as the dependent variables. The motivation behind these two measurements of firm performance is that one (value added) captures a firm's effect on the surrounding society, whiles the other (EBITDA-margin) considers its operating efficiency. Both models follows the same approach as for the models in section 5.1.2 with firm, region and year fixed effects. Both models also includes NHO's and KR's rankings as the indicators of business environment and splits all firms by their size.

Table A5 (NHO) and A6 (KR) in the appendix repots the results when using value added as the dependent variable. It is clear from table A5 that we also here can observe much of the same findings as in previous models. The coefficient for labour market remains negative and significant for small and medium sized firms, even though it no longer is significant for small firms when all variables are entered combined. We can furthermore observe that the coefficient for competence now becomes negative and significant when looking at small firms. Like in the non-average models with fixed effects, only the labour market coefficient remains

significant for medium sized firms. We are still not able to find any relationship between firm performance and the business environment related to the biggest firms in the dataset.

Table A6 shows that the same trend in evident when using the KR rankings as the independent variables. Elderly care, child welfare, health and municipality costs all have negative and significant coefficients for small firms. This indicates that small firms' value added is positively correlated with the quality of the business environment in respect to these categories. In contrast to the NHO results, we cannot observe any significant relationships when considering medium sized firms. The same still holds true for big firms.

The fact that the value added models follows the same trend as the total revenue models suggests that payroll expenses and depreciation costs (inputs in the value added variable) follows the same trend as total revenue.

While we could observe much of the same trend in the value added models as in the total revenue models, the results from the EBITDA-margin models does not find evidence supporting this relationship. In fact, the EBITDA-margin models does not report any significant relationship at all. This is true for all firm sizes and I have therefor not reported the results in this paper. Such a finding would suggest that while we can find indications of a relationship between the business environment and small firms' revenue numbers, we cannot observe the same relationship when considering operating efficiency. It is worth noting that the increase in payroll expenses can outweigh some of the positive effect of an increase in revenue on the EBITDA-margin.

5.1.5 Individual Firms Separated by Industry

As it appears that our proxy for business environment affects smaller firms more than larger firms, it is natural to ask if we can find other firm characteristics that explain the level of business environment influence. The following part of the paper will therefore split all firms into the five main industries knowledge intensive business services (KIBS), commerce, logistics, secondary industry, and *others*. Firms within the KIBS sector are firms with most of their revenue related to advisory, legal services, IT or other products that typically employ a highly educated workforce, while the commerce sector typically covers stores and other trade organisations. Logistics include shipping and other transportation firms while the secondary

industry often relates to the utilisation of raw materials. Lastly, *others* covers the firms that are not characterised by the above sectors. Firms in this category would typically be sport clubs, gyms and artists. Note that governmental firms and firms in the primary industry are not included in the dataset.

In order to analyse if industry classification can give an indication on the level of business environment dependence, I have implemented a similar model to the one used when analysing size differences. The models in this section uses the same control variables rated to assets, labour, competition, age, centralization and ownership as earlier. It will not be further analysed in this paper, but we can now see some more variation in the control outputs than what we observed when splitting firms on size. This, however, is not surprising when considering that firms in different industries vary substantially in respect to their inputs. We can still see that the control variables related to total assets and employees remain significant for all firms.

Table 13: NHO rankings regressing Total Revenue with firm, region and year fixed effects. Split by industry.

	KIBS		Commerce		Logistics		Secondary		Other	
	(1)	(2)	(3)	(4)	(9)	(10)	(7)	(8)	(11)	(12)
VARIABLES	Tot. Rev.	Tot. Rev.	Tot. Rev.	Tot. Rev.	Tot. Rev.	Tot. Rev.	Tot. Rev.	Tot. Rev.	Tot. Rev.	Tot. Rev.
	Individual	Combined	Individual	Combined	Individual	Combined	Individual	Combined	Individual	Combined
Industry and commerce	-0.183	-0.509	0.0519	0.0307	-0.946	-0.909	-0.177	-0.307	-0.397	0.379
	(0.569)	(0.692)	(0.967)	(1.201)	(0.855)	(1.093)	(0.562)	(0.730)	(0.813)	(1.019)
Labour market	-1.583**	-2.005**	-1.583	-1.578	-2.136**	-2.076	-3.929***	-3.791***	0.206	1.273
	(0.692)	(0.863)	(1.191)	(1.528)	(1.073)	(1.388)	(0.721)	(0.933)	(0.996)	(1.265)
Demographics	-0.113	-0.645	-0.200	-0.273	-1.097	-0.810	-2.157***	-1.866	-0.539	0.803
	(0.798)	(1.115)	(1.349)	(1.927)	(1.171)	(1.744)	(0.790)	(1.179)	(1.113)	(1.598)
Competence	-1.298	-1.422	-2.715*	-2.693	-0.488	-0.0170	-0.363	0.299	-1.245	-0.497
	(0.884)	(0.974)	(1.524)	(1.672)	(1.578)	(1.748)	(0.950)	(1.052)	(1.482)	(1.637)
Economy (municipality)	-0.593	-1.153	-0.813	-1.075	-1.339	-1.121	0.899	1.209	-0.552	0.485
	(0.940)	(1.083)	(1.603)	(1.860)	(1.431)	(1.641)	(0.959)	(1.112)	(1.351)	(1.570)
Total	-1.167	2.377	-1.884	1.090	-3.516**	-0.125	-3.914***	-0.0722	-1.996	-3.964
	(1.169)	(2.301)	(1.988)	(4.046)	(1.750)	(3.652)	(1.135)	(2.418)	(1.659)	(3.403)
Observations	127,383	127,383	111,183	111,183	41,113	41,113	107,154	107,154	31,375	31,375
R-squared	0.907	0.907	0.892	0.892	0.942	0.942	0.931	0.931	0.976	0.976

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Individually implemented variables are all reported in one line (Individual), observations and R-squared is therefore approximate in Individual. Control variables are not reported.

Table 14: KR rankings regressing Total Revenue with firm, region and year fixed effects. Split by industry.

	KIBS		Commerce		Logistics		Secondary		Other	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(11)	(12)
VARIABLES	Tot. Rev.	Tot. Rev.	Tot. Rev.	Tot. Rev.	Tot. Rev.	Tot. Rev.	Tot. Rev.	Tot. Rev.	Tot. Rev.	Tot. Rev.
	Individual	Combined	Individual	Combined	Individual	Combined	Individual	Combined	Individual	Combined
Elementary School	-1.155***	0.546	-0.457	-0.760	0.130	0.431	-0.372	0.309	-0.694	-0.224
	(0.406)	(0.635)	(0.718)	(1.168)	(0.674)	(1.095)	(0.448)	(0.728)	(0.590)	(0.948)
Elderly care	-0.281	0.862**	-0.145	-0.356	-0.843*	-0.255	0.165	0.576	-0.652	-0.311
	(0.288)	(0.415)	(0.523)	(0.779)	(0.495)	(0.757)	(0.331)	(0.506)	(0.424)	(0.632)
Child welfare	0.0640	0.670*	-0.166	-0.355	0.232	0.642	0.262	0.934**	-0.0928	0.347
	(0.290)	(0.377)	(0.509)	(0.705)	(0.482)	(0.676)	(0.320)	(0.443)	(0.419)	(0.578)
Kindergarten	-1.021***	-0.134	-0.328	-0.691	0.584	0.543	-0.680*	0.00185	-0.821	-0.425
	(0.362)	(0.473)	(0.614)	(0.835)	(0.548)	(0.762)	(0.370)	(0.516)	(0.502)	(0.675)
Health	0.143	0.563*	0.232	0.247	-0.753	-0.724	0.224	0.743**	-0.274	-0.0821
	(0.252)	(0.303)	(0.477)	(0.590)	(0.464)	(0.575)	(0.306)	(0.377)	(0.393)	(0.474)
Social support	0.520	0.991**	0.405	-0.0351	-0.00505	0.555	0.675	1.217**	1.057*	1.264*
	(0.402)	(0.497)	(0.694)	(0.888)	(0.636)	(0.819)	(0.418)	(0.539)	(0.570)	(0.718)
Culture	-0.368	-1.053*	-1.036	-1.371	-0.856	-1.732*	-0.502	-0.469	-0.945	-1.298
	(0.501)	(0.572)	(0.867)	(1.006)	(0.834)	(0.981)	(0.536)	(0.616)	(0.734)	(0.844)
Economy (Municipality)	-1.088***	-0.214	-0.509	-0.733	-0.202	0.213	-0.152	0.416	-0.117	0.259
	(0.248)	(0.369)	(0.455)	(0.702)	(0.433)	(0.673)	(0.297)	(0.454)	(0.367)	(0.558)
Costs	-1.217***	-0.0123	-0.616	-0.532	-0.706	-0.566	0.515	1.197*	-0.692	-0.229
	(0.348)	(0.524)	(0.666)	(0.986)	(0.645)	(0.948)	(0.442)	(0.622)	(0.544)	(0.805)
Environment and resources	-0.293	-0.0988	-0.365	-0.483	-0.298	-0.109	0.364	0.802**	-0.768*	-0.750*
	(0.248)	(0.283)	(0.445)	(0.520)	(0.421)	(0.495)	(0.282)	(0.325)	(0.358)	(0.414)
Administrative procedures	0.458*	0.582**	-0.576	-0.617	-0.353	-0.530	0.654**	0.834***	0.367	0.485
	(0.260)	(0.285)	(0.476)	(0.524)	(0.452)	(0.503)	(0.292)	(0.322)	(0.388)	(0.427)
Water, Drainage and Renovatic	-0.604	-0.173	0.384	0.587	0.177	0.178	-0.808**	-0.861*	-0.842	-0.683
	(0.369)	(0.415)	(0.655)	(0.745)	(0.600)	(0.692)	(0.399)	(0.447)	(0.527)	(0.598)
Total	-1.640***	-2.135***	-0.352	0.384	-0.901*	-0.725	0.0843	-1.928**	-1.640*	-0.490
	(0.287)	(0.736)	(0.546)	(0.655)	(0.528)	(1.381)	(0.368)	(0.941)	(0.287)	(1.154)
Observations	127,383	118,146	111,183	100,933	41,113	35,994	107,154	94,249	127,383	28,563
R-squared	0.907	0.907	0.892	0.888	0.942	0.941	0.931	0.930	0.907	0.977

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Individually implemented variables are all reported in one line (Individual), observations and R-squared is therefore approximate in Individual. Control variables are not reported.

Table 13 and 14 in reports the results from the models using the NHO and KR rankings respectively. They both include firm, region and year fixed effects in the same manner as previously.

When looking at the NHO model in table 13, we can quickly observe that the coefficient related to the labour market is the most significant also in this model. More specifically, we can see that the labour market ranking is both economically and statistically significant at a 5 or 1 % level for firms within the KIBS sector, logistics and the secondary industry. It is, however, important to remember that most firms in the dataset are small and that this might be the underlying driver for the observed relationship. We can furthermore observe that the demographics indicator for the business environment is highly significant for firms in the secondary industry when implemented individually.

Table 14 reports the results when using the KR rankings as the independent variables. Like in the NHO model, we can also here see that firms within the KIBS sector and secondary industry appears to be the most affected. When entered individually, elementary school, kindergarten, municipality economy and cost are all negative and significant at a 1 % level for firms in the KIBS sector. This changes when we enter all coefficients combined, and elderly care, social support and administrative procedures now becomes positive and significant at a 5 % level. While these findings differs substantially with respect to their economical meaning, they do support the hypothesis that we can find a relationship between firm performance in the KIBS sector and the business environment.

When looking at the industries commerce, logistics and others, we cannot observe any significant findings with statistical relevance. On the hand, we can find several significant relationships when considering firms in the secondary industry. Firstly, the coefficient related to administrative procedures is positive and significant. This would suggest that as a municipality performs better with respect to the administrative procedures, firms in that municipality within the secondary industry performs worse. While it is difficult to say why we find this relationship, one possibility is that a higher score on administrative procedures makes it easier to start a new business and can hence improve competition. If the control variables does not fully capture this effect, it can have an effect on the model and cause a positive coefficient. The coefficient for water, drainage and renovation is, however, negative and significant. This would suggest that as a municipality increases its performance related to this type of infrastructure, firms within the secondary industry would improve their financial

performance. We should note that all these effects are relatively small in absolute values. For example, an increase in the ranking for water, drainage and renovation would, according to the model, result in an increase of approximately 800 NOK in annual revenues for firms in the secondary industry.

This section has analysed at the relationship between individual firm performance and indicators of the business environment. While the first models without firm, region or year fixed effects gave us the same findings as in much of the relevant literature, these significant relationships quickly disappeared when we later introduced fixed effects. This is similar to the findings of Commander and Svejnar (2011). However, when splitting firms into sub groups, and introducing averaged variables, we could observe a trend where some firms are more affected than others are. In particular, smaller firms and firms within the KIBS and secondary industry, tend to be more affected by their business environment that bigger firms and firms in other industries. This suggests that while there is a relationship between business environment and individual firm performance, it remains relatively small and only holds for a specific type of businesses. The next part of the paper looks further into this relationship by aggregating firm performance on a municipality level to see how this will affect the results.

5.2 The Effects of Business Environment on Aggregated Performance

In view of the findings in part 5.1, a question arises as to whether these results are robust in the way that other non-financial measures of performance yield similar results. To answer this question, and to reduce the effect of individual firm volatility, this section will introduce performance numbers aggregated on a municipality level. In particular, I have added data on the yearly number of bankruptcies and start-ups per municipality to the original dataset, and will use these numbers as the dependent variables. Both numbers are calculated per 1000 firms to control for different municipality sizes. The hypothesis is that higher quality business environments reduces the number of bankruptcies and increases the number of successful start-ups[11].

I have additionally created variables on the aggregated sum of firm employees, total assets and the total number of firms per municipality to serve as control variables in the upcoming models. Extracting this new aggregated data, and adding the municipality rankings, created a new panel-data set that allows us to control for municipality, region and yearly fixed effects. As this new dataset originates from the individual firm level dataset, it follows that the definition of variables introduced in part 4 holds true also here. While I have data on the number of bankruptcies for the full testing period, I only have data on the number of stat-ups up to 2014. Note that the number of observations is still sufficient to generate robust models with multiple layers of fixed effects.

While not reported, the control variables related to total assets, employees and the number of firms all remain significant at a 1 % level throughout the models. The number of firms and aggregated total assets both have positive coefficients suggesting that bigger municipalities experience both a higher number of bankruptcies and start-ups per 1000 firms. The coefficient for aggregated number of employees is negative throughout the model, indicating that municipalities with bigger firms sees less start-ups and bankruptcies. The fact that aggregated

[11] Only start-ups that survived the first year of operations are included

total assets has a positive coefficient is likely due to the number-of-firms effect on total assets rather that the firm-size effect.

TABLE 15: NHO rankings regressing aggregated number of bankruptcies and start-ups with municipality, region and year fixed effects

	Bankruptcies Per 1000 Firms		Start-ups Per 1000 Firms	
VARIABLES	Individual	Combined	Individual	Combined
	(1)	(2)	(3)	(4)
Industry and commerce	-0.00443	-0.0284	-1.116**	-0.979**
	(0.0359)	(0.0504)	(0.0316)	(0.0442)
Labour market	0.00595	-0.0223	0.0239	0.142
	(0.0496)	(0.0634)	(0.0617)	(0.0588)
Demographics	0.00952	-0.0264	0.101*	0.293*
	(0.0410)	(0.0671)	(0.0489)	(0.0592)
Competence	0.0376	0.0163	0.199*	0.310*
	(0.0720)	(0.0789)	(0.0887)	(0.0717)
Economy (municipality)	0.0134	-0.00793	0.0195	0.302*
	(0.0574)	(0.0656)	(0.0666)	(0.0576)
Total	0.0419	0.106	-1.029**	-0.657**
	(0.0711)	(0.158)	(0.0822)	(0.141)
Observations	2,557	2,557	2,132	2,132
R-squared	0.232	0.232	0.697	0.814

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Individually implemented variables are all reported in one line (Individual), observations and R-squared is therefore approximate in Individual. Control variables are not reported.

Table 15 reports the results from both the bankruptcy and start-up models when using NHO rankings as the independent variables. As we can observe in column 1 and 2, there are no significant findings related to the number of bankruptcies per 1000 firms. This suggest that we are not able to say anything about the relationship between a municipality's business environment and the number of bankruptcies. When looking at the start-up models in column 3 and 4, on the other hand, we can find indicators of a significant relationship. In fact, the variable for industry and commerce and the *total* variable is negative and significant at a 5 % level when both entered individually and combined. This suggest that as municipalises ranks higher (lower ranking number) on the industry and commerce score, they will also experience a higher number of start-ups. More precisely, column 3 indicates that as municipalities increase their industry and commerce score by one, they will see about one more successful start-up per 1000 firms. While only significant as a 10 % level, we can additionally observe

that the variable related to both demographics and competence is positive, suggesting that a better score would reduce the number of start-ups in that municipality. It is noteworthy that the r-squared is significantly higher for the start-up models than for the bankruptcy models.

TABLE 16: KR rankings regressing aggregated number of bankruptcies and start-ups with municipality, region and year fixed effects

	Bankruptcies Per 1000 Firms		Start-ups Per 1000 Firms	
VARIABLES	Individual	Combined	Individual	Combined
	(1)	(2)	(3)	(4)
Elementary School	-0.114**	-0.116*	0.0223	0.0925
	(0.0320)	(0.0657)	(0.0360)	(0.0601)
Elderly care	-0.0109	0.0212	-0.0829**	-0.0638
	(0.0256)	(0.0515)	(0.0312)	(0.0480)
Child welfare	-0.00969	0.0208	0.00659	0.0140
	(0.0216)	(0.0398)	(0.0250)	(0.0363)
Kindergarten	0.00712	0.0402	-0.0109	-0.00373
	(0.0222)	(0.0434)	(0.0265)	(0.0398)
Health	0.00781	0.0351	0.0500*	0.0283
	(0.0228)	(0.0362)	(0.0269)	(0.0338)
Social support	0.0371	0.0659	-0.0510	-0.0671
	(0.0300)	(0.0488)	(0.0343)	(0.0454)
Culture	-0.000346	-0.0133	0.115*	0.0907
	(0.0419)	(0.0609)	(0.0501)	(0.0571)
Economy	-0.0351	-0.0234	-0.0147	-0.0257
	(0.0235)	(0.0449)	(0.0293)	(0.0422)
Costs	-0.0458	-0.000389	0.0805*	0.0315
	(0.0366)	(0.0626)	(0.0439)	(0.0596)
Environment and resources	-0.00591	0.0151	0.00766	-0.0273
	(0.0220)	(0.0315)	(0.0251)	(0.0282)
Administrative procedures	0.0472*	0.0592*	0.0547*	0.0398
	(0.0246)	(0.0311)	(0.0264)	(0.0285)
Water, Drainage and Renovation	0.00174	0.00717	-0.0278	-0.0188
	(0.0304)	(0.0420)	(0.0331)	(0.0379)
Total	-0.0539**	-0.0622	-0.00729	0.0518
	(0.0247)	(0.0888)	(0.0291)	(0.0812)
Observations	2,557	1,825	2,132	1,502
R-squared	0.234	0.240	0.669	0.718

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Individually implemented variables are all reported in one line (Individual), observations and R-squared is therefore approximate in Individual. Control variables are not reported.

Table 16 reports the same models as in table 15, but with KR ranking variables as the independent variables. In contrast to the NHO models, column 1 and 2 indicates evidence of a significant relationship between the business environment and the number of bankruptcies. Both the variables related to elementary school and *total* are negative and significant at a 5 % level when entered individually. Note that a negative coefficient in this setting suggest that an increase in the business environment quality (lower ranking number) increases the number of bankruptcies. I do cannot find the rationale behind this relationship without further analysis. We can find, however, that the coefficient for administrative procedures is positive and significant at a 10 % level, suggesting a negative correlation between business environment quality and the number of bankruptcies per 1000 firms.

Column 3 and 4 shows the models when using the number of start-ups as the dependent variable. It is an interesting observation, although not significant, that variables in column 1 and 2 seems to have the opposite sign (positive/negative) relative to the variables in columns 3 and 4. This can indicate that the business environment has opposite effects on the number of start-ups relative to the number of bankruptcies. As in table 15, we can also here observe a somewhat significant relationship between the number of start-ups per 1000 firms and the ranking variables. The coefficient for elderly care is negative and significant at a 5 % level when entered individually, indicating a positive correlation with the business environment quality. In addition, and as in the NHO models, we can observe some positive coefficients that are significant at a 10 % level. All coefficients lose their significance when entered combined. We can still observe that the r-squared is considerably larger for the start-up models than for the bankruptcy models.

Having looked at the number of bankruptcies and start-ups per 1000 firms as an indicator of firm performance, we can find some evidence suggesting a relationship between start-ups and the business environment. Most variables indicates that a higher quality business environment can lead to a higher number of successful start-ups. The effect is, however, small and we can observe some contradicting findings. We can find little evidence suggesting a relationship between the number of bankruptcies and the business environment. Our results in this section can support the findings in part 5.1 suggesting a significant, but weak, relationship between firm performance and business environment. The findings do also follows some of the results from the more aggregated models in the relevant literature. These papers, however, mostly look at aggregated models on a country level and controls less for regional and yearly fixed effects.

5.3 Can Business Environment Explain Why Firms Move?

In light of the results in several of the relevant papers, the findings that we can only detect a weak relationship between the business environment and general firm performance is sobering. This naturally arises the question as to weather a firm's business environment can explain other aspects of its behaviour. While an elaborate treatment of this topic is beyond the scope of this paper, I have conducted some tests to approach this question.

In particular, I will in this section look at the relationship between a municipality's business environment, represented by the NHO and KR rankings, and individual firms' moving behaviour. Even though we cannot say with certainty that business environment drives general firm performance, it can be that firms draws towards municipalities with greater business environment when in a moving decision. Figure 3 and 4 in part 4.3 showed that there seems to be a relationship between the municipality ranking percentiles and the number of firms in these areas. This section will analyse if this trend can be a result of firms moving towards municipalities with higher rankings. This relationship has not been tested in the relevant literature.

In order to investigate this relationship, I created a moving dummy equal to one in the year where the firm changed its municipality number, and zero otherwise. This allows upcoming models to regress the change in the moving dummy on the difference in the municipalities' rankings. As such, the coefficients in this section will report the effect of the destinations ranking variable on a firm's moving behaviour. All firms that do not change their municipality number throughout the period are omitted in order to isolate the effect of moving. I have spitted the dataset into the five main industries and three sizes introduced in part 5.1 in order to get a more detailed picture of the different drivers. For example, it might be that small firms with a highly educated employee base move for other reasons than larger manufacturing firms. As we do not have enough observations on big firms to run robust models here, these firms are not included in the size split models.

To ensure consistency, and due to the fact that there are no strong reasons to change it, the models use the same control variables as for all other individual firm models in this paper. These variables relates to employees, total assets, age, competition, centralization and ownership. The control variable related to centralisation will now be of particular importance in order to separate the effect of the business environment from the destination's location relative to metropolitan areas. This is something I can clearly see throughout the models, where the control variable related to centralisation (not reported) stands out at the most significant variable both for the NHO and KR models. Expect from this centralisation variable, however, there are quite significant variations between the industries when looking at the effect of different control variables. We can for example see that total assets, age and local competition is particularly important for firms in the secondary industry, while centralisation seems to be the only significant control variable for logistics firms. For firms in the commerce and KIBS section, close to all control variables remain statistical significant at a 5 % level.

As we can see in all the tables below, a large amount of firms have moved throughout the testing period. More than 7 500 firms have changed their municipality number between 2010 and 2015, and most of them are within the small size group and in the KIBS and commerce sector. We can find the lowest amount of moving firms in the logistics and *others* sector, with 500 and 300 firms having changed their municipality number, respectively. This is, nevertheless, enough observations to run multiple layer fixed effects models.

As in previous analysis, the models reported here do also include several layers of fixed effects. By implementing a logistic regression model with firm fixed effects and including a dummy for the geographical region, we can isolate much of the moving effect while still observe sufficient variation in the variables.[12] As most firms only move once throughout the period, it does not make much sense to include yearly fixed effects in these models. Note that these logistic regressions do not report r-squared.

[12] The model employ STATA's *xtlogit* command to regress binary dependent variables using panel data

Table 17: NHO, moving behaviour regressed with firm and region fixed effects

	KIBS		Commerce		Logistics		Secondary		Other	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(11)	(12)
VARIABLES	Moving	Moving	Moving	Moving	Moving	Moving	Moving	Moving	Moving	Moving
	0.000522	0.000431	0.000816	0.00134**	-0.000973	0.000803	-0.000353	0.000503	-0.00533***	-0.00344**
Industry and commerce	(0.000510)	(0.000583)	(0.000530)	(0.000624)	(0.000964)	(0.00114)	(0.000532)	(0.000633)	(0.00122)	(0.00155)
	-0.00144***	-0.00223***	-0.00240***	-0.00268***	-0.00194**	0.000272	-0.00167***	-0.000638	-0.00542***	-0.00505***
Labour market	(0.000514)	(0.000664)	(0.000502)	(0.000717)	(0.000934)	(0.00132)	(0.000548)	(0.000762)	(0.00107)	(0.00160)
	-0.000588	-0.00103	-0.00230***	-0.00199*	-0.00151	0.00411**	-0.00127*	0.00125	-0.00719***	-0.00645***
Demographics	(0.000656)	(0.000910)	(0.000695)	(0.00105)	(0.00120)	(0.00188)	(0.000662)	(0.00108)	(0.00162)	(0.00241)
	-0.000588	0.000224	0.000104	-2.33e-05	0.000970	0.00366***	0.000439	0.00142**	-0.00480***	-0.00536***
Competence	(0.000656)	(0.000570)	(0.000465)	(0.000574)	(0.000925)	(0.00119)	(0.000480)	(0.000597)	(0.00132)	(0.00170)
	-0.000588	-0.00203*	-0.00149*	-0.00193*	-0.00333**	0.000139	-0.00142*	0.000317	-0.00790***	-0.00749**
Economy (municipality)	(0.000656)	(0.00109)	(0.000852)	(0.00116)	(0.00151)	(0.00200)	(0.000816)	(0.00108)	(0.00201)	(0.00304)
	-0.000333	0.00294	-0.00254***	0.00187	-0.00432***	-0.0111***	-0.00255***	-0.00452**	-0.00956***	0.0132**
Total	(0.000830)	(0.00186)	(0.000842)	(0.00212)	(0.00146)	(0.00369)	(0.000825)	(0.00214)	(0.00191)	(0.00527)
Observations	9,876	9,876	8,302	8,302	2,045	2,045	6,636	6,636	1,364	1,364
Number of firms	2,477	2,477	2,003	2,003	516	516	1,659	1,659	339	339

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Individually implemented variables are all reported in one line (Individual), observations and number of firms is therefore approximate in Individual. Control variables are not reported.

Table 18: KR, moving behaviour regressed with firm and region fixed effects

	KIBS		Commerce		Logistics		Secondary		Other	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(11)	(12)
VARIABLES	Moving	Moving	Moving	Moving	Moving	Moving	Moving	Moving	Moving	Moving
	Individual	Combined	Individual	Combined	Individual	Combined	Individual	Combined	Individual	Combined
Elementary School	-0.000486	-0.00183**	0.000191	0.000270	-0.000675	-0.00162	-0.000677	0.00115	0.00339***	0.00229
	(0.000425)	(0.000793)	(0.000441)	(0.000857)	(0.000834)	(0.00165)	(0.000464)	(0.000898)	(0.00104)	(0.00222)
Elderly care	-1.37e-05	-0.000439	-0.000648*	0.000384	-0.00170**	-0.00152	-0.00105***	0.000535	-0.000556	-0.00128
	(0.000313)	(0.000515)	(0.000335)	(0.000565)	(0.000687)	(0.00114)	(0.000384)	(0.000652)	(0.000853)	(0.00149)
Child welfare	-0.000175	-0.000681	0.00131***	0.000781*	0.000375	-9.70e-05	0.000238	0.000799	0.00110	-0.000199
	(0.000319)	(0.000419)	(0.000352)	(0.000464)	(0.000691)	(0.000937)	(0.000384)	(0.000522)	(0.000801)	(0.00127)
Kindergarten	0.000552	-0.000222	-0.000524	-0.000475	-0.00211***	-0.00249**	0.000854*	0.00219***	-0.00205**	-0.00121
	(0.000378)	(0.000521)	(0.000391)	(0.000534)	(0.000750)	(0.00105)	(0.000443)	(0.000636)	(0.000931)	(0.00135)
Health	0.000236	0.000340	-0.000245	0.000391	-0.000557	0.000563	-9.11e-05	0.00104**	-0.00147*	-0.00167
	(0.000264)	(0.000362)	(0.000311)	(0.000417)	(0.000644)	(0.000867)	(0.000344)	(0.000457)	(0.000805)	(0.00114)
Social support	-0.000493	-0.000955	-0.000888*	2.61e-05	-0.00134	-0.00126	-0.000348	0.00143**	0.00221*	0.000986
	(0.000455)	(0.000594)	(0.000489)	(0.000626)	(0.000908)	(0.00123)	(0.000511)	(0.000677)	(0.00126)	(0.00192)
Culture	0.000565	0.000238	0.00145***	0.000894*	0.00142*	0.000834	0.000466	0.000217	-0.00521***	-0.00741***
	(0.000369)	(0.000445)	(0.000402)	(0.000476)	(0.000772)	(0.000969)	(0.000414)	(0.000513)	(0.00106)	(0.00129)
Economy (Municipality)	-0.000881***	-0.00124**	8.88e-07	0.000858	-0.000390	-0.000197	-0.000436	0.00125**	0.000993	-0.000698
	(0.000306)	(0.000483)	(0.000316)	(0.000526)	(0.000635)	(0.00103)	(0.000357)	(0.000579)	(0.000855)	(0.00140)
Costs	-0.000454	-0.000677	-0.00214***	-0.00164***	-0.00196***	-0.000484	-0.00119***	-1.46e-05	-0.00145	-0.00453***
	(0.000351)	(0.000470)	(0.000382)	(0.000495)	(0.000732)	(0.000997)	(0.000424)	(0.000581)	(0.00103)	(0.00145)
Environment and resources	0.000533	0.000346	0.000457	-6.55e-05	0.00189***	0.00182**	0.000633*	0.000487	0.000399	0.000384
	(0.000324)	(0.000363)	(0.000346)	(0.000392)	(0.000658)	(0.000761)	(0.000378)	(0.000431)	(0.000864)	(0.00106)
Administrative procedures	-0.000379	-0.000570	-0.00104***	-0.00108***	-0.000267	-0.000196	-0.000394	-8.00e-05	0.000362	-0.000399
	(0.000314)	(0.000349)	(0.000346)	(0.000378)	(0.000665)	(0.000739)	(0.000366)	(0.000410)	(0.000843)	(0.00103)
Water, Drainage and Renovation	-0.000560	-0.000524	-0.000441	0.000738	-0.00342***	-0.00258***	-0.00121**	-0.000384	-0.00447***	-0.00338**
	(0.000396)	(0.000459)	(0.000442)	(0.000515)	(0.000846)	(0.000949)	(0.000471)	(0.000537)	(0.00118)	(0.00143)
Totaltkorrigert	-0.000454	0.00199**	-0.00124***	-0.00101	-0.00264***	0.00103	-0.00140***	-0.00392***	0.00101	0.00483
	(0.000314)	(0.00101)	(0.000366)	(0.00113)	(0.000709)	(0.00221)	(0.000413)	(0.00126)	(0.000891)	(0.00303)
Observations	9,876	9,090	8,302	7,646	2,045	1,741	6,636	5,807	1,364	1,233
Number of firms	2,477	2,338	2,003	1,890	516	462	1,659	1,509	339	315

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Individually implemented variables are all reported in one line (Individual), observations and number of firms is therefore approximate in Individual. Control variables are not reported.

Table 17 reports the results when running the moving models on the NHO ranking variables and dividing firms into different industries. It is clear that we can here observe more significant relationships than we could when using the industry spitted model on individual firm performance. While we could only find a significant relationship between the labour market ranking and firm performance for some industries previously, we can now observe significant relationships in all industries.

As in previous models, we can also here observe that the coefficient related to the labour market is the most significant. This variable is negative and statistical significant for all industries when entered individually. A negative coefficient must be interoperated positively and indicates that if the ranking-number in the destination municipality is lower than in the origin municipality (i.e. higher performance), the likelihood of a firm moving to that municipality increases. In particular, a lower labour market ranking-number in the destination municipality (if entered individually) will result in a multiple effect of 1.00144 (1- (-0.00144)) for firms in the KIBS sector, and thus increase the probability of such a firm to move to the respective municipality. It is interesting to note that the competence coefficient lacks significance for firms in the KIBS sector. The competence coefficient relates to the number of people in a municipality with higher education, a crucial asset for many firms in the KIBS sector.

Regarding firms in the commerce sector, we can observe in column 3 and 4 that the demographics variable now becomes significant together with the labour market variable. Such a relationship can relate to the underlying factors in the demographics variable. Specifically, improved performance related to the demographics factor implies that we can observe either an increased share of younger and employed citizens or an increase in the overall population number. It is natural to assume that both these factors will have a positive impact on firms in the commerce industry. We can also observe a significant relationship between firms in the commerce sector and the industry and commerce variable when entered combined. While this coefficient is positive (negative moving effect), it is important to remember the high correlation found between the sub-rankings in the NHO publication. However, a positive coefficient can also reflect the negative impact of increased competition as the industry and commerce variable includes a factor for the number of newly started firms in the relevant area.

For firms in the logistics sector, the municipality economy coefficient comes out as negative and significant when entered individually, in addition to the mentioned labour market variable. This can indicate that as municipalities improve their economy ranking, by, for example, increasing their procurement of private services, firms in the logistics sector find this attractive and moves towards the respective municipality. When we enter all variables combined, we can observe that this effect loses its significance and that both demographics and competence becomes positive and significant. Note that these results can be skewed due to the high correlation between NHO's sub-rankings.

When looking at both firms in the logistics sector and in the secondary industry, we can observe that the variable reflecting the *total* ranking is both negative and highly significant. This holds true even when all variables are included combined. We cannot observe any other noteworthy results for firms in the secondary industry.

We can lastly see that all variables are negative and highly significant for firms in the *other* category. After further analysis of the underlying data, it is likely that the previous industry cleaning has excluded some organisations, such as kindergartens, that are governmentally controlled. These results can therefore be subject to reverse causality and should be interoperated with care.

Table 18 reports the results from the same models as above, but with KR rankings as the dependent variables. Equally to the NHO models, we can also here observe a higher number of significant relationships than we did when regressing firm performance. Also like in the NHO models, it appears that the business environment affects the commerce and logistics sector more than the KIBS sector and secondary industry. In fact, only the coefficient related to a municipality's economy turns out negative and significant at a 5 % level for firms in the KIBS sector when both entered individually and combined. For firms in the secondary industry, we can see that the variables elderly care, costs and water, drainage and renovation are negative and significant when entered individually. This effect, however, disappears when we enter all variables combined. We can actually see that several of the variables in the secondary industry turns positive and significant when entered combined.

Within the commerce sector in column 3 and 4, we can observe that the two variables costs and administrative procedures are consistent in the sense that they remain significant at a 1 % level when both entered individually and combined. They are also both negative, indicating a

positive relationship between municipality performance and attractiveness for firms within the commerce industry. The variables for child welfare and culture are, on the other hand, both positive when entered individually and combined, even though the significance drops to a 10 % level when entered combined.

A similar combination of negative and positive coefficients is observable for firms within the logistics sector. Here, kindergarten and water, drainage and renovation turns out significant and negative, while environment is significant and positive when both entered individually and combined. The positive coefficient can be explained by the rationale that municipalities with a high score on environment often have stricter regulations on pollution, and that this might reduce the attractiveness for logistics firms. However, further research is needed in order to fully understand these relationships. While elderly care, costs and *total* are all negative and significant when entered individually, these effects does not hold when all variables are entered combined.

For firms in the secondary industry, we are also here able to observe contradicting results with both positive and negative coefficients. Nevertheless, we can see that the only coefficient that remains significant when entered individually and combined is the *total* variable. This coefficient is negative and indicates a positive relationship between the overall ranking performance and attractiveness. Lastly, and while not as clear as in the NHO model, we can observe several negative and significant coefficients for firms in the *other* category.

Table A7 and A8 in the appendix reports the results of the moving models when splitting firms by their size instead of industry. As I do not have sufficient observation to regress the moving behaviour for big firms alone, I have excluded these firms from the tables. When using the NHO rankings as the independent variables in table A7, close to all coefficients turn out negative and significant. While we can see that some coefficients drops their significance when entered combined for medium sized firms, the overall trend remains the same. The models clearly sates a significant relationship between the destination municipality's business environment and its attractiveness for moving firms. Table A7 reports similar, but somewhat weaker, results when using KR rankings as inputs. Most coefficients turn out negative and significant when entered individually for small firms, and some of them, costs and administrative procedures, remain significant at a 1 or 10 % level when entered combined. Like in the NHO model in table A7, we can also in table A8 see a significant, but reduced, effect when we consider medium sized firms. Here, only elderly

care and water, drainage and renovation remains negative and significant when both entered individually and combined.

While section 5.1 and 5.2 only found a limited relationship between firm performance and business environment, this section has reported results suggesting a strong correlation between firms' moving behaviour and indicators of the destination's business environment. More specifically, we have observed evidence suggesting that firms take different aspects of the destination's business environment into account when in a moving decision. Most models furthermore reported a positive relationship (i.e. negative coefficients), indicating that firms move from municipalities with lower scores on the NHO and KR rankings towards municipalities with higher scores. If this truly reflect the real world, such a relationship can have major implications on local politics. Given that politicians can affect their municipality score, they might also be able to significantly improve their attractiveness for firms that are in a moving process.

As our findings are relatively volatile in respect to the different sub-rankings across models, we cannot say anything about which aspect of the business environment that attracts different firms. In order to gain this insight, further research is needed. In the next section of the paper, I will discuss some of these results in more detail.

6. Results

The results from the models is part 5.1 and 5.2 indicates that the relationship between a municipality's business environment and firm performance is generally weak, but that the effect is dependent on several aspects of firm characteristics. In part 5.3, we could observe, however, a strong relationship between firms' business environment and their moving behaviour. Although I have shortly commented these results throughout the paper, this section will introduce a discussion on the implications of my findings. The section will also discuss further research and the shortcomings of the paper.

The methodology used in this thesis largely follows of the approach used in much of the relevant literature introduced in part 3. However, some major differences in both the data input and models used can have influenced the outputs. Firstly, the firms used in this study all came from the same country. This naturally reduces the differences between firms, but also makes it easier to control for variation not caused by the local business environment. Secondly, and more importantly, the vast amount of firm level data has made it possible to run models with multiple layers of fixed effects. Part 4.3 and 5.1 showed that this ability to control for firm, region and year fixed effect is of major importance.

When not controlling for any fixed effects, we can clearly find a strong relationship between a firm's performance, indicated by its total revenue, and the local business environment, indicated by municipality rankings. This is in line with the findings of authors such as Kaufman (2003) and Durnev and Kim (2005). Once we control for fixed effects, on the other hand, and in particular regional and firm fixed effects, most of this significance disappears. The finding that much of the significance disappears as soon as we introduce fixed effects goes well in line with the results of Commander and Svejnar (2011). In contrast to Commander and Svejnar (2011), however, this paper goes further and separates the firms into different groups in order to see if different firms relates to their business environment differently.

Following the approach used by Beck, Asli and Vojislav (2005), the analysis firstly separates firms into the three different size groups, small, medium and big, based on their number of full time equivalents. The results from these models indicates that size tend to play a role in how much a firm is affected by its business environment. The first evidence of this is observable in table 9 and 10 of part 5.1. From the NHO models, the coefficient related to the labour market comes out as highly significant for small and medium sized businesses. From

the KR models, we generally observe more coefficients that are significant for small and medium sized firms than for big firms. One important aspect here is the reverse causality that is likely to be evident for the labour market coefficient in the NHO model. As the labour market variable contains measurements that firms themselves affect directly, such as the employment rate, once should interpret the results from this variable with extra care. Even though I have tried to control for this with lagged effects, and tested the models with extra two- and three-year lagged effects[13], it is unlikely that we are able to avoid the reverse causality problem completely.

Despite the fact that we most likely have some level of endogeneity issues, the finding that smaller firms are more affected than bigger firms remain robust when we use value added as the dependent variable. In addition, models using a three-year moving average of the ranking variables yield similar results. In fact, when using a moving average model, we can observe a stronger relationship for small and medium sized firms than in other models. This can indicate that we have some level of random variation in the rankings caused by measurement errors. As both firm performance and business environment generally tend to be relatively sticky, it is noteworthy that we get a more significant relationship when we reduce the volatility in the indicators of the business environment. It is also interesting that even though we find stronger results for small and medium sized firms, the effect on big firms continues to be absent. Such a result shows that when we attend to equalise the movement of the two variables performance and business environment, we are still not able to find any significant relationships for the biggest firms in the dataset. This strengthens our assumption that smaller firms are more affected than bigger firms, a finding that goes well in line with the results of Beck, Asli and Vojislav (2005).

While insight into the reason why smaller firms are more affected needs further research, it can relate to the fact that bigger firms most likely have operations across several municipalities. This can make bigger firms less affected by an individual municipality's business environment. In order to test for this, one should look at the business environment at a more aggregated level.

[13]These models are not reported in the paper as they give little extra insight

To gain further insights into how the business environment affects firms differently, the paper includes models that divide all firms into five different industry groups. Even though the effect is small in absolute values, we are also here able to observe a trend where the business environment affects some firms more than others. Specifically, firms in the KIBS sector and the secondary industry seems more affected than firms in other sectors.

Even though it appears to exist an underlying trend where the local business environment plays a bigger role for some firms, there is too much volatility in the results for us to say anything about which aspect of the business environment that is the most important. For example, we cannot find ground to state that the kindergarten or child welfare aspect of the business environment affects smaller firms more than bigger firms. This, however, can serve as an interesting starting point for future research.

In order to test the robustness of our results in part 5.1, I integrated a model using the number of bankruptcies and start-ups as a measurement for aggregated performance in part 5.2. These models sums all firms in the municipality in order to control for moving firms and reduce the effect of individual firm volatility. While we could not observe any evidence suggesting that improved business environments reduce the amount of bankruptcies, we were able to observe a positive relationship when regressing the number of start-ups per municipality. Even though most coefficients suggested that “good” business environments experienced a higher amount of successful start-ups, we could here observe some contradicting results. Furthermore, when looking at KR rankings in table 14, we could additionally observe that the sign (negative/positive) was in many cases opposite when looking at bankruptcies and start-ups. Most of these coefficients where not significant, but this would suggest that the municipalities with a higher score on business environment can experience less bankruptcies and more start-ups. If future analysis are be able to confirm this relationship, that could have major implications on local politics.

In light of the findings in part 5.1 and 5.2, I started to investigate if a firm’s business environment can explain other aspects of its behaviour. Specifically, I here implemented a model regressing the moving decisions of firms on the change in the business environments. This model only included the firms that had changed their municipality number in the testing period and looked at the difference in the origin’s and destination’s business environment. In contrast to the investigation of a firm’s financial performance, we could here find strong evidence suggesting a significant relationship between the business environment and moving

behaviour. The results from these models suggest that while one might not be able affect a firm's performance directly by changing its business environment, one can improve an area's attractiveness for firms across most industries and sizes. Even though we were able to find significant relationships in all industries and for both the NHO and KR rankings, it appears that firms in the KIBS sector are least affected. For firms in the KIBS sector, we can only find a significant relationship with the labour market coefficient when using the NHO ranking. As discussed earlier, it is likely that this variable suffers from reverse causality.

Nevertheless, if the findings in part 5.3 reflect the true behaviour of moving firms, this can have large implications on politics in local areas. As there is little doubt that the local industry has major impactions on an area's economic performance, it is likely a high priority for local politicians to increase the number of firms in their area. If, as we can find evidence for here, improved business environment attracts businesses it will therefore be highly relevant for local politicians to improve their business environment. It is, however, not given that these politicians actually can affect their business environment significantly. As we saw in in the data description section, many of the sub rankings do measure characteristics that most likely will be difficult for local politicians to change. This is especially true for the variables in the NHO publication that measures unemployment rate, sick leave and competence in the local population. We can see, however, variables in the KR publication, such as administrative procedures, that local politicians more likely can affect directly. These results therefore remain highly interesting and should be the subject of further investigation.

The findings in this thesis both contradicts and support the results found in the relevant literature discussed in part 3. While the analysis do not find sufficient evidence to state that there is a general relationship between a firm's local business environment and its financial performance, it is evident that some firms are more affected than others. In particular, it appears that smaller firms, and firms within the KIBS sector and secondary industry, are more affected than others are. We can also find evidence suggesting that firms do indeed take the change in business environment into account when moving from one municipality to another. A central finding to this paper is therefore that while a good business environment does not create good performing business, it appears that it can attract businesses when they are in a moving decision. Another interesting finding is that while the firm fixed effect estimator tends to knock out much of the significance for the biggest firms in the dataset, it is the region-, and to a degree the year-, fixed effects that are most important for smaller firms. This indicates

that there is some regional factor, including the business environment but also other elements, that is highly important for the performance of smaller firms.

This paper does not find, however, sufficient evidence to say anything about which part of a municipality's business environment that affect, or attract, local businesses. For insides into this area, further research is needed. It would also be interesting to investigate the characteristics of the affected firms further in order to understand how local politicians can have an impact on firm´s performance.

While the large dataset made available for this master thesis allows highly robust and detailed models, there are several limitations to the research. Firstly, the obvious problem with endogeneity makes it difficult to say anything about the direction of the effect with certainty. This is particularly the case with some of the sub rankings within the NHO publication as factors affected directly by the businesses are included. Another major weakness of the research is the quality of the proxies for business environment. Even though the thesis includes two separate publications that focuses on different characteristics of a municipality's environment, this will never be a perfect image of the true business environment. It is also possible that the majority of big firms included in the dataset has operations across municipalities, and that they therefore are less affected by one municipality's business environment. This does not mean, however, that no form of business environments affect these firms. Lastly, it is not given that decision makers are able to affect their business environment enough for it to have an implication on firms' performance or behaviour.

7. Conclusion

It has been widely argued in recent years that a region's business environment plays a major role on the overall strength of its economy, primarily through the financial performance of the local businesses. "Good" business environments –characterized by factors such as low taxation, highly educated citizens and good infrastructure- are expected to result in higher performing businesses, and bad environments are expected to result in poorer performing businesses. These concussions can be found in a wide arrange of relevant literature, including papers testing the relationship on country level, but also, and more recently, papers testing the relationship on an industry and firm level.

To explore whether such a relationship is evident also in Norway, and on a municipality level, I have used two types of datasets in this thesis. The first comprises a large firm level dataset of all Norwegian firms and groups in the period 2010-2015. The second dataset is two-split and consist of annual municipality rankings for all Norwegian municipalities in the same period, released by two separate publications. Combining these two datasets, the paper has implemented various models, and analysed firm characteristics based on size and industry identification. Both individual firm performance and aggregated performance has been analysed by looking at factors such as finical income, bankruptcies, start-ups and moving behaviour. To minimize problems of endogeneity, I have used lagged effects of both control variables and the independent business environment variables.

When analysing individual firm performance, and when looking at aggregated performance, only a few variables of the business environment retain any explanatory power once we control for firm, region and year fixed effects. We can therefore not observe any evidence suggesting a relationship between the local business environment and firm performance on a general level.

I do find, however, evidence suggesting that some firms, and in particular small firms and firms within the KIBS sector and the secondary industry, relates more to their business environments than others. An investigation of the fixed effects reviles that while firm fixed effects removes most of the significance for big firms, we can, to some extent, still find a

relationship for small, and to a degree, medium sized firms. The same is true for firms within the KIBS sector and the secondary industry.

These findings led us to question if a firm's business environment can explain other aspects of its behaviour. The paper takes a step towards answering this question by analysing the relationship between firms' moving pattern and the change in their business environment, represented by the municipality rankings. I find that, for most firms, the destination's business environment does indeed have a significant effect on the moving decision. If this relationship reflects the true considerations a firm take when in a moving decision, this can have major implications on local politics.

Overall, the findings in this paper brings into question much of the established knowledge in this important area. The findings suggest that it is extremely hard to influence a firm's financial performance by changing its business environment, but that municipalities are able to improve their attractiveness for firms in a moving decision. Such a result would suggest that policymakers wishing to improve the local economy should focus on attracting new businesses by improving their local business environment.

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9. Appendix

TABLE A1: Correlation matrix for KR sub rankings

	Elementary School	Child welfare	Kindergarden	Health	Social support	Culture	Economy (Municipality)	Elderly care	Costs	Environment and resources	Administrative procedures	Water, Drainage and Renovation
Elementary Scho	1,00											
Child welfare	0,14	1,00										
Kindergarden	-0,09	0,01	1,00									
Health	-0,02	-0,21	0,16	1,00								
Social support	-0,33	-0,27	0,06	0,31	1,00							
Culture	0,40	0,28	0,09	-0,03	-0,35	1,00						
Economy (Munic	0,09	0,09	-0,21	0,05	0,07	0,00	1,00					
Elderly care	-0,04	-0,20	0,19	0,26	0,12	-0,18	-0,07	1,00				
Costs	-0,11	-0,06	0,10	0,03	0,05	-0,36	0,09	0,24	1,00			
Environment and	0,37	0,24	-0,10	-0,26	-0,41	0,30	-0,08	-0,10	-0,06	1,00		
Administrative pr	-0,21	-0,17	0,06	0,22	0,31	-0,17	0,17	0,12	0,07	-0,28	1,00	
Water, Drainage	0,05	0,03	0,12	0,04	-0,09	-0,09	0,14	0,17	0,42	-0,04	0,06	1,00

TABLE A2: KR rankings regressing Total Revenue without firm, region and year fixed effects

VARIABLES	(1) Tot. Rev.	(2) Tot. Rev.	(3) Tot. Rev.	(4) Tot. Rev.	(5) Tot. Rev.	(6) Tot. Rev.	(7) Tot. Rev.	(8) Tot. Rev.	(9) Tot. Rev.	(10) Tot. Rev.	(11) Tot. Rev.	(12) Tot. Rev.	(13) Tot. Rev.	(14) Tot. Rev.
Elementary School	-0.791***													0.157
	(0.208)													(0.361)
Elderly care		0.291*												0.825***
		(0.164)												(0.248)
Child welfare			-0.164											0.159
			(0.162)											(0.216)
Kindergarten				0.475**										0.879***
				(0.186)										(0.249)
Health					0.605***									1.086***
					(0.148)									(0.185)
Social support						0.821***								1.259***
						(0.219)								(0.273)
Culture							-0.0336							-0.403
							(0.235)							(0.276)
Economy (Municipality)								-0.620***						0.0378
								(0.141)						(0.224)
Costs									-0.584***					0.00915
									(0.188)					(0.270)
Environment and resources										-0.155				0.0754
										(0.147)				(0.167)
Administrative procedures											0.444***			0.566***
											(0.155)			(0.169)
Water, Drainage and Renovati												0.0443		0.403*
												(0.200)		(0.225)
Totaltkorrigert													-0.274*	-1.648***
													(0.164)	(0.454)
Constant	-15,925***	-16,105***	-15,997***	-16,031***	-16,228***	-16,319***	-16,031***	-15,870***	-15,933***	-16,044***	-16,357***	-15,984***	-15,997***	-17,038***
	(326.4)	(327.2)	(326.6)	(327.9)	(328.5)	(337.0)	(325.9)	(327.3)	(326.8)	(325.5)	(336.5)	(332.5)	(326.0)	(405.3)
Observations	544,351	544,840	543,894	542,089	544,973	542,865	544,948	544,948	544,948	543,293	517,950	525,992	544,973	497,284
R-squared	0.385	0.3851	0.3851	0.3851	0.3852	0.385	0.3851	0.3852	0.3851	0.3849	0.3852	0.3839	0.3851	0.3845
Number of firms	165,295	165,363	165,277	164,658	165,370	165,217	165,369	165,369	165,369	165,194	163,345	162,858	165,370	159,483

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

TABLE A3 – All firms, NHO ranking with firm, region and year fixed effect

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
VARIABLES	Tot. Rev	Tot. Rev	Tot. Rev	Tot. Rev	Tot. Rev	Tot. Rev	Tot. Rev	Tot. Rev
Log L1 Total Assets	1,921***	1,921***	1,921***	1,921***	1,921***	1,921***	1,921***	1,920***
	(27.51)	(27.51)	(27.51)	(27.51)	(27.51)	(27.51)	(27.51)	(27.51)
Log L1 Employees	2,108***	2,108***	2,108***	2,108***	2,108***	2,108***	2,108***	2,108***
	(36.32)	(36.32)	(36.31)	(36.32)	(36.32)	(36.32)	(36.32)	(36.32)
Log L1 Local Competition	-95.54***	-96.72***	-97.18***	-97.13***	-98.31***	-95.62***	-96.50***	-100.6***
	(35.09)	(35.09)	(35.09)	(35.10)	(35.13)	(35.09)	(35.09)	(35.14)
Age	268.1	270.9	272.8	267.5	274.3	267.5	271.4	277.9
	(9.668e+07)	(9.668e+07)	(9.668e+07)	(9.668e+07)	(9.668e+07)	(9.668e+07)	(9.668e+07)	(9.668e+07)
Centralisation	-37.53	-25.47	-7.390	-22.09	-6.403	-34.81	27.24	27.17
	(28.73)	(29.56)	(29.20)	(29.78)	(34.78)	(30.87)	(32.39)	(37.41)
Foreign	2,255***	2,255***	2,257***	2,255***	2,256***	2,255***	2,261***	2,258***
	(483.0)	(483.0)	(483.0)	(483.0)	(483.0)	(483.0)	(483.0)	(483.0)
Listed	5,013***	5,018***	4,999***	5,008***	5,012***	5,013***	5,013***	5,000***
	-1,672	-1,672	-1,672	-1,672	-1,672	-1,672	-1,672	-1,672
Cooperation	1,970*	1,970*	1,965*	1,968*	1,975*	1,970*	1,969*	1,965*
	-1,041	-1,041	-1,041	-1,041	-1,041	-1,041	-1,041	-1,041
Private	1,268***	1,268***	1,273***	1,268***	1,270***	1,268***	1,273***	1,273***
	(436.6)	(436.6)	(436.6)	(436.6)	(436.6)	(436.6)	(436.6)	(436.6)
Industry and commerce		-0.576*						-0.596*
		(0.332)						(0.335)
Labour market			-2.361***					-2.278***
			(0.411)					(0.416)
Demographics				-0.905**				-0.674
				(0.458)				(0.463)
Competence					-0.857			-0.357
					(0.540)			(0.546)
Economy (Municipality)						-0.133		0.0665
						(0.552)		(0.557)
Total							-2.910***	
							(0.672)	
Observations	506,182	506,182	506,182	506,182	506,182	506,182	506,182	506,182
R-squared	0.917	0.917	0.917	0.917	0.917	0.917	0.917	0.917

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

TABLE A4 – All firms, KR ranking with firm, region and year fixed effect

VARIABLES	(1) Tot. Rev.	(2) Tot. Rev.	(3) Tot. Rev.	(4) Tot. Rev.	(5) Tot. Rev.	(6) Tot. Rev.	(7) Tot. Rev.	(8) Tot. Rev.	(9) Tot. Rev.	(10) Tot. Rev.	(11) Tot. Rev.	(12) Tot. Rev.	(13) Tot. Rev.	(14) Tot. Rev.	(15) Tot. Rev.
Log L1 Total Assets	1,921***	1,920***	1,921***	1,920***	1,918***	1,921***	1,922***	1,921***	1,921***	1,921***	1,919***	1,919***	1,919***	1,921***	1,913***
	(27.51)	(27.53)	(27.51)	(27.56)	(27.58)	(27.51)	(27.61)	(27.51)	(27.51)	(27.51)	(27.59)	(28.87)	(28.25)	(27.51)	(29.81)
Log L1 Employees	2,108***	2,109***	2,108***	2,111***	2,105***	2,108***	2,113***	2,109***	2,109***	2,108***	2,107***	2,115***	2,136***	2,108***	2,142***
	(36.32)	(36.35)	(36.33)	(36.40)	(36.43)	(36.32)	(36.47)	(36.32)	(36.32)	(36.32)	(36.43)	(38.23)	(37.46)	(36.32)	(39.64)
Log L1 Local Competition	-95.54***	-96.13***	-95.16***	-94.92***	-95.09***	-96.44***	-97.37***	-98.65***	-96.02***	-94.77***	-95.31***	-107.3***	-88.85**	-95.57***	-106.3***
	(35.09)	(35.11)	(35.10)	(35.13)	(35.12)	(35.10)	(35.19)	(35.11)	(35.09)	(35.09)	(35.14)	(36.41)	(35.70)	(35.09)	(37.24)
Age	-846.8	1,231	-409.7	600.6	82.19	-845.4	1,882	342.6	345.8	345.5	-2,817	1.158e+11	7,444	-847.2	1,756
	(9.668e+07)	(1.343e+08)	(4.485e+07)	(4.480e+07)	(4.707e+07)	(9.668e+07)	(1.389e+08)	(4.308e+07)	(4.308e+07)	(4.308e+07)	(1.969e+08)	(1.186e+12)	(2.383e+08)	(9.668e+07)	(1.172e+08)
Centralisation	-37.53	-30.47	-38.03	-39.82	-35.54	-36.58	-27.41	-17.63	-38.95	-38.77	-36.74	-20.96	-47.22	-34.65	9.127
	(28.73)	(29.25)	(28.76)	(28.88)	(28.85)	(28.75)	(29.31)	(29.80)	(28.75)	(28.74)	(28.99)	(30.39)	(30.17)	(28.76)	(34.87)
Foreign	1,970*	1,950*	1,969*	2,073**	824.7	1,972*	2,048*	1,964*	1,970*	1,972*	1,971*	2,067*	2,093*	1,963*	1,026
	(1,041)	(1,047)	(1,041)	(1,055)	(1,061)	(1,041)	(1,057)	(1,041)	(1,041)	(1,041)	(1,042)	(1,088)	(1,073)	(1,041)	(1,163)
Listed	2,255***	2,219***	2,254***	2,275***	2,230***	2,255***	2,231***	2,255***	2,255***	2,255***	2,257***	2,372***	2,325***	2,253***	2,401***
	(483.0)	(484.8)	(483.1)	(485.7)	(483.2)	(483.0)	(487.0)	(483.0)	(483.0)	(483.0)	(483.5)	(509.2)	(497.2)	(483.0)	(528.1)
Cooperation	5,013***	4,979***	5,015***	5,034***	5,010***	5,001***	4,992***	5,022***	5,029***	5,026***	5,011***	6,796***	5,099***	5,025***	6,893***
	(1,672)	(1,673)	(1,672)	(1,674)	(1,672)	(1,672)	(1,676)	(1,672)	(1,672)	(1,672)	(1,673)	(1,753)	(1,689)	(1,672)	(1,778)
Private	1,268***	1,231***	1,267***	1,285***	1,277***	1,268***	1,253***	1,268***	1,268***	1,269***	1,268***	1,324***	1,353***	1,267***	1,420***
	(436.6)	(438.6)	(436.6)	(439.5)	(436.6)	(436.6)	(440.7)	(436.6)	(436.6)	(436.6)	(437.1)	(461.3)	(450.7)	(436.6)	(480.0)
Elementary School		-0.364													-0.407
		(0.250)													(0.294)
Elderly care			-0.101												-0.138
			(0.182)												(0.209)
Child welfare				0.119											0.227
				(0.178)											(0.206)
Kindergarten					-0.295										-0.381
					(0.212)										(0.251)
Health						0.160									0.297
						(0.164)									(0.183)
Social support							0.545**								0.435
							(0.240)								(0.277)
Culture								-0.760**							-1.189***
								(0.302)							(0.349)
Economy (Municipality)									-0.230						-0.137
									(0.158)						(0.202)
Costs										-0.368					-0.259
										(0.229)					(0.300)
Environment and resources											-0.0943				0.0452
											(0.155)				(0.177)
Administrative procedures												0.0979			0.128
												(0.164)			(0.175)
Water, Drainage and Renovation													-0.175		-0.129
													(0.225)		(0.251)
Totaltkorrigert														-0.393**	
														(0.189)	
Observations	506,182	505,562	506,043	505,062	503,325	506,182	503,899	506,158	506,158	506,158	504,521	477,942	486,992	506,182	457,564
R-squared	0.917	0.917	0.917	0.917	0.917	0.917	0.917	0.917	0.917	0.917	0.917	0.915	0.917	0.917	0.915

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

TABLE A5: NHO rankings regressing Value added with firm, region and year fixed effects

	SMALL		MEDIUM		BIG	
	Individual	Combined	Individual	Combined	Individual	Combined
VARIABLES	Value Added	Value Added	Value Added	Value Added	Value Added	Value Added
	-1	-2	-3	-4	-5	-6
Industry and commerce	-0.384**	-0.305*	-0.00963	-0.0153	-2.215	-4.028
	(0.176)	(0.181)	(1.285)	(1.315)	(7.962)	(8.233)
Labour market	-0.451**	-0.329	-3.758**	-3.888**	-6.831	-9.679
	(0.223)	(0.230)	(1.596)	(1.626)	(9.810)	(10.37)
Demographics	-0.317	-0.165	-0.787	-0.355	1.539	0.613
	(0.241)	(0.250)	(1.830)	(1.867)	(10.55)	(11.04)
Competence	-0.624***	-0.432*	0.441	1.577	5.280	8.380
	(0.240)	(0.257)	(1.938)	(2.038)	(11.60)	(12.52)
Economy (municiplaity)	-0.274	-0.00993	-1.486	-1.468	8.263	9.020
	(0.279)	(0.293)	(2.081)	(2.152)	(12.33)	(12.96)
Total	-1.063***		-2.712		1.082	
	(0.323)		(2.488)		(14.62)	
Observations	399,267	399,267	78,767	78,767	5,881	5,881
R-squared	0.721	0.721	0.717	0.717	0.863	0.863

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Individually implemented variables are all reported in one line (Individual), observations and R-squared is therefore approximate in Individual. Control variables are not reported.

TABLE A6: KR rankings regressing Value Added with firm, region and year fixed effects

	SMALL		MEDIUM		BIG	
	Individual	Combined	Individual	Combined	Individual	Combined
VARIABLES	Value Added	Value Added	Value Added	Value Added	Value Added	Value Added
	(1)	(2)	(3)	(4)	(5)	(6)
Elementary School	0.162	0.209	-0.422	-2.760	3.236	-7.549
	(0.0989)	(0.160)	(1.876)	(3.044)	(14.41)	(21.45)
Elderly care	-0.167**	-0.189*	-1.319	-2.689	-4.829	-13.31
	(0.0719)	(0.108)	(1.322)	(1.974)	(9.950)	(13.91)
Child welfare	-0.140**	-0.197**	-0.637	-1.777	2.735	2.938
	(0.0703)	(0.0969)	(1.359)	(1.836)	(11.13)	(13.69)
Kindergarten	-0.0438	-0.0630	0.835	0.0508	11.57	8.604
	(0.0838)	(0.115)	(1.694)	(2.243)	(14.98)	(18.56)
Health	-0.128**	-0.149*	1.812	1.579	-2.576	-0.457
	(0.0651)	(0.0808)	(1.205)	(1.474)	(8.626)	(10.23)
Social support	0.0939	0.102	-0.0667	-1.939	1.833	-4.481
	(0.0947)	(0.122)	(1.866)	(2.342)	(16.04)	(19.26)
Culture	-0.139	-0.0905	0.268	0.228	-34.65	-40.46
	(0.119)	(0.140)	(2.332)	(2.723)	(21.45)	(25.06)
Economy	-0.00713	-0.0807	-0.316	-0.238	5.321	5.195
	(0.0627)	(0.0968)	(1.171)	(1.766)	(8.475)	(12.70)
Costs	-0.181**	-0.227*	-1.439	-2.649	4.906	-8.862
	(0.0904)	(0.135)	(1.660)	(2.509)	(11.11)	(18.59)
Environment and resources	-0.0266	-0.0223	-1.358	-1.324	-0.935	1.578
	(0.0614)	(0.0718)	(1.165)	(1.349)	(8.286)	(9.498)
Administrative procedures	0.0120	0.0400	-0.688	-1.314	4.663	5.371
	(0.0653)	(0.0721)	(1.216)	(1.348)	(9.168)	(10.41)
Water, Drainage and Renovation	0.195**	0.157	0.557	0.209	-12.01	-12.98
	(0.0893)	(0.102)	(1.713)	(1.933)	(13.84)	(16.42)
Total	-0.202***	-0.129	-0.583	3.454	4.597	12.69
	(0.0748)	(0.196)	(1.377)	(3.657)	(9.532)	(24.19)
Observations	408,203	368,669	43,369	40,045	1,956	1,864
R-squared	0.787	0.784	0.651	0.651	0.800	0.801

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Individually implemented variables are all reported in one line (Individual), observations and R-squared is therefore approximate in Individual. Control variables are not reported.

TABLE A7: NHO rankings regressing Total Revenue with firm, region and year fixed effect

	SMALL		MEDIUM	
	Individual	Combined	Individual	Combined
VARIABLES	Moving	Moving	Moving	Moving
	(1)	(2)	(3)	(4)
Industry and commerce	0.000225	0.000691**	-0.00223**	-0.000978
	(0.000277)	(0.000323)	(0.000879)	(0.00108)
Labour market	-0.00166***	-0.00152***	-0.00498***	-0.00456***
	(0.000272)	(0.000374)	(0.000912)	(0.00127)
Demographics	-0.00149***	-0.000529	-0.00585***	-0.00458**
	(0.000349)	(0.000519)	(0.00129)	(0.00188)
Competence	0.000479*	0.000762**	-0.00116	-1.20e-05
	(0.000249)	(0.000308)	(0.000849)	(0.00112)
Economy (Municipality)	-0.00162***	-0.00116**	-0.00450***	-0.00112
	(0.000436)	(0.000587)	(0.00159)	(0.00221)
Total	-0.00198***	-0.000549	-0.00726***	0.00291
	(0.000432)	(0.00106)	(0.00154)	(0.00391)
Observations	28,682	28,682	2,652	2,652
Number of firms	7,162	7,162	702	702

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Individually implemented variables are all reported in one line (Individual), observations and R-squared is therefore approximate in Individual. Control variables are not reported.

TABLE A8: KR rankings regressing Total Revenue with firm, region and year fixed effect

	SMALL		MEDIUM	
VARIABLES	Individual Moving	Combined Moving	Individual Moving	Combined Moving
	(1)	(2)	(3)	(4)
Elementary School	-0.000358	-0.000301	0.00173**	-0.00128
	(0.000238)	(0.000449)	(0.000764)	(0.00154)
Elderly care	-0.000584***	0.000120	-0.00158***	-0.00333***
	(0.000183)	(0.000303)	(0.000612)	(0.00103)
Child welfare	0.000460**	0.000224	0.000299	-0.000941
	(0.000187)	(0.000247)	(0.000579)	(0.000798)
Kindergarten	-0.000174	-2.93e-05	5.52e-05	-0.00142
	(0.000213)	(0.000294)	(0.000756)	(0.00101)
Health	-0.000229	0.000389*	0.000943*	0.000607
	(0.000162)	(0.000219)	(0.000532)	(0.000700)
Social support	-0.000625**	9.54e-05	0.000412	-7.51e-05
	(0.000258)	(0.000335)	(0.000906)	(0.00124)
Culture	0.000787***	0.000284	0.000213	-0.000816
	(0.000211)	(0.000254)	(0.000712)	(0.000888)
Economy	-0.000506***	0.000132	0.000392	-0.00162*
	(0.000175)	(0.000283)	(0.000599)	(0.000930)
Costs	-0.00144***	-0.00104***	-0.00154**	-0.00106
	(0.000204)	(0.000271)	(0.000717)	(0.000931)
Environment and resources	0.000734***	0.000392*	-7.65e-05	-0.000236
	(0.000186)	(0.000210)	(0.000637)	(0.000724)
Administrative procedures	-0.000584***	-0.000443**	0.000642	-0.000156
	(0.000183)	(0.000202)	(0.000606)	(0.000690)
Water, Drainage and Renovation	-0.00119***	-0.000508*	-0.00203**	-0.00224**
	(0.000231)	(0.000265)	(0.000828)	(0.000955)
Total	-0.00124***	-0.000367	0.000181	0.00430**
	(0.000191)	(0.000598)	(0.000650)	(0.00196)
Observations	28,167	25,393	2,603	2,380
Number of firms	7,064	6,551	690	645

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Individually implemented variables are all reported in one line (Individual), observations and R-squared is therefore approximate in Individual. Control variables are not reported.