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Abstract

This paper seeks to answer the impact of foreign acquisitions on listed companies in the Norwegian market. Over the period of 2003-2018 we found 44 Norwegian listed companies with our specific limitations which had been exposed for cross-border acquisition. Looking at trends and firm performance for two samples, acquired and non-acquired firms, we try to investigate the effects a foreign investor has on the Norwegian market. We use the performance measures ROE and ROA, and the characteristic measures size and leverage. We find evidence that firms with weak size are more likely to be acquired by foreign investors. We do not find evidence that firm performance change after acquisition. Due to lack of statistical significance in firm performance we cannot conclude on the impact foreign investors have on the Norwegian market, but we see trends towards similar research articles.

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1. Introduction

In 2017, Elisabeth Holvik, Chief economist in Sparebank 1, stated that she was worried about the fact that almost 50% of acquisitions in Norway come from foreign investors and that the number is increasing. According to Elisabeth, “The good jobs will disappear, and the whole society will be weakened” (Nettavisen, 2017). Where do these concerns come from? Is this trend of increasing foreign ownership on Oslo Stock Exchange problematic for Norway’s future?

Since the turn of the century, countries have witnessed favorable impacts from foreign investments directly on target firms and indirectly on economic development within target countries. As a result, governments have increasingly liberalized their policies to attract foreign investments. Foreign investors can increase the competitiveness of target countries through new capital, technology upgrades and enhancing local workforce skills (World Bank Group, 2010). Foreign investors may also transfer expertise in terms of R&D abilities and managerial approaches that result in productivity gains in the acquired companies (Piscitello & Rabbiosi, 2005). Target firms may also benefit from the parent’s resources, such as supplier relationships, marketing, technology, and distribution knowledge which helps acquired companies cut costs (Capron, 1999).

In the Norwegian market, we’ve seen a significant increase in foreign ownership within listed companies, ever since the trading system was changed back in 2002 (Jørgensen, K. 2012). Today, this level is almost at an all-time high, with Nordic and Norwegian M&A trends indicating that the level will continue to rise, and no indication of stagnation (Wiersholm, 2021). Many other countries have foreign ownership in the range of 40-50%, with Denmark reaching above 50% in 2019 (Danmarks Nationalbank, 2019), indicating that the increase we see here in Norway is not alarming by itself. However, this might change if we consider Norway’s specific ownership structure. The Norwegian government directly owns a large portion of the outstanding shares in several companies. Folketrygdfondet owns smaller, but still relatively large stakes in many companies, and relatively low levels of private investments (non-professional) compared to our Scandinavian neighbors. Ownership structure in Norway has been a subject for debate for many years, with several politicians and economists raising their opinions and sounding the alarm, especially regarding State- and foreign

ownership. However, these opinions are rarely backed up by empirical evidence, suggesting that the statement might not hold true. We intend to contribute to this debate, with empirical evidence from studies related to the same topic, as well as our own analysis on the performance of acquired firms in relation to specific firm characteristics, both before and after the acquisition.

Several economists and politicians argue that foreign ownership can have a negative effect on the Norwegian market, as infrastructure, technology and labor is moved abroad. We decided to investigate whether this was a recurring issue for listed Norwegian firms being targeted by foreign investors. We found evidence of unlisted Norwegian companies moving production abroad after being acquired by foreigners such as Elko. Elko was a company producing electronic devices but was acquired by a French company in 1999. In 2020 it was decided that the factory in Åmot should be moved to Germany and the employees in Norway lost their jobs (Gullord, 2020). This is a perfect example of what economists and politicians fear might happen with listed companies if the trend in foreign acquisitions continues. However, after further research we found no evidence supporting this claim regarding listed foreign acquisitions. In fact, evidence suggest that domestically (Norwegian) owned firms relocate divisional headquarters at approximately the same rate as foreign owned companies (Benito et al., 2011). Which led us to ask whether this is or should be a major concern going forward.

This thesis seeks to illuminate the effects foreign investors have on Norwegian firms. Through empirical evidence alongside previous studies, we will be able to understand whether these concerns are justifiable. The objective of our thesis is to gather data on foreign acquisitions from reliable sources, extracting and storing several key financial variables over the respective time-period and run regressions.

The thesis will not consider country-specific effects even though previous research articles look at where foreign investors have its origins. It could have been relevant to see where foreign investors are coming from and investigate which country performs best, but due to the small sample we use in this thesis, we have chosen to exclude this topic from our research.

1.2 Research Question

With regards to the section above, we want to investigate the economic consequence a foreign acquisition has on the acquired firm. We will look at Norwegian listed companies that have been acquired by foreign investors. We will answer two hypotheses based on the gathered data, which is closely related to previous research in the same field. Applying well known empirically statistical tests such as Probit and OLS regressions, we seek to answer if these factors are significant. On this basis, we formed the following research question.

“Have Norwegian companies benefited from increased foreign ownership, or does this trend present a challenge for the Norwegian markets?”

In order to answer this question, we need to gather a sample of acquisitions on Norwegian listed firms. We will only focus on the Norwegian market even though previous research has taken several countries into account. This thesis consists of six main sections. The first section covers various reasons and incentives behind acquisitions on a general basis. The second section consists of literature review with previous research linked to our topic. In the third section we look at the methodology used and our hypotheses. The fourth section covers data and selection process. The fifth section covers our result and findings, while our last section consists of conclusion, with limitations and suggestion for future research.

1.3 Reasons Behind Acquisitions.

This section will elaborate on reasons for acquisitions on a general basis. Since we are looking at the economic consequences of foreign acquisitions, we find it relevant to look at the mechanisms that may trigger an acquisition to get a better understanding as to why companies on Oslo Stock Exchange are acquired.

There are a variety of reasons and incentives for investors to acquire listed companies. They may seek economies of scale, increased synergies, diversification, or cost reduction (Kenton, 2020). Synergy is the rather simplistic notion that two or more businesses in combination will create a greater shareholder value than if the firms operated separately. Synergies are usually divided into two basic types, operating and financial synergies. Operating synergy can be determined as shareholder wealth creation where gains in efficiency comes from improved managerial practices. Such operational synergies are typically distribution and

administration (e.g. marketing, human resources, accounting etc.), but also economies of scale and greater pricing power due to less competition which improves margins. Financial synergy refers to the impact of the acquisition on the cost of capital (DePamphilis, 2010). Access to cheap capital is a strong motive for financial synergies. Larger companies often have easier access to cheap capital, and so, most acquisitions with financial synergies as motive is done by larger companies buying smaller firms.

Acquisitions outside a company's current primary line of business is called diversification and is typically justified in one of two ways. First of all, diversification may reduce the cost of capital, i.e. create financial synergies. Diversification allows a firm to shift its core business to new markets with higher growth prospects. A firm that experiences slow growth in its current markets can benefit from diversification by accelerating growth into new markets. However, entering a new market could also increase the risk of the firm (DePamphilis, 2010).

Mismanagement or agency problems within a firm is another reason for acquisitions. Agency problems arise when there is a difference between the interests of incumbent managers and the firm's shareholders (DePamphilis, 2010). When the management owns a small fraction of the outstanding shares, they may be more inclined to focus on their job security than maximizing shareholder value. If such mismanagement is tolerated over a long period of time, the stock price will put pressure on the managers to take actions in order to raise the share price or risk being a target for hostile takeovers.

Acquisitions can also be motivated by taxation. Norway has for a long time had one of the most aggressive taxations on company profits. The system was created in 1992, and remained largely unchanged until 2013-2014 (Bjørnstad, 2013), with a corporate tax on profits amounting to 28%, while other Nordic and European countries steadily reduced their tax rate. Until 2014, Norway was one of the few countries left without tax regulations preventing multinational companies from transferring profits created in Norway to other countries with lower taxation. This incentivized multinationals to keep or put high costs on their Norwegian sister company, while shifting their profits to countries with lower tax rates. Without this regulation, multinationals could also finance Norwegian acquisitions through internal loans with high interest deductions, while interest income was funneled to

countries with lower tax rates. Consequently, increasing the competitiveness of well diversified multinational companies given its higher debt capacity and associated tax benefits (Seth et al., 2002). As a result of this, the Norwegian government took action to reduce the corporate tax rate to follow our closest neighbors. This led to increased competitiveness of Norwegian companies, and at the same time increased the government's tax income from multinationals and recently acquired Norwegian companies (Bjørnstad, 2014).

2. Literature Review

This section of the thesis will consist of previous research articles linked to foreign acquisitions. Previous findings are important to study in order to educate the reader on the most renowned theories in the field. By looking at previous findings on this topic, we can form expectations related to the outcome of our research and the results of foreign acquisitions on the Oslo Stock Exchange.

After reading regular press, we came to learn that the frequency of foreign acquisitions was increasing. However, most of the concerns brought up in this debate was not backed by empirical evidence from Norway, nor any other country. What are the actual pros and cons of foreign ownership? One obvious positive outcome is that foreign ownership comes with fresh capital into the firm, hence better liquidity. This is something that can be supported by the findings in "*Foreign Portfolio Flows and the Trading Environment*" (Jørgensen, K. 2012). This article shows that the Norwegian market has benefited from this change, leading to a general increase in liquidity, substantial ease in trading Norwegian equities and a subsequent fall in associated costs, which increased foreign portfolio flows. In contrast to economist Elisabeth Holvik, Jørgensen finds no evidence of foreign ownership being linked to negative consequences for the Norwegian market even though it has risen to around 40%.

Information asymmetry is something that might be a challenge when foreign investors enter a country. Information needs to flow across borders seamlessly to inform investors about the ongoing situation and possible challenges that can impact efficiency and decision-making within the firm. Government and foreign institutional owners are associated with different levels of information asymmetry

and agency problems according to Chen et al., (2014). They find robust evidence that government ownership increases investment inefficiency as investment Q sensitivity weakens (Tobin's Q). The opposite happens with foreign ownership. Another problem is that government ownership can have different incentives, which can lead to investment inefficiency. For example, firms owned by the government might be evaluated on the basis of whether they accomplish political objectives, which tend not to be value maximization, such as higher wages and employment-benefits.

Foreign investors usually acquire larger and less profitable firms, often in countries with lower governance. Their goal is to make these firms profitable in the long run. In fact, between 2008-2014, 850 European private companies who experienced change in the ownership structure showed higher return on assets (ROA) in the short term, than companies who did not have any changed ownership structure. They argued that profit margin decreases due to higher administrative, marketing, and operating costs. One of the reasons is that foreign owned firms spend more money to train the employees than domestic owned firms. Hence, lower ROA and profit margin in the short term does not necessarily mean it is a negative sign, unless the foreign investors have other non-maximization incentives to buy the firm. These arguments are well supported by evidence presented in "*The effect of domestic to foreign ownership change on firm performance in Europe*" (Lindemanis et al., 2019).

Acquisitions must be motivated by one or several factors that the investors see a value in. One factor is profitability, which can be either direct or indirect. Direct profitability is related to operational profit, while indirect profitability can be access to new markets or technology that will increase the profitability in the long run (Hannan & Rhoades, 1987). Another motivation is risk reduction. Cross-border acquisitions ensure portfolio diversification which reduces the risk of the company. Financial synergies can also be a motivation for the investor. The buyer could have good access to less expensive cash which means he or she might achieve a lower cost of capital (DePamphilis, 2010). However, personal self-interest by a manager who gets paid according to the size of the company might reduce the profitability in the firm according to (Conyon et. al., 2002).

In this thesis, we will focus on the Norwegian market, but we find it relevant to investigate whether other Nordic countries have experienced any effects related foreign acquisitions. As economist Elisabeth Holvik mentioned, she was worried that “the good jobs will disappear”. What are the consequences if this is true? This statement is relatively vague, but her concern is likely linked to acquisitions leading to jobs moving abroad. If jobs are offshored and replaced with better suitable labor for the firm, then it might not present a problem. This is something that is supported in the research article “*Empirical investigations of labour market and welfare state effects in Denmark and the Nordic countries*” (Refslund & Andersen, 2014). They find evidence that if education is increasing, offshoring does not present a big problem in terms of job losses. In addition, the tax incentives do not seem to play a big role in deciding whether to offshore or not.

3. Hypotheses and Methodology

3.1 Methodology

Regression analysis is a statistical technique for investigating relationships between variables and occurs in almost every field (Montgomery et al., 2012). The first methodology we use is the propensity score matching method.

3.1.1 Propensity Score Matching

Propensity score matching (PSM) is a quasi-experimental method where it uses statistical techniques to construct a control group by matching treated units with non-treated units. PSM computes the probability that a firm or a unit will enroll in a program based on the observed characteristics (The World Bank Group, 2022). PSM is widely used in order to deal with confounding bias in research (Granger et al., 2020), and we find it particularly important to avoid biased results when we compare the two groups of firms in our research.

Paul R. Rosenbaum and Donald Rubin introduced the PSM technique in 1983 and the general theorem for this method is elaborated below.

- There are two groups numbered 1 and 0 with N units viewed as a simple random sample from some population.

- The quantity to be estimated is the average treatment effect $E(r_1) - E(r_0)$, where r_{1i} is the group that received the treatment (1) and r_{0i} is the response group that received treatment (0).
- $E(.)$ denotes the expectation in the population
- $Z_i = 1$ if unit i is assigned to the experimental treatment. $Z_i = 0$ if unit i is assigned to the control treatment
- X_i is a vector of observed pretreatment measurements or covariates for the i th unit.
- The conditional probability of assignment to treatment one, given the covariates will be denoted by

$$e(x) = pr(z = 1 | x),$$

Where we assume

$$pr(z_1, \dots, z_n | x_1, \dots, x_n) = \prod_{i=1}^n e(x_i)^{z_i} \{1 - e(x_i)\}^{1-z_i}$$

(Rosenbaum & Rubin, 1983)

For the matching related to our research the treatment will be the variable *Change* which is 1 if the firm has been acquired by a foreign investor in the respective time period, and zero otherwise. The independent variables are $Size_{t-1}$, $Leverage_{t-1}$ and ROE_{t-1} . Further we need to match the observed data on the basis of the variable *YearNACE* which is a combination of the year which the firm had been acquired plus the NACE industry code. In order to capture most observations while maintaining the integrity of the matching procedure we will accept a match within a 20% caliper, which is consistent with previous research related to optimal caliper setting in PSM (Wang et al., 2013). The main equation will be:

$$\begin{aligned} Prob(Change_i) \\ = \beta_1 + \beta_2 Size_{t-1} + \beta_3 Leverage_{t-1} + \beta_4 ROE_{t-1} + YearNACE \\ + \varepsilon_i \end{aligned}$$

where

- *Size* is the natural logarithm of revenues

- *Leverage* is total debt to total assets
- *ROE* is net income divided by average shareholders equity in percentage

3.1.2 Cross-Sectional OLS Regression

Ordinary least squares regression (OLS), is a statistical method in an analysis that estimates the relationship between one or more independent variables and a dependent variable. This method estimates the relationship by minimizing the sum of squares in the differences between the observed and predicted values in the dependent variable (Encyclopedia, 2022).

We ran four regressions:

$$\Delta ROE_1 = \beta_1 + \beta_2 Change + \beta_3 \Delta Size_1 + \beta_4 \Delta Leverage_1 + \varepsilon_i$$

$$\Delta ROE_3 = \beta_1 + \beta_2 Change + \beta_3 \Delta Size_3 + \beta_4 \Delta Leverage_3 + \varepsilon_i$$

$$\Delta ROA_1 = \beta_1 + \beta_2 Change + \beta_3 \Delta Size_1 + \beta_4 \Delta Leverage_1 + \varepsilon_i$$

$$\Delta ROA_3 = \beta_1 + \beta_2 Change + \beta_3 \Delta Size_3 + \beta_4 \Delta Leverage_3 + \varepsilon_i$$

where:

- ΔROE_1 (ΔROE_3) is short-term (*long-term*) change in profitability. Forward ROE, one year after the change in ownership (*three years after the change in ownership*) minus lagged ROE, one year before the change (*one year before the change*)
- ΔROA_1 (ΔROA_3) is short-term (*long-term*) change in profitability. Forward ROA, one year after the change in ownership (*three years after the change in ownership*) minus lagged ROA, one year before the change (*one year before the change*)
- *Change* is a dummy variable which equals 1 if the firm has been acquired and zero otherwise
- $\Delta Size_1$ ($\Delta Size_3$) is a control variable for the respective period defined as $\ln\left(\frac{revenue_{t+1}}{revenue_{t-1}}\right)$ ($\ln\left(\frac{revenue_{t+3}}{revenue_{t-1}}\right)$) and is a measure of revenue growth
- $\Delta Leverage_1$ ($\Delta Leverage_3$) is a control variable for the respective period defined as $\ln\left(\frac{leverage_{t+1}}{leverage_{t-1}}\right)$ ($\ln\left(\frac{leverage_{t+3}}{leverage_{t-1}}\right)$)

3.2 Hypotheses

After looking at literature and theory it is important to state some relevant hypotheses we want to test to further explore our research question.

On the basis of the available literature, it does not seem problematic for a firm to be acquired by foreign investors. The firm receives capital to improve their profitability through restructuring, managerial practices, technology, or efficiency. However, as mentioned earlier, investors can have different incentives to buy a firm and therefore different strategies when they have acquired the respective firm. We know from the article written by Lindemanis et al., (2019) that new foreign investors come from bigger and wealthier countries with greater economic freedom and better governance relative to the target countries. Only considering acquisition in Norway, we find it interesting to investigate specific company characteristics of acquired firms relative to non-acquired firms. Will we be able to find significant evidence that acquired firms outperform non-acquired firms prior to the acquisition? And does the treated group share any characteristics that differ from those in the control group? From this we formed the following hypotheses:

H0: Investors do not tend to acquire a specific type of firms in terms of characteristics and performance

H1: Investors tend to acquire a specific type of firms in terms of characteristics and performance

Acquisitions occur regularly and cross-border acquisitions are becoming more common. We investigate whether there is a specific pattern that foreign investors follow when they are looking for a firm to acquire. The type of pattern that interests us is “Cherry Picking” and “Managerial Discipline”. Cherry picking is a process of picking the best firms in terms of financial strength (strong characteristics) and profitability (Bandick & Karpaty, 2007). Managerial discipline is when foreign investors target larger (by revenues) and less profitable (by ROE/ROA) companies (Lindemanis et al., 2019). In our case, we will look at the characteristics size measured by revenues, leverage, return on equity and return on assets. To explore these hypotheses, we will use propensity score matching for the following equation:

$$\begin{aligned}
& \text{Prob}(\text{Change}_i) \\
& = \beta_1 + \beta_2 \text{Size}_{t-1} + \beta_3 \text{Leverage}_{t-1} + \beta_4 \text{ROE}_{t-1} + \text{YearNACE} \\
& + \varepsilon_i
\end{aligned}$$

We use the variables above as a measure for characteristics and performance. Previous studies such as Lindemanis et al., (2019) are using sales, leverage and ROA as their characteristics and performance. Their research is however based on private companies, but we find our use of measurements reliable for listed companies based on other previous research articles such as Salim & Yadav, (2012).

Furthermore, we want to investigate the performance of acquired firms in terms of profitability. We therefore find it relevant to state the following hypotheses:

H0: Firm performance do not increase after foreign acquisition

HA: Firm performance increase after foreign acquisition

In order to investigate these hypotheses, we need to state some measures for firm performance. Since our research is observing listed companies, we find it relevant to use measurements such as return on equity and return on assets as dependent variables. Empirical evidence from a research article from Salim & Yadav, (2012), used ROE, ROA, Tobins Q and earnings per share (EPS) as measurements on firm performance on listed companies in Malaysia. Therefore, we find it relevant to use ROE and ROA as measurements of firm performance.

Return on equity (ROE) is a measure of financial performance. ROE is expressed as a percentage and can be calculated for any firm if net income and equity are both positive numbers (Fernando, 2021). The formula for ROE is:

$$\text{Return on Equity} = \frac{\text{Net Income}}{\text{Average Shareholder Equity}}$$

ROE has some limitations which we find important to elaborate on. The rule of thumb is that a good ROE is equal or just above the average for the company's sector (Fernando, 2021). However, a high ROE is not always positive. A large ROE can give indications of inconsistency of profits or excessive debt. In addition to a high ROE, a negative ROE due to a net loss can be very misleading when valuing

a company. Even though a high ROE indicates that the company generates excessive values for its shareholders, it is often due to a small equity account compared to net income, which implies higher risk. This can be the result of excess debt, inconsistent profits, accumulated losses in retained earnings, or negative net income. To better understand the performance of the companies within our sample, we also include ROA.

The term ROA refers to a financial ratio that indicates how profitable a company is in relation to its total assets (Hargrave, 2022). ROA can be used by the management, investors and analysts in order to determine how well the company uses its assets to generate profit, i.e. asset efficiency. Even though both ROE and ROA measures how companies utilize their resources, there are some key differences. ROA accounts for company debt, whereas ROE does not. Thus, for companies taking on a lot of debt, ROE would be higher relative to ROA. The formula for ROA is net income divided by total assets.

$$\text{Return on Assets} = \frac{\text{Net Income}}{\text{Total Assets}}$$

There are in addition to ROE some limitations by using ROA. One of the biggest limitations is that ROA cannot be used across industries, because some industries have a different asset base compared to other industries. For example, airline companies have significantly higher asset-base compared to small IT-companies, resulting in misleading ROA comparisons. However, with the use of PSM, incorporating NACE-codes to sort companies into different industries, we will not have this issue running our regression when using ROA.

4. Data

4.1 Data Sources.

For the purpose of our research, we needed an overview of historical acquisitions by foreign investors on the Oslo Stock Exchange in the interval of 2003-2018. The acquisition needs to be more than 10% and the acquirer has to be the largest direct shareholder after the acquisition and throughout the time period analyzed. To obtain this historical data we used Bloomberg and found over 150 relevant acquisitions within our time frame.

Furthermore, we needed to gather relevant data from each of the acquired firms from a year before the acquisition to three years after. The relevant data of interest was:

- Total assets
- Operating revenue
- Total debt
- Non-current liabilities
- Net income
- Shareholder fund

We used several data providers in order to obtain our dataset. We relied on Orbis whenever data was available for the reason of consistency. This database had a good overview of our necessary data, but unfortunately it only provided data going back ten years. Hence, observations of acquired firms older than 2012 were not available due to the BI's subscription of historical data in Orbis. As we focus on Norwegian firms, we were able to use Proff.no as a database for almost every remaining firm. However, we found several missing data points throughout this research but managed to fill some of them with the use of published annual reports which were available and the programme Refinitiv(eikon).

4.2 NACE-Codes

In addition to the relevant data stated above, we had to sort the observations with a NACE code. It is of crucial importance that the data is sorted correct in order to make the regression as reliable as possible. If the companies are not divided in the correct industry, we can get incomplete results. As an example, a comparison of ROA between two firms can be very misleading when companies don't share the same industry. Hence, in order to match and compare acquired firms with non-acquired firms, we needed to use the same industry classification system. *The Statistical Classification of Economic Activities in the European Community* (NACE) is an industry standard classification system used in the European Union (Wikipedia, 2022). Sorting our sample according to NACE-code will help us match the observations correctly in our research. The NACE codes were available for each company in Orbis, which we used for the whole sample.

4.3 Target and Selection Process

As already mentioned, we are only considering a specific type of acquisition for our analysis. We use data on acquisitions from 2003-2018, and there are several reasons for why we do this. We know that the trading system in Norway was changed in 2002. It moved from the original OSE onto the SAXESS trading system which already was the standard for other Nordic exchanges such as Denmark, Sweden and Iceland. After this, investors could access 80% of the Nordic stock market from the same screen. The main objective for this change was to make it easier and less costly to trade Nordic shares for foreign investors (Jørgensen, K. 2012). We only consider acquisitions from 2003 because we want to understand the effects of ownership change on various financial variables, which can only be observed by looking at the performance prior ($t - 1$) to the acquisition in relation to after. Starting in 2003, ensures that we only observe data after the trading system was changed. On the other end, firms acquired after 2018 cannot be evaluated as we need values ranging from $t - 1$ to $t + 3$. Data for 2022 will not be available within our thesis period.

Through our initial search, we targeted over 400 companies in our time period. However, Bloomberg did not manage to filter between listed and non-listed firms since listed firms could be named both AS and ASA (after delisting). In addition to this, the platform did not always correctly identify the party of interest as listed, e.g. "acquired firm" rather "acquiring firm". After manually filtering for firms that were listed when the acquisition took place, the sample shrunk to around 150 companies. In the next step of filtering, we needed to check if the necessary data was available. During this process we observed that some of the firms were not originally Norwegian, only listed on Oslo Stock Exchange. These kinds of firms were typically shipping companies or firms owned by John Fredriksen who has been a Cypriot citizen since 2006 (Wikipedia, 2022). We also found some observations that had been supplemented into a larger organization, meaning we could no longer evaluate the acquired firm on a stand-alone basis. After this process, we ended up with 44 observations.

4.4 Comparable Group Sample

The next step was to compare these observations to Norwegian listed firms that were not acquired by foreign investors, based on some characteristics, i.e. same

sector, size and time. We found 124 comparable firms (several for each observation). There are several ways to compare two groups and we find it important to clarify why we have used our method. We used a propensity score matching method to compare the acquired firms with non-acquired firms to determine the probability of ownership change and difference in profitability between the two groups (after matching procedure). The propensity score matching (probit regression) method is conducted in order to match firms with the same characteristics from two groups of companies, which we have already elaborated for. Those that changed their ownership to foreign and those that remained domestic (Lindemanis et al., 2019). After running our regressions and matching procedure, our final sample amounted to 41 observations for our thesis (i.e. 41 foreign and 41 domestic). Even though the sample is rather small, we managed to draw similarities from our results with previous literature in the same field.

To correct for outliers, we winsorize all the financial variables on both ends at the 2% level in order to reduce the extreme values in our sample.

5. Results

The following section presents and analyzes the effect of foreign investors acquiring Norwegian firms on the Oslo Stock Exchange. All the analysis related to this section has been conducted using the statistical software package STATA. The software package is fast and easy to use for our purpose in this thesis.

Throughout the results we are using the standardized significance level for a two-sided test.

Level of Significance	T-Statistic
10 %	1.645
5 %	1.960
1 %	2.576

5.1 Findings by the Observed Data.

After filtering the data, we had a sample of 44 Norwegian listed companies that had been acquired in our specific timeframe with correct limitations. Figure 1 shows

when they got acquired, and even though we have a small sample, we can draw some remarks to these findings. In the period of 2009-2011, there was little activity in terms of acquisition. This can however be explained very well when the financial crisis hit in the fall of 2008, which had repercussions several years afterwards. Forbes published an article in the summer of 2009, and they stated at this point of year, the M&A activity was down 86% compared to the previous year. The majority of deals within this period was mainly mid- and small size firms, as financing were easier to find (Zendrian, 2009).

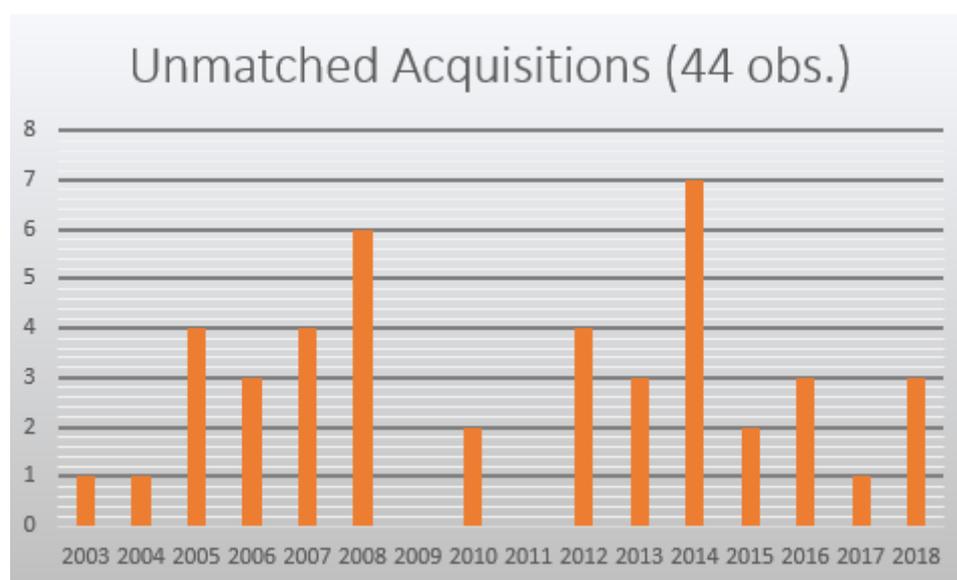


Figure 1. Observations of foreign acquisitions before matching

5.2 Propensity Score Matching

The first step is to do a propensity score matching. As previously mentioned, the reason is to compare two groups, acquired and non-acquired firms. We found 44 observations for the treated (acquired) group and 99 observations for the control group (non-acquired). From our observations we managed to match 41 out of 44 firms. In Table 1 we see that Size (lag) has a coefficient of -0.1288 as the only variable being statistically significant at five percent level. This indicates that ownership change from domestic to foreign is more likely in smaller firms measured by revenues. ROE (lag) has a coefficient of 0.1018. This variable fails to be significant, but it is possible to see a slight indication of greater profitability in ROE one year prior to the acquisition for companies experiencing cross-border treatment. We cannot draw conclusions from the ROE variable since we fail on the common significance level, but the lack of statistical significance does not mean

there is no effect (Altman, 1996). Leverage does seem to have a slight positive impact on whether the company is acquired by foreign investors, but it fails to be significant at the standardized levels. It just missed the respective significant level but there is some evidence that firms with higher leverage tend to be acquired more often by foreign investors, even though we cannot be sure. Hence, we can say we see some evidence that investors tend to look at specific characteristics and performances.

Likelihood of domestic-to-foreign

Panel A. Descriptive statistics for the main regression variables

Variable	Coefficient	Standard deviation	z
Size (lag)	-0,1288304**	0,0513028	-2,51
Leverage (lag)	0,3823869	0,4739212	0,81
ROE (lag)	0,1018473	0,2204683	0,46
Constant	0,6858672	0,5228137	1,31
Industry effect		Yes	
Year effect		Yes	
Observations		141	
Pseudo R-squared		0,0376	

Table 1. Likelihood of domestic-to-foreign

Looking at our first set of hypotheses:

H0: Investors do not tend to acquire a specific type of firms in terms of characteristics and performance

H1: Investors tend to acquire a specific type of firms in terms of characteristics and performance

We do find some support for our H1 hypothesis where the results are statistically significant on size measured by revenues. It indicates that there is evidence for weak characteristics in terms of size, and some small evidence for greater leverage and ROE even though it fails to be statistically significant. In contrast to Lindemanis et al.,(2019) we do not find any evidence supporting either cherry picking nor managerial discipline. We do not find adequate evidence of a statistically significant relationship; thus we do not reject H0, and conclude that we do not find sufficient support as only one characteristic is statistically significant. The lack of significance may be affected by the small sample.

5.3 Main Financial Variables

If we look at Table 2, we can see the mean values of our main financial variables before and after ownership change both for short-term and long-term effects. In panel A we report the mean values of short-term changes from one year prior to treatment to one year after the treatment. The change in profitability ($ROE_{t+1} - ROE_{t-1}$) is negative in the treatment group and positive in the control group, -0.089 and 0.018 respectively. However, it just fails to be statistically significant at 10% level on a two-sided test with a T-score of 1.2966. The change in profitability ($ROA_{t+1} - ROA_{t-1}$) has a positive value in the treated and negative in control (0.015 vs. -0.035), but again just fails to be significant (T-score -1.2254). The results show that revenue growth ($\Delta Size$) is slightly higher in the treatment group compared with the control group, although it fails to be significant at the standardized levels.

Panel B of Table 2 reports the mean values of long-term changes and we can clearly see that none of the financial variables are statistically significant on the main levels. The change in profitability (ROE between years $t + 3$ and $t - 1$) is positive in both treatment and control group, while the change in ROA is negative for the treated group and positive for control group. Revenue growth is slightly higher for the treated group compared to the control group. Since none of the variables are significant, we cannot make any definitive conclusion regarding the result, but the trend seems slightly supportive in favor of previous empirical evidence found in Lindemanis et al., (2019), where foreign acquirers seek immediate market penetration which may come at the expense of a short-term drop in profitability.

Main financial variables before and after the ownership change			
Panel A. Changes in the key financial variables (Short-term)			
Variable	Treated (N = 41)	Control (N = 41)	Difference test (t-stat)
ΔLeverage	0,005281	0,0135129	0,1745
ΔROE	-0,0895115	0,0180236	1,2966
ΔROA	0,0150142	-0,035815	-1,2254
ΔSize	0,3776885	0,3422049	-0,1487

Panel B. Changes in the key financial variables (Long-Term)			
Variable	Treated (N = 41)	Control (N = 41)	Difference test (t-stat)
ΔLeverage	0,021935	0,068674	0,7124
ΔROE	0,044311	0,1096022	0,3032
ΔROA	-0,0116734	0,0040832	0,289
ΔSize	0,4630924	0,4494174	-0,0455

Table 2. Financial variables before and after ownership change. Panel A, short term. Panel B, long term.

5.4 Return on Equity

After matching the firms that had been acquired with non-acquired firms with propensity score matching, we had to exclude the non-observable firms to avoid noise in the regression. 82 observations remained in the data while 61 observations were deleted. We ran a cross sectional OLS regression, for both short- and long-term effects. This test is linked to the second set of hypotheses:

H0: Firm performance do not increase after foreign acquisition

HA: Firm performance increase after foreign acquisition

Panel A of Table 3 reports results linked to our main hypothesis. The regression is:

$$\Delta ROE_1 = \beta_1 + \beta_2 \text{Change} + \beta_3 \Delta \text{Size}_1 + \beta_4 \Delta \text{Leverage}_1 + \varepsilon_i$$

This is the short-term effect where “Change” is the dependent variable which is the same dummy variable we have been using. Half of the observations have been exposed for cross-border acquisition and the other half have not. We see that the Change-variable for firms that have been exposed to cross-border acquisition has a

coefficient of -0.1076, indicating 10.76% lower growth in ROE by acquired firms in the short term. The result misses the respective significance levels and is not significant. As to the control variables we find that change in size is positively associated with change in profitability and leverage is negatively associated with change in profitability. The respective coefficients for size and leverage are 0.0879 and -0.2834 but size is the only variable being statistically significant. For this regression we cannot conclude that firm performance increases after foreign acquisition in the short-term and we fail to reject H0.

Looking at the second regression below and outputs in Panel B of Table 3, counting for the long-term effect for change in ROE

$$\Delta ROE_3 = \beta_1 + \beta_2 Change + \beta_3 \Delta Size_3 + \beta_4 \Delta Leverage_3 + \varepsilon_i$$

We find that the dummy variable for change indicates a -2,4% lower growth in ROE in the long-term. The variable is not significant in any of the respective significance levels as the t-score is -0.12. Leverage is the only statistically significant control variable with a positive coefficient of 0.8857, indicating a positive association with change in profitability in the long term. As previously mentioned, investors might want to restructure the acquired firm in order to increase the long-term profitability. Size is in addition to the short-term regression positive, but now it fails to be significant. Since our dummy variable is not significant, we cannot conclude that leverage is higher in the long-term but it gives an indication that it might be higher. For the long-term effect, we fail to reject H0.

The effect of domestic-to-foreign ownership change on profitability (dependent variable - Δ ROE)

Panel A. Short-term changes				
Variables	Coefficient	Std. err.	t	Adjusted R-squared
Change dummy	-0,1076893	0,0809011	-1,33	
Δ Size	0,0879129	0,03817	2,30	
Δ Leverage	-0,2834282	0,1907378	-1,49	
Constant	-0,0135292	0,0590813	-0,23	0,0746

Panel B. Long-term changes				
Variables	Coefficient	Std. err.	t	Adjusted R-squared
Change dummy	-0,0244279	0,2104757	-0,12	
Δ Size	0,039027	0,0781036	0,50	
Δ Leverage	0,8857041	0,3577874	2,48	
Constant	0,031238	0,1546178	0,20	0,0402

Table 3. Effect of domestic-to-foreign ownership change on profitability. Δ ROE is dependent variable. Panel A, Short term. Panel B, long term.

5.5 Return on Assets

We want to investigate if ROA is a better proxy for firm performance and run regressions with ROA as a dependent variable. In order to make this correct, we need to run the propensity score matching method with ROA as profitability measurement. The output is nearly the same as the result with ROE with 41 of 44 matches and the only variable being statistically significant is smaller size.

Looking at Panel A of Table 4 showing the results for our third regression with focus on short term ROA

$$\Delta ROA_1 = \beta_1 + \beta_2 \text{Change} + \beta_3 \Delta \text{Size}_1 + \beta_4 \Delta \text{Leverage}_1 + \varepsilon_i$$

By observing the outputs, we see that “Change” is now positive, indicating that the short-term ROA increased 4,92% for firms that have been exposed to cross-border acquisition. The t-score of 1.35 fails to be significant, but since it is not far away, we can discuss for some evidence in ROA. This is however the opposite from ROE where the output was negative. The control variables size and leverage have positive and negative values respectively, similar to the short-term regression for ROE. The regression shows some evidence for short-term ROE increase after a cross-border acquisition, but it fails to be statistically significant, hence we fail to reject H0.

The last regression reports the long-term effect for ROA

$$\Delta ROA_3 = \beta_1 + \beta_2 \text{Change} + \beta_3 \Delta \text{Size}_3 + \beta_4 \Delta \text{Leverage}_3 + \varepsilon_i$$

The output we get from this regression is shown in Panel B of Table 4. The Change-variable in this regression is negative with a coefficient of -0.0189 indicating weaker ROA in the long run for acquired firms, but again, it fails to be significant with a t-score of -0.41. The control variables show the same trend as previously where size is larger and leverage smaller for firms that have been acquired. Both of the control variables are significant, but we fail to reject H0 as “Change” is not significant for this regression.

The effect of domestic-to-foreign ownership change on profitability (dependent variable - Δ ROA)

Panel A. Short-term changes				
Variables	Coefficient	Std. err.	t	Adjusted R-squared
Change dummy	0,0492917	0,0365244	1,35	
Δ Size	0,0550943	0,0178202	3,09	
Δ Leverage	-0,313832	0,0863602	-3,63	
Constant	-0,0534287	0,0263685	-2,03	0,2293

Panel B. Long-term changes				
Variables	Coefficient	Std. err.	t	Adjusted R-squared
Change dummy	-0,0189453	0,0462241	-0,41	
Δ Size	0,047472	0,0175813	2,70	
Δ Leverage	-0,3040608	0,0793263	-3,83	
Constant	-0,0080424	0,0336912	-0,24	0,2019

Table 4. Effect of domestic-to-foreign ownership change on profitability. Δ ROA is dependent variable. Panel A, Short term. Panel B, long term.

6. Conclusion

We have explored and investigated the impact of foreign investors acquiring Norwegian listed companies. We made a dataset with cross-border acquisitions and domestic owned companies in the period of 2003-2018. The sample consisted of

141 observations before limitations were conducted. In order to answer our research question, we ran two different sets of hypotheses.

For the first hypothesis: Our findings show that foreign investors are more likely to acquire smaller firms measured by revenues, which can indicate motives such as diversification, technology, intellectual property, and new growth opportunities (DePamphilis, 2010).

For the second hypothesis: we do not find any significant effect on changes in ROE or ROA for the respective firms that have been exposed to cross-border acquisition. This indicates that we cannot say firm performance change after foreign investors acquire a firm.

Interestingly, we found that three out of four regressions showed a negative impact on the change in profitability (ROE & ROA) for acquired firms. Only short-term ROA has a positive coefficient. Even though none of these variables are significant and can therefore not find sufficient support, the observation suggests a weak negative relationship between cross-border acquisition ROE and long-term ROA. We also find a relative improvement in profitability between short-term and long-term effects for the treated group, as ROE becomes positive. Combining these findings with increased revenue growth for the treated group in the short- and long term, we can draw some similarities to Lindemanis et al., (2019). The result, albeit not significant, suggests that acquired companies seek immediate market penetration at the expense of a drop in short-term profitability. These findings are also consistent with foreign owned firms spending more on employee training than domestic firms, which is outlined in World Bank (1997) and Filer et al., (1995).

There are several reasons for the variables not being significant. Our sample is rather small compared to other similar studies such as Lindemanis et al., (2019). Another explanation is that there are large fluctuations in ROE and ROA, making the data volatile, even though we winsorized the sample at both ends.

In order to answer our research question. *“Have Norwegian companies benefited from increased foreign ownership, or does this trend present a challenge for the Norwegian markets?”*, we have to utilize previous research articles in comparison with our own findings. There is little doubt that the Norwegian market as a whole

has benefitted from increased foreign portfolio flows, leading to a general increase in liquidity, substantial ease in trading Norwegian equities and a subsequent fall in associated costs (Jørgensen, 2012).

However, on a firm level, the conclusion is not that straight forward. We have proved that foreign acquisitions in Norway cannot be categorized within the theory of cherry picking, meaning foreign investors are not only buying the best companies out there. These acquisitions seem to occur in smaller companies (by revenues), with marginally higher profitability, indicating motives such as diversification through new growth opportunities, technology, market access and intellectual property (Hoberg & Phillips, 2010). Although acquired companies experience higher revenue growth and lower profitability, we cannot make a definitive conclusion since our results are not statistically significant.

We know that large domestically owned (listed) firms relocate divisional headquarters at approximately the same rate as listed firms with foreign owners (Benito et al., 2011). After investigating the corporate structure of our foreign acquired sample, we found no evidence suggesting that “The good jobs will disappear, and the whole society will be weakened”, (Nettavisen 2017). The outsourcing of labor overseas will always be a risk factor, both for foreign- and domestically owned firms. However, increasing education and with that – innovation, outsourcing / offshoring does not present a big problem in terms of job losses (Refslund & Andersen, 2014).

We cannot say Norwegian companies have benefited from foreign acquisitions in terms of performance, nor does it present a challenge for the Norwegian market. This is because our main regression for change in ROE and ROA are not significant. Hence, we do not find evidence of weaker/stronger firm performance.

6.1 Limitations and Suggestions for Future Research

We need to acknowledge several limitations in our study. In order to live up to a critical assessment of our study, we find it necessary to elaborate these limitations.

6.1.1 Sample

Throughout the thesis we have emphasized that our sample could be a potential weakness. Several of the research papers that have been mentioned in our thesis have used a bigger sample than us. We managed to get our sample to be 44 main observations. On the basis of this, we need to critically look at the validity and robustness of our findings.

Data collection was always an important aspect of our thesis, but due to our specific filtering and data availability we ended up with fewer observations than we had thought. There are several problems with a small dataset, but the most important is that the sample does not represent the actual distribution of data in the population (Cosley, 2021). Do the results that we got represent the all listed Norwegian acquisitions, and can we draw conclusions on just the 44 observations? Small samples can cause problems for the interpretation of results and particular confidence intervals and p-values. A small study will have a large standard error and an imprecise estimate of the effect, leading to no firm conclusion (Hackshaw, 2008). However, the lack of statistical significance does not mean there is no effect (Altman, 1996). It is better to say there is some evidence of an effect, but the result has just missed statistical significance. Throughout the thesis we have questioned many of our results due to the relatively small sample size, but it is still possible to see similarities with previous research and our results.

Suggestions for future research is to include both Sweden and Denmark in the research with the same limitations we used in order to expand the sample. The Nordic countries as we mentioned earlier are using the same trading system, with multiple similarities in terms of governance and economic development, which could have improved the validity of our sample. Another suggestion involves subscribing to the entire Orbis' historical data (expensive). This would eliminate the inconsistency arising from using multiple data providers, as well as improving the efficiency of data collection.

6.1.2 Variables

We have found some weaknesses in financial variables due to our sample. Initially, we wanted to base our research on previous empirical evidence from the field of interest. This led us to choose well founded economic variables best suited to test and answer our research question. Only after gathering and filtering our data, we

realized that many of our observations had a negative net income in some, if not many of the years analyzed. As a result of this, our profitability measures (ROE & ROA) became less indicative. Using NACE-codes for industry specification and same year sample in PSM improves these measures, but future research should also incorporate Free Cash Flow (FCF) and Net Operating Profit After Tax (NOPAT) .

Acquired firms often go through a restructuring of some sort. This can lead to large write downs, which in turn affect net income negatively. Calculating profitability measures using net income can in these cases be misleading. To get a better understanding of the company's position, the same measurement could be calculated on the basis of FCF.

In order to get a more holistic overview of the acquired firms, one could also include return on invested capital (ROIC). In contrast to ROA (which also incorporates debt), cash is netted out of ROIC when solving for invested capital. Furthermore, NOPAT, i.e. the numerator of ROIC, is a measure of earnings available to all capital providers (debt and equity), allowing ROIC to be measured across firms with different capital structures (Damodaran, 2007).

6.1.3 Research Design

Propensity score matching is a popular method in statistics and is widely used among researchers. However, there are weaknesses with this method and several researchers have elaborated why it is not a good method. For instance, one potential disadvantage is that the PSM only accounts for observable and observed covariates, and not the latent characteristics. This implies that factors that actually affect the results of treatment, but are not observed in the matching cannot be accounted for in the sample for matching procedure (Garrido et al., 2014).

Professor Judea Pearl raises concerns about PSM related to bias. He argued that hidden bias in such matching methods may actually increase because the fact that matching on observed variables may lead to bias due to dormant unobserved confounders (Pearl, 2009).

7. Appendices

Appendix 1. Propensity Score Matching ROE

Algorithm to estimate the propensity score

The treatment is Bought

Bought	Freq.	Percent	Cum.
0	99	69.23	69.23
1	44	30.77	100.00
Total	143	100.00	

Estimation of the propensity score

Iteration 0: log likelihood = -87.523836
 Iteration 1: log likelihood = -84.23549
 Iteration 2: log likelihood = -84.229457
 Iteration 3: log likelihood = -84.229457

Probit regression	Number of obs	=	141
	LR chi2(3)	=	6.59
	Prob > chi2	=	0.0862
Log likelihood = -84.229457	Pseudo R2	=	0.0376

Bought	Coefficient	Std. err.	z	P> z	[95% conf. interval]	
Sizeminus1~r	-.1288304	.0513028	-2.51	0.012	-.229382	-.0282788
Leveragemin~r	.3823869	.4739212	0.81	0.420	-.5464816	1.311255
ROEminus1_tr	.1018473	.2204683	0.46	0.644	-.3302626	.5339572
_cons	.6858672	.5228137	1.31	0.190	-.338829	1.710563

Appendix 2. Regress Short ROE

Source	SS	df	MS	Number of obs	=	81
Model	1.25130511	3	.417101703	F(3, 77)	=	3.15
Residual	10.1978514	77	.132439629	Prob > F	=	0.0297
				R-squared	=	0.1093
				Adj R-squared	=	0.0746
Total	11.4491565	80	.143114456	Root MSE	=	.36392

ShortROE_tr	Coefficient	Std. err.	t	P> t	[95% conf. interval]	
Bought	-.1076893	.0809011	-1.33	0.187	-.2687839	.0534054
ShortSize_tr	.0879129	.03817	2.30	0.024	.0119068	.1639191
ShortLeverage_tr	-.2834282	.1907378	-1.49	0.141	-.6632358	.0963793
_cons	-.0135292	.0590813	-0.23	0.819	-.1311751	.1041168

Appendix 3. Regress Long ROE

Source	SS	df	MS	Number of obs	=	82
Model	5.7714135	3	1.9238045	F(3, 78)	=	2.13
Residual	70.3887688	78	.902420112	Prob > F	=	0.1029
				R-squared	=	0.0758
				Adj R-squared	=	0.0402
Total	76.1601823	81	.940249164	Root MSE	=	.94996

LongROE_tr	Coefficient	Std. err.	t	P> t	[95% conf. interval]	
Bought	-.0244279	.2104757	-0.12	0.908	-.4434529	.394597
LongSize_tr	.039027	.0781036	0.50	0.619	-.1164653	.1945192
LongLeverage_tr	.8857041	.3577874	2.48	0.015	.1734042	1.598004
_cons	.031238	.1546178	0.20	0.840	-.2765825	.3390584

Appendix 4. Propensity Score Matching ROA

Algorithm to estimate the propensity score

The treatment is Bought

Bought	Freq.	Percent	Cum.
0	99	69.23	69.23
1	44	30.77	100.00
Total	143	100.00	

Estimation of the propensity score

Iteration 0: log likelihood = -87.523836

Iteration 1: log likelihood = -84.22133

Iteration 2: log likelihood = -84.215196

Iteration 3: log likelihood = -84.215196

Probit regression

Number of obs = 141

LR chi2(3) = 6.62

Prob > chi2 = 0.0852

Pseudo R2 = 0.0378

Log likelihood = -84.215196

Bought	Coefficient	Std. err.	z	P> z	[95% conf. interval]	
Sizeminus1~r	-.131488	.0522497	-2.52	0.012	-.2338956	-.0290804
Leveragemin~r	.3989506	.4736882	0.84	0.400	-.5294611	1.327362
ROAminus1_tr	.353358	.7232178	0.49	0.625	-1.064123	1.770839
_cons	.7099927	.5322861	1.33	0.182	-.3332689	1.753254

Appendix 5. Regress Short ROA

Source	SS	df	MS	Number of obs	=	81
Model	.719338676	3	.239779559	F(3, 77)	=	8.93
Residual	2.0667887	77	.026841412	Prob > F	=	0.0000
Total	2.78612737	80	.034826592	R-squared	=	0.2582
				Adj R-squared	=	0.2293
				Root MSE	=	.16383

ShortROA_tr	Coefficient	Std. err.	t	P> t	[95% conf. interval]	
Bought	.0492917	.0365244	1.35	0.181	-.0234377	.1220212
ShortSize_tr	.0550943	.0178202	3.09	0.003	.0196098	.0905788
ShortLeverage_tr	-.313832	.0863602	-3.63	0.001	-.4857972	-.1418668
_cons	-.0534287	.0263685	-2.03	0.046	-.1059351	-.0009222

Appendix 6. Regress Long ROA

Source	SS	df	MS	Number of obs	=	82
Model	1.01902143	3	.33967381	F(3, 78)	=	7.83
Residual	3.38290799	78	.043370615	Prob > F	=	0.0001
Total	4.40192942	81	.054344808	R-squared	=	0.2315
				Adj R-squared	=	0.2019
				Root MSE	=	.20826

LongROA_tr	Coefficient	Std. err.	t	P> t	[95% conf. interval]
Bought	-.0189453	.0462241	-0.41	0.683	-.1109705 .0730798
LongSize_tr	.047472	.0175813	2.70	0.008	.0124704 .0824737
LongLeverage_tr	-.3040608	.0793263	-3.83	0.000	-.4619874 -.1461343
_cons	-.0080424	.0336912	-0.24	0.812	-.0751164 .0590316

Appendix 7. Financial variables before ownership change

Panel A. Financial variables before ownership change			
Variable	Treated	Control	Difference test (t-stat)
Leverage	0,5898158	0,5423754	-0,7868
ROE	0,0027861	-0,0172256	-0,1768
ROA	-0,0196017	-0,0242225	-0,1268
Size	10,61582	10,72763	0,2064

Appendix 8. Descriptive statistics and correlation

Descriptive statistics and correlations.

Panel A. Descriptive statistics for the main regression variables					
Variable	Obsevatons	Mean	Min	Max	Standard deviation
Δ ROE (short term)	82	-0,0357439	-1,053557	1,172442	0,3770723
Δ ROA (short term)	82	-0,0104004	-0,7351421	0,3626836	0,1883832
Δ Size (short term)	81	0,3601657	-2,516311	4,163229	1,067244
Δ Leverage (short term)	82	0,009397	-0,5681831	0,4226953	0,2122812
Δ ROE (long term)	82	0,0769566	-5,368338	2,95585	0,9696645
Δ ROA (long term)	82	-0,0037951	-0,9711027	0,669157	0,2454384
Δ Size (long term)	82	0,4562549	-4,451482	5,207692	1,352275
Δ Leverage (long term)	82	0,0453045	-0,5924414	1,25719	0,2961274

Panel B. Correlation coefficients									
	Change dummy	Δ ROE (short term)	Δ ROA (short term)	Δ ROE (long term)	Δ ROA (long term)	Δ Leverage (short term)	Δ Size (short term)	Δ Leverage (long term)	Δ Size (long term)
Change dummy	1,0000								
Δ ROE (short term)	-0,1362	1,0000							
Δ ROA (short term)	0,1596	0,3568	1,0000						
Δ ROE (long term)	-0,0367	0,0616	-0,2179	1,0000					
Δ ROA (long term)	-0,0379	0,0242	0,2096	-0,1345	1,0000				
Δ Leverage (short term)	-0,0179	-0,1689	-0,3728	0,1886	-0,1786	1,0000			
Δ Size (short term)	0,0167	0,2530	0,3223	-0,0652	0,4212	-0,0463	1,0000		
Δ Leverage (long term)	-0,0805	-0,1100	-0,1546	0,2695	-0,3688	0,5700	-0,1393	1,0000	
Δ Size (long term)	0,0028	0,1318	0,1673	0,0443	0,3421	-0,0155	0,8159	-0,0356	1,0000

8. References

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