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Erasmus School of Economics

BSc. Economics and Business Economics

The effect of ownership concentration on firm performance: an empirical analysis of Dutch firms.

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Date final version: 05-07-2019

Abstract

This thesis examines the relationship between ownership structure and firm performance. Theory suggests that firms with larger shareholders should be able to monitor management more effectively, which would suggest a decrease in agency costs. However, others suggest that ownership concentration has no effect on the performance of firms, but that it is rather a result of a firm's response on previous performance. Existing literature produces inconclusive results on the significance of the relationship between ownership concentration and firm performance. Therefore, the aim of this thesis is to contribute to this ongoing literature and see whether firms with a higher ownership concentration perform better than firms that are more widely dispersed. A sample of 560 firm-year observations is used, consisting of Dutch firms during the period 2011-2018. The return on assets is used as an indication of firm performance. The results show no statistical evidence of a relationship between ownership concentration and the return on assets.

Keywords: agency theory, ownership structure, ownership concentration, firm performance, return on assets.

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1. Introduction

Agency costs, resulting from the principal-agent relationship, are among the main problems firms have to deal with (Jensen & Meckling, 1976). This problem is not something that recently arose, it has been around for decades. Berle and Means (1932) were one of the first to address such a problem, but Leeson (2007) found that these problems already existed during the Golden Age of piracy, which was around the 17th and 18th centuries. He investigated the difference between pirate ships and merchant ships, who were controlled differently. Pirate ships were led by a captain who was also the owner of the ship, whereas merchant ships were led by a captain who was appointed by the owners, or shareholders, of the ship. These owners did not travel along on the ships, which makes the situation fairly similar to modern day companies. Leeson found that pirate ships were able to act more efficiently than merchant ships, who suffered from a lot of problems comparable to agency problems.

Nowadays, one of the possible solutions for minimizing agency problems is ownership concentration (Shleifer & Vishny, 1997). Large shareholders are able to monitor managers more efficiently than smaller shareholders, which could reduce agency costs. There has been a lot of research on the effects of ownership concentration on firm performance. Some claim there is no relationship between ownership structure and firm performance (e.g. Demsetz & Lehn, 1985; Holderness & Sheehan, 1988) and some prove that ownership concentration is related to firm performance in a positive way (e.g. Core et al., 1999; Thomsen & Pedersen, 2000).

This thesis will examine the relationship between ownership concentration and firm performance in the Netherlands and will therefore contribute to the ongoing literature on ownership structure. The main research question will be stated as the following:

"*What is the relationship between ownership concentration and firm performance of Dutch companies over the time period of 2011-2018?*"

The remainder of this thesis is structured as follows. Section 2 gives a clear summary of previous relevant literature after which the hypotheses are formulated. Section 3 provides a description of the data used, after which the methodology part describes which empirical models will be used in this analysis. Section 4 describes and examines the results of the empirical models. The final section will give a conclusion, limitations and possible further research.

2. Literature Review

The aim of this thesis is to investigate the effect of ownership concentration on firm performance. By limiting agency costs, ownership concentration can improve efficiency and therefore firm performance. This section will summarize existing literature on the agency problem and the possible ways to minimize these costs.

Coase (1937) was one of the first to describe a firm in a more contractual view. Part of this view was the idea that the owners of a firm would contract an agent to perform business actions on their behalf. Shareholders would not always be able to manage a firm themselves, so they hired managers to do this for them. One of the main problems of this contract were the transaction costs associated with this principal-agent relationship. This theory is also described by Jensen and Meckling (1976), who depict the agency relationship as an agreement between principal and agent, in which the agent is given jurisdiction to decide on certain matters on behalf of the principal. Assuming that both parties aim to maximize their own utility function, it is not unlikely that the agent will, at some moments, decide to do what is best for him, even though this decision may not be in the best interest of the principal. Jensen and Meckling subdivide agency costs in three types of expenditures. First, the costs to monitor the agent. The principal needs to be able to effectively monitor the agent, which will not go without costs. Second, the costs to make sure that the agent does not act in a way that negatively affects the principal. This means that the agent needs to have an incentive to act in the principal's interest. In addition to these costs, most of the times there will still be a divergence in the decisions that would maximize the principal's interest and the actual decisions of the agent. The loss in utility for the principal is called the residual loss, which is the third and final type of agency costs. Fama and Jensen (1983) describe the agency theory as a trade off for firms between agency costs and the benefits of specialization of management. They try to explain how firms that are characterized by the separation of ownership and control survive and how they base their decisions on this separation. They describe a theory where firms tend to maximize their utility by trading off the benefits of contracting a specialized manager and the costs of this manager acting in his own interest. To benefit their own interests, managers tend to maximize the growth of a firm, which could lead to lower profits (Jensen M. C., 1986). Jensen finds that managers often aim to make companies grow beyond the optimal point. This will lead to inefficiencies, which in turn leads to lower profitability.

The idea that ownership concentration would affect firm performance was initially described by Berle and Means (1932), who stated that widely dispersed firms underperformed firms that had more concentrated ownership. After their theory, a lot of research has been done on this subject. Jensen and Meckling (1976) state that agency costs can be limited by effective monitoring, but that monitoring, when done inefficiently, can be seen as part of the agency costs as well. They state that

larger firms usually have more monitoring costs, because of the fact that it is harder to do this efficiently when there are more smaller shareholders. Shleifer and Vishny (1986) agree with the view of Jensen and Meckling (1976). They suggest that firms with a large number of small shareholders often suffer from the free-rider problem. None of the small owners will feel the need to monitor the behavior of management, since the costs of monitoring outweigh the individual benefits. They find that large shareholders would be able to reduce agency costs, since they are often able to do this more efficiently than small shareholders. Large shareholders are also relatively more affected by decisions made by managers, since they own a larger share of the firm. Therefore, they are better motivated to effectively monitor management, thereby decreasing the opportunities for managers to act in their own interest. Accordingly, Eisenhardt (1989) stated that the agency problem is present in companies with a large number of shareholders and management that has little to no ownership. Since management has little ownership, they have no incentive to behave in the interest of the shareholders and because of the large number of shareholders, it is hard to monitor management. Shleifer and Vishny (1997) support the theory of Fama and Jensen (1983). They argue that most corporate governance mechanisms, trying to minimize agency costs, can be seen as increasing ownership concentration. Large investors rely less on legal protection and are able to exercise their shareholder rights more easily. However, Shleifer and Vishny also argued that the presence of large shareholder could lead to an increase in the threat of expropriation of smaller shareholders. Therefore, firms should carefully decide on the trade-off of increasing ownership concentration. La Porta, Lopez-De-Silanes, Shleifer and Vishny (1999) support the idea of Shleifer and Vishny (1997) that ownership concentration is one of the main corporate governance mechanisms around the world. They investigate large companies in 27 wealthy economies and find that the main problem of increasing ownership concentration is the possibility of expropriation of smaller shareholders by larger controlling shareholders. Corresponding with these theories, Core, Holthausen and Larcker (1999) find that firms with lower ownership concentration usually have a weaker governance structure. This weaker governance structure is significantly correlated with CEO compensation, which in turn is correlated with firm performance. Overall, they find that ownership concentration has a significant relationship with agency costs. Moreover, Thomsen and Pedersen (2000) examine the performance of the 435 largest European companies. They found statistical evidence of a relationship between ownership concentration and firm performance. However, this relationship differs based on the type of owners of a firm. In addition, Mitton (2002) tests the relationship between firm performance and corporate governance on 398 Asian firms during the period of 1997-1998. He finds that firms with higher ownership concentration have a statistically significantly positive relationship with firm performance. Joh (2003) shows that firms with lower ownership concentration underperformed firms with higher ownership concentration. He examined 5829 Korean firms over the period 1993-1997 and found statistical evidence that firms with low

ownership were associated with low profitability. Gompers, Ishii and Metrick (2003) examine the relationship between shareholder rights and firm value. Shareholder rights tend to be stronger when ownership concentration is higher. They find statistical evidence of a relationship between stronger shareholder rights and higher firm value.

Following the theories on large shareholders being able to minimize agency costs (e.g. Jensen & Meckling, 1976; Shleifer & Vishny, 1986) and results indicating a positive relationship between ownership concentration and firm performance (e.g. Core et al., 1999; Thomsen & Pedersen, 2000), the first hypothesis is stated as follows:

Hypothesis 1: There is a positive relationship between ownership concentration and firm performance.

Contrary to the theory of a positive relationship between ownership concentration and firm performance, Demsetz (1983) argued that ownership structure should not be seen as a factor of firm performance, but that the effect is the other way around. Ownership structure is the result of a firm's response to performance of the past. Two years later Demsetz and Lehn (1985) examined 511 large US firms to see if there was a relationship between ownership concentration and firm performance. They found no statistically significant evidence of a relationship. In addition, Holderness and Sheehan (1988) examined 202 US firms during the period 1979-1984. 101 of these firms were majority held and 101 were widely held. They found that majority held firms had insignificantly higher rates of return, but insignificantly lower values for Tobin's Q. The insignificance and contradictive results indicate the absence of a relationship between ownership concentration and firm performance. Moreover, McConnell and Servaes (1990) find no statistical evidence of a relationship between Tobin's Q and blockholder variables, where blockholders are shareholders owning at least five percent of the total common stocks outstanding. Furthermore, Agrawal and Knoeber (1996) investigate several different mechanisms to control agency problems, of which one is ownership concentration. They find no evidence of a statistically significant relationship between ownership concentration and firm performance.

Since previous research indicated contradictive results regarding the statistical significance of the relationship between ownership concentration and firm performance (e.g. Demsetz & Lehn, 1985; Holderness & Sheehan, 1988), the second hypothesis is stated as follows:

Hypothesis 2: There is no relationship between ownership concentration and firm performance.

3. Data and Methodology

3.1 Data

3.1.1 Data collection and sample selection

The sample used, consists of the 100 companies in the Netherlands with the highest operating revenue. The choice of the sample is based on the availability of the financial data of the corresponding firms over the years 2010 - 2018.

The initial dataset provides 701 firm-year observations. Observations within the first and beyond the 99th percentiles were excluded to reduce the chance of a potential bias by the outliers of the dependent variable, in this case the return on assets. After excluding these observations, a total number of 687 firm-year observations remained. Since lagged values of the explanatory variables were used, another 117 observations were excluded from the analysis. Next, 10 observations had missing values for some of the control variables, so these observations were also excluded from the analysis. The total dataset used in the analysis consists of 560 firm-year observations.

3.1.2 Data sources

Orbis was used to collect data needed to build the dataset that was used in this thesis. *Orbis* is a database maintained by the Dutch firm *Bureau van Dijk*. It contains financial information on more than 275 million companies worldwide, of which around 100 million in Europe. One of the unique features is the possibility to easily check the ownership concentration of firms. This was the main reason for using *Orbis* to construct the dataset used in this thesis.

3.2 Variables

3.2.1 Dependent variable

The dependent variable that is used in the analysis is the return on assets (*ROA*), which is in trend with previous research (e.g. Core et al., 1999; Joh, 2003). The return on assets is computed by dividing net income by total assets. The return on assets is a good indicator of firm performance, since it gives the ratio in which a firm is able to turn their available assets into profit.

3.2.2 Explanatory variables

The main focus of this research is the relationship between ownership structure and firm performance. The variable of interest is ownership concentration (*ownership*). Consecutive with previous research, ownership concentration is defined by the percentage of shares owned by shareholders who own at least 5% of all outstanding shares (e.g. Holderness, 2009; McConnel & Servaes, 1990). After computing ownership concentration, *ownershipc* was added, which is a factor variable of ownership concentration. This variable splits the observations in four groups, based on the level of ownership concentration. The groups are, (0,25] for ownership concentration of more than -

0.1% and no more than 25%; (25,50] for ownership concentration of more than 25% and no more than 50%; (50,75] for ownership concentration of more than 50% and no more than 75%; and (75,100] for ownership concentration of more than 75% and no more than 100%. This variable is added to see if the relationships between ownership structure and firm performance differ between these categories.

Next to ownership structure, there are other variables that supposedly have a relationship with the return on assets. These variables differ per firm-year and since they seem related to the dependent variable, they need to be included in the models to arrive at a more accurate result of the relationship between our variable of interest, ownership structure, and the return on assets. The first firm-specific variable is *leverage*, which is computed by dividing total debt by total assets. Corporate finance literature suggests that capital structure is one of the ways companies try to cope with the agency problem (Jensen & Meckling, 1976). Jensen (1986) suggested that managers can commit themselves to acting more efficiently by taking on more debt. The presence of the possibility of default, as a result of taking on more debt, stimulates managers to behave more profitable (Grossman & Hart, 1982). This way, increasing leverage should have a positive relationship with firm performance.

The second firm-specific variable is the profit margin (*profit*). This variable is calculated by dividing net income by operating revenue. Since this margin is an indication of how effectively a firm is able to turn revenue into net income, it is expected to be related to the return on assets. Therefore, this variable needs to be included in the analysis.

The third firm-specific variable is *cashflow*, which is computed by dividing the book value of cash and cash-equivalents by the book value of total assets. According to previous research (e.g. Jensen, 1986) cash flow is expected to have a negative relationship with firm performance. Companies with large amounts of free cash usually provide managers the opportunity to act in their own interest, which eventually will lead to more agency costs and thus to a lower firm performance. This theory is supported by Harford Mansi and Maxwell (2008), who found that firms with large amounts of excessive cash also seem to show lower profitability and firm values.

The final firm-specific variable is the size of a firm (ln*firmsize*). This variable is computed by taking the natural logarithm of the total assets of a firm. Basic theory of economics suggests that companies should be able to take advantage of their growth via the effects of economies of scale. Therefore, it is assumable to think that firm size has a relationship with firm performance. The natural logarithm of the total assets is used to improve the normal distribution of this variable. Table 1 gives an overview and description of all the variables used in the models.

After the firm specific variables, the lagged values of the explanatory variables were added to the models as well. This is because these variables are expected to have a relationship with their values of the year t-1. This way, the relationship between a change in one of the variables and the return on

assets can be examined as well. Table 1 gives a summary of the variables that will be used in the analysis.

Table 1

Definition of variables

Variable	*Acronym*	Definition
Dependent variable		
Return on assets	*ROA*	Net income divided by total assets (in percentages).
Ownership structure variable		
Ownership concentration	*ownership*	The percentage of shares owned by shareholders who own at least 5% of all outstanding shares.
Ownership category	*ownershipc*	Ownership concentration grouped in 4 categories (-0.1,25], (25,50], (50,75] and (75,100].
Firm-specific variables		
Leverage	*leverage*	Total debt divided by total assets (in percentages).
Profit margin	*profit*	Net income divided by operating revenu (in percentages).
Cash flow	*cashflow*	Cash and cash equivalents, divided by total assets (in percentages).
Firm size	ln*fsize*	Natural logarithm of total assets (in percentages).
Lagged variables		
Lagged ownership	lagOwn	*ownership* of year *t*-1.
Lagged leverage	lag*Lev*	*leverage* of year *t*-1.
Lagged profit margin	lag*Profit*	*profit* of year *t*-1.
Lagged cash flow	lag*Cash*	*cashflow* of year *t*-1.
Lagged firm size	lagln*fsize*	ln*fsize* of year *t*-1.

3.3 Methodology

To answer the main question of this thesis, multiple regression models will be done. The models will be based on a general panel regression model, which can be expressed as:

$$Y_{it} = \alpha_0 + \sum_{k=1} \beta_k X_{k,it} + \mu_i + \delta_t + \varepsilon_{it}$$

where, Y_{it} is the return on assets of firm *i* on time *t*; α_0 is the constant; β is the coefficient for the vector of explanatory variables X; μ_i is the value to control for firm-specific effects that are unobservable; δ_t is the value to control for unobservable time-specific effects; and ε_i is the standard error for firm *i* on time *t*.

The general model specified above will be used to derive multiple models to test the relationship between ownership structure and firm performance.

The first model (1) looks like the following:

$$ROA_{it} = \alpha_0 + \beta_1 ownership_{it} + \sum_{k=1} \theta_k X_{k,it} + \delta_t + \varepsilon_{it}$$

This model examines the effect of *ownership* on the return on assets, while controlling for unobservable time fixed-effects.

The second model (2) has the following equation:

$$ROA_{it} = \alpha_0 + \beta_1 ownership_{it} + \sum_{k=1} \theta_k X_{k,it} + \mu_i + \delta_t + \varepsilon_{it}$$

This model examines the effect of *ownership* on the return on assets, while controlling for unobservable time and firm fixed effects.

First, the relationship between ownership concentration and the return on assets will be examined, while only controlling for time fixed-effects. This way, the relationship of ownership concentration and the return on assets will not be biased by specific effects or events that occurred during a specific year. After this, the firm fixed-effects will be added to the regression model to control for firm specific effects that could lead to a biased result. Moreover, by examining Model 2 after examining Model 1, the change in the R squared will depict the magnitude of the unobservable firm fixed-effects.

After examining Models 1 and 2, two more models will be examined, using *ownershipc* as the variable of interest. This way, it will be examined if the different categories also have different relationships between ownership concentration and firm performance.

The hypotheses will be tested by examining the coefficients of ownership concentration and their significance level in the different models. If the results depict positive coefficients that are statistically significant, hypothesis 1 will be supported while hypothesis 2 will be rejected, indicating a positive relationship between ownership concentration and firm performance. If the results depict coefficients that are statistically insignificant, hypothesis 1 will be rejected while hypothesis 2 will be supported, indicating no relationship between firm performance.

4. Results

4.1 Descriptive statistics

Table 2 shows the descriptive statistics for all the variables used in the models. The return on assets has a mean (median) value of 3.92 (3.44). Since the mean and the median are relatively similar, we can assume that either one of them depicts the average return on assets adequately. This is also supported by the fact that half of the values of the return on assets lie between 0.92 and 6.59. Ownership concentration has a mean of 68.08, whereas the median observation is 89.43, indicating that ownership concentration is negatively skewed and thus not equally distributed. Therefore, the median is taken to illustrate the average ownership concentration, which indicates that the firms in the sample have a high ownership concentration. Half of the values of ownership concentration are distributed between the values 38.52 and 100. The mean leverage among all firms is 66.19 with a median of 64.21. This suggests that this distribution follows a relatively normal pattern, with half of the observations located between 52.84 and 80.54. Profit margin has a mean (median) value of 2.92 (2.18). Since these values suggest a slight positive skewness in the distribution, the median value is used to indicate the average profit margin. Half of the observations have a profit margin between 0.47 and 4.67. The mean cashflow among all observations is 8.28, while the median is 6.50. The median is used as an indication for the average, since these values suggest a slight positive skewness as well. Finally, the mean value of ln*fsize* is 21.13, whereas the median is 21.04.

Table 2

Descriptive statistics

Variable	Observations	Mean	SD	Median	1st Quartile	3rd Quartile
ROA	560	3.92	7.57	3.44	0.92	6.59
ownership	560	68.08	36.99	89.43	38.52	100
leverage	560	66.19	20.01	64.21	52.84	80.54
profit	560	2.92	13.4	2.18	0.47	4.67
cashflow	560	8.28	7.68	6.50	2.25	11.64
ln*fsize*	560	21.13	1.82	21.04	19.63	22.27
lag*Own*	560	67.73	37.08	87.31	39.48	100
lag*Lev*	560	66.25	20.05	63.76	53.07	80.9
lag*Profit*	560	2.73	13.63	2.08	0.8	4.58
lag*Cash*	560	8.39	8.03	6.41	2.21	11.99
lagln*fsize*	560	21.08	1.83	20.96	19.54	22.26

Table 3 shows the mean and median values of all the variables used for each category of ownership concentration. The category (25,50] seems to have the lowest average return on assets, whereas the category (50,75] has the highest average return on assets. To test if these differences in return on assets are significant, there are several tests that could be used. The ANNOVA test is one of the most used tests for differences of means, but the results of a Shapiro-Wilkinson test, to see if the distribution of each group is normal, showed no p-values > 0.05, indicating that none of the categories

follow a normal distribution of return on assets. This is a violation of one of the assumptions of the ANNOVA test, which makes it unsuitable in this dataset. The non-parametric alternative is the Kruskal-Wallis test, which resulted in a p-value of 0.5275, indicating that there are no significant differences between the means of the categories. The pairwise Wilcoxon test was used to test if there were differences between categories, when tested individually. The results showed no p-values < 0.05, also indicating no statistically significant difference of means between the several categories of ownership concentration.

Table 3

Difference in means and medians of all variables between the various ownership categories.

	Ownership category											
	(-0.1,25]			(25,50]			(50,75]			(75,100]		
	N	Mean	Median	N	Mean	Median	N	Mean	Median	N	Mean	Median
ROA	110	3.94	3.54	72	3.55	3.76	72	4.32	4.15	306	3.92	3.06
ownership	110	7.6	0	72	39.88	40.47	72	61.22	61.37	306	98.08	100
leverage	110	62.22	61.37	72	67.17	60.79	72	62.32	61.09	306	68.29	69.19
profit	110	3.62	3.71	72	2.61	3.71	72	5.19	2.76	306	2.2	1.37
cashflow	110	8.91	7.33	72	11.04	9.69	72	7.79	4.81	306	7.52	5.29
ln*fsize*	110	21.48	21.5	72	22.02	21.78	72	21.87	20.95	306	20.62	20.12
lag*Own*	110	17.53	5.26	72	40.65	42.88	72	58.74	61.75	306	94.26	100
lag*Lev*	110	61.72	61.01	72	68.44	61.09	72	61.89	61.09	306	68.39	69.06
lag*Profit*	110	1.96	2.89	72	3.45	3.84	72	5.76	3.15	306	2.12	1.32
lag*Cash*	110	8.59	6.85	72	11.56	9.69	72	7.94	5.65	306	7.68	5.22
lagln*fsize*	110	21.44	21.45	72	21.98	21.78	72	21.8	20.93	306	20.58	20.07

Table 4 shows the pair wise correlation for each of the variables used in the models. *Ownership* seems to be positively correlated to firm performance, however not statistically significant, but this bolsters the theory that ownership concentration could be a way to minimalize the agent problem (e.g. Shleifer & Vishny, 1986; Jensen & Meckling, 1976; Eisenhardt, 1989). Furthermore, it is observable that the return on assets is significantly correlated with the explanatory firm specific variables *leverage, profit,* lag*Lev* and lag*Profit.* The signs of the correlations suggest a possible negative relationship between leverage and the return on assets, and the lagged value of leverage and the return on assets. They also suggest a possible positive relationship between profit margin and the return on assets, and the lagged value of profit margin and the return on assets.

Table 4 also indicates the absence of multicollinearity between the explanatory variables. Multicollinearity occurs when the explanatory variables are too highly correlated with each other. There are multiple absolute correlations above 0.8, which would indicate multicollinearity. However, these correlations result from lagged variables and we would expect these variables to be highly correlated. Other than the correlations of the lagged variables, there are no high absolute correlations. Therefore, there is no reason to assume that multicollinearity will be a threat in this analysis.

Table 4

Pairwise correlation of the variables.

	ROA	*ownership*	*leverage*	*profit*	*cashflow*	ln*fsize*	lag*Own*	lag*Lev*	lag*Profit*	lag*Cash*	lagln*fsize*
ROA	1										
ownership	0.01	1									
leverage	-0.34***	0.12***	1								
profit	0.44***	-0.05	-0.17***	1							
cashflow	-0.06	-0.1**	-0.07*	0.02	1						
ln*fsize*	-0.07	-0.24***	0.01	0.04	0.15***	1					
lag*Own*	0.01	0.87***	0.14***	-0.04	-0.09**	-0.22***	1				
lag*Lev*	-0.26***	0.12***	0.91***	-0.1**	-0.1**	0.01	0.12***	1			
lag*Profit*	0.13***	-0.01	-0.12***	0.03	0.08*	0.05	-0.02	-0.15***	1		
lag*Cash*	-0.04	-0.08*	-0.05	0.01	0.69***	0.17***	-0.08*	-0.05	0.03	1	
lagln*fsize*	-0.07*	-0.24***	0.02	0.04	0.14***	0.99***	-0.22***	0.02	0.05	0.17***	1

Note. *p<0.1; **p<0.05; ***p<0.01

4.2 Multiple regression analysis

Table 5 shows the results of the regressions of Models 1-4. Model 1 depicts the results of the regression on the return on assets, where *ownership* is the variable of interest and dummy variables were included for the years to account for year fixed-effects. Model 1 has a R squared of 0.447, meaning that 44.7% of the variance of the return on assets is explained by the explanatory variables. *Ownership* has a negative coefficient, which would indicate a negative relationship between ownership concentration and firm performance. However, this coefficient proves to be statistically insignificant, which implies no significant relationship between ownership concentration and firm performance. The statistically significant explanatory variables are *leverage, profit* and *cashflow*. *ROA* seems to have a negative relationship with leverage, indicating that the theory of Jensen (1986), does not hold when tested on this sample. Leverage might decrease the available cashflow and positively stimulate managers to perform more efficiently, but apparently the costs associated with debt outweigh these benefits. Profit margin has a positive relationship with the return on assets. This relationship was expected, since it indicates the level of profitability of a firm. The coefficient of *cashflow* is negative, but only statistically significant on the 0.1 level. This indicates that there are signs of a negative relationship between cashflow and firm performance. This supports the theory of Jensen (1986),

stating that excessive cashflows could lead to higher agency costs and therefore lower firm performance.

Model 2 shows the results of the regression where the firm fixed-effects were added. This model has an R squared of 0.780, meaning that 78% of the variance of the return on assets is explained by the explanatory variables. The increase in R squared of 0.447 for Model 1 to 0.780 for Model 2 indicates that there are a lot of unobservable firm fixed-effects related to the return on assets. Just as in Model 1, *ownership* has a negative coefficient and this coefficient remained insignificant as well, indicating no relationship between ownership concentration and the return on assets. *Leverage* still has a statistically significant negative coefficient after controlling for the firm fixed-effects. This supports the finding of Model 1 that leverage has a negative relationship with the return on assets. The coefficient of *profit* is still statistically significant as well. The fact that the coefficient is positive, reinforces the result of Model 1 on the positive relationship between profit margin and the return on assets. After adding the firm fixed-effects, the coefficient for *cashflow* proved to be statistically insignificant. The coefficient remained negative, but the statistically insignificance indicates no relationship between cashflow and the return on assets.

Model 3 shows the results of the regression where *ownershipc* was used as the dependent variable. This model depicts the coefficients of three of the four categories of ownership structure, where the first category was left out of the regression as a point of reference. Similarly to Model 1, this model includes dummies for the years to account for the year fixed-effects. The coefficients of the explanatory variables remained almost the same as those of Model 1. Therefore, these will not be explained in this part. Model 3 shows a positive coefficient for the categories (25,50] and (75,100], indicating a possible positive relation between these categories and the return on assets. The category (50,75] has a negative coefficient, which indicates the possibility of a negative relationship between this category and the return on assets. However, all of these coefficients prove to be statistically insignificant, suggesting the absence of a relationship between ownership concentration and the return on assets.

Model 4 shows the results of the regression where the firm fixed-effects were added. These results show the same signs of coefficients for each category. In addition, this model shows as well that the coefficients prove to be statistically insignificant, also indicating an absence of a relationship between ownership concentration and the return on assets.

Since the results of Models 1 and 2 both showed no significant relationship between ownership concentration and the return on assets, hypothesis 1 is rejected. This is supported by the findings of Models 3 and 4, that also showed no statistically significant relationship between the categories of ownership and the return on assets. Therefore, hypothesis 2 is accepted.

Table 5

Linear regression results of the relationship between ownership concentration and the return on assets.

	Dependent variable: *ROA*			
	(1)	(2)	(3)	(4)
ownership	-0.002	-0.0001		
	(0.012)	(0.011)		
ownershipc(25,50]			0.473	0.081
			(1.051)	(1.001)
ownershipc(50,75]			-0.215	-0.676
			(0.946)	(1.035)
ownershipc(75,100]			0.467	0.031
			(0.844)	(0.902)
leverage	-0.163**	-0.126**	-0.159**	-0.125**
	(0.068)	(0.054)	(0.067)	(0.054)
profit	0.219**	0.164**	0.220**	0.164**
	(0.092)	(0.073)	(0.093)	(0.073)
cashflow	-0.097*	-0.043	-0.100*	-0.043
	(0.056)	(0.048)	(0.056)	(0.048)
ln*fsize*	1.750	1.700	1.782	1.792
	(2.071)	(1.462)	(2.051)	(1.464)
lag*Own*	0.010	0.004		
	(0.013)	(0.013)		
lag*Lev*	0.068	0.038	0.064	0.037
	(0.062)	(0.055)	(0.062)	(0.055)
lag*Profit*	0.056	-0.004	0.057	-0.004
	(0.055)	(0.034)	(0.055)	(0.034)
lag*Cash*	0.028	0.039	0.026	0.040
	(0.044)	(0.046)	(0.044)	(0.046)
lagln*Fsize*	-2.034	-1.181	-2.069	-1.220
	(2.036)	(1.806)	(2.021)	(1.810)
Year dummies	Yes	Yes	Yes	Yes
Firm fixed-effects	No	Yes	No	Yes
Observations	560	560	560	560
R2	0.447	0.780	0.447	0.780
Adjusted R2	0.428	0.728	0.427	0.728
F Statistic	24.319***	15.014***	22.973***	14.866***
Number of clusters	18	107	19	108

Note. Standard errors are in parentheses; *p<0.1; **p<0.05; ***p<0.01

4.3 Robustness checks

When conducting a multiple regression, there are a few assumptions that are important to test. When these assumptions are violated, the outcomes of the regression could be biased indicating that the coefficients could have been predicted less accurately. In this section, these assumptions will be checked for Models 1 and 2. Models 3 and 4 will not be tested on these assumptions, since they have almost the same results as Models 1 and 2.

The first assumption is that the residuals of the regression follow a normal distribution. If this assumption is violated, the confidence intervals of estimated coefficients could be too wide or too narrow. The normality of the residuals can be examined by using a normal Q-Q plot. Figure 1 shows the normal Q-Q plot for the residuals of Model 1. It shows that the residuals are not normally

distributed, indicating a violation of the first assumption. The results of a Shapiro-Wilkinson test on the residuals of Model 1 (p-value < 0.05) support the observation of violation of this assumption. This assumption indicates that the size of the coefficients of Model 1 could be estimated with less accuracy.

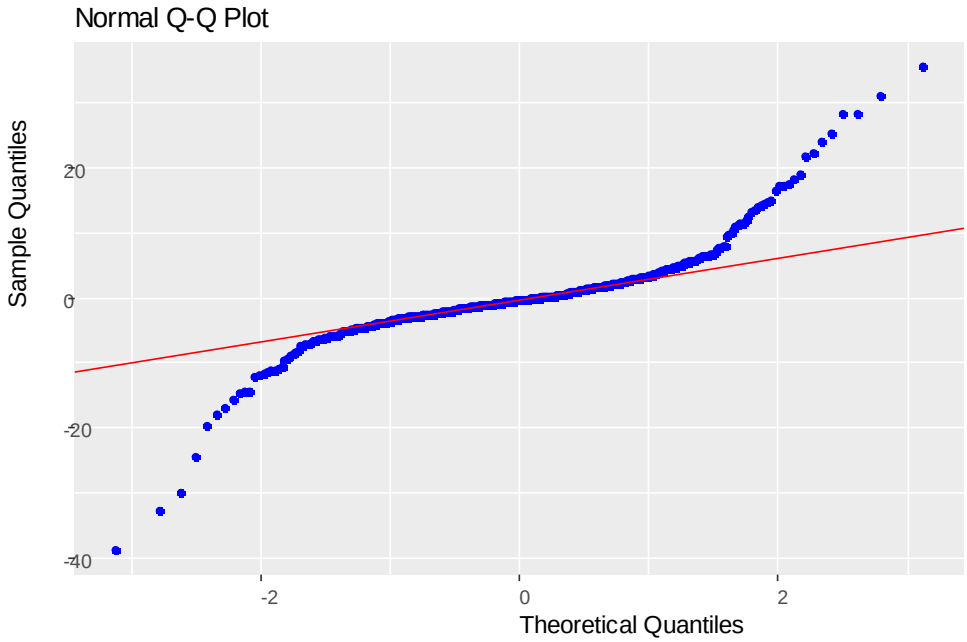

Figure 1. Normal Q-Q plot for the residuals of Model 1.

Figure 2 shows the normal Q-Q plot for the residuals of Model 2. This figure shows that the residuals of Model 2 follow a non-normal distribution as well. The results of a Shapiro-Wilkinson test for the residuals of Model 2 (p-value < 0.05) show that the residuals of Model 2 violate the assumption of normality as well.

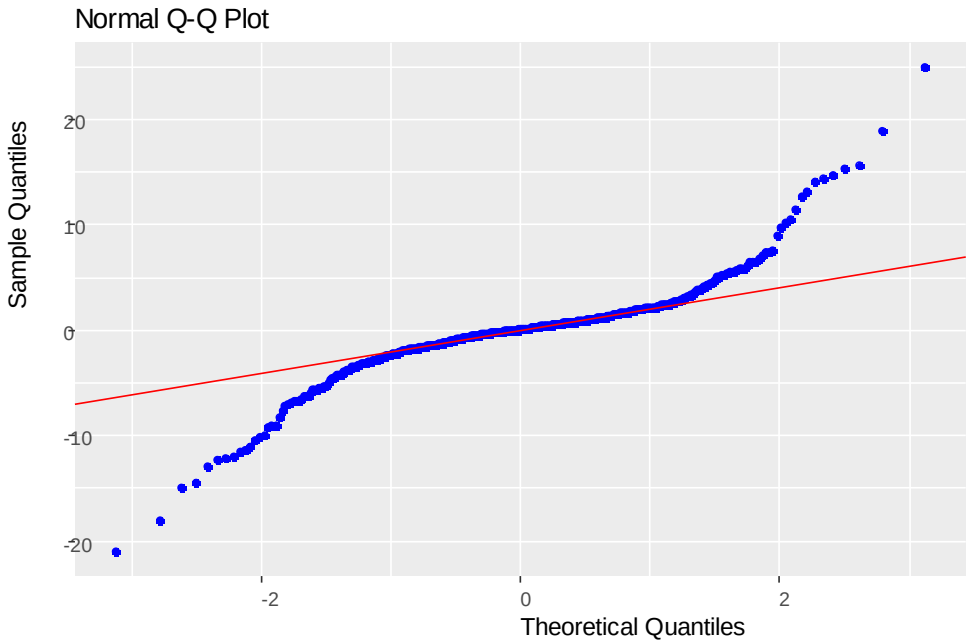

Figure 2. Normal Q-Q plot for the residuals of Model 2.

The second assumption is that of homoscedasticity, which means that the residuals should have equal variances. Absence of homoscedasticity, or heteroscedasticity, can be tested by plotting the residuals versus the predicted values of a model. The residuals should be equally spread out along the x-axis, indicating that the distribution of the residuals has the same variance for every predicted value. Figure 3 shows the residuals versus fitted values plot of Model 1. It shows signs of heteroscedasticity and to support this observation, a Breusch-Pagan test (p-value < 0.05) proves that the variances are not equal.

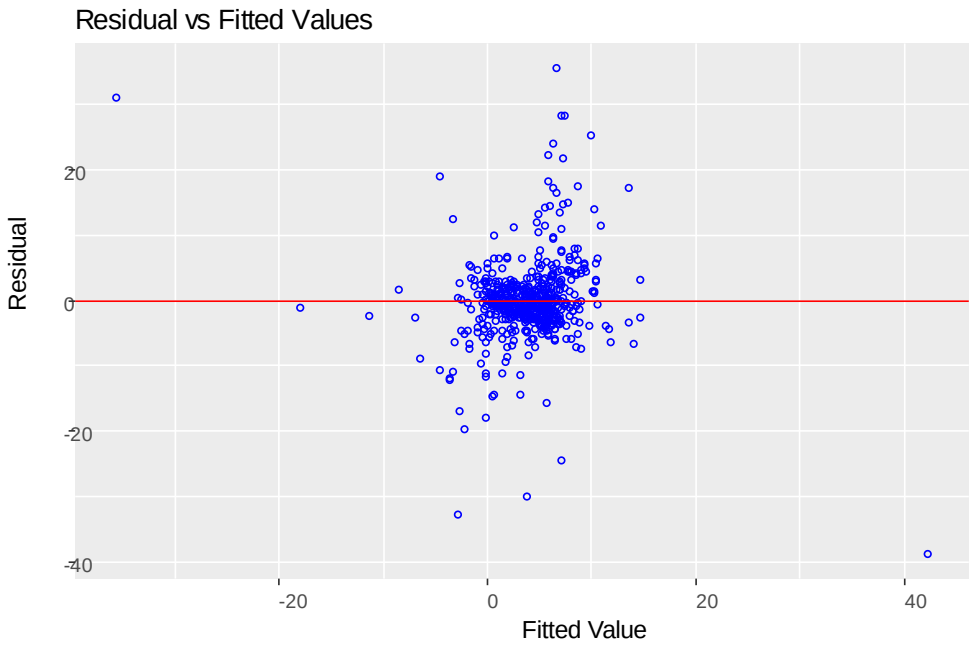

Figure 3. Residuals versus fitted values plot of Model 1.

Figure 4 shows the residuals versus fitted values plot of Model 2. This figure shows less signs of heteroscedasticity as with Model 1. Still, when performing the Breusch-Pagan test, the results indicate absence of homoscedasticity (p-value <0.05).

The third assumption is that there is an absence of multicollinearity. When examining the correlation matrix in Table 4, the absence of multicollinearity was already observed.

The final assumption is that the dependent variable is a linear function of the explanatory variables. This can be tested by checking the residuals versus fitted values plots of Figures 3 and 4. The fact that there is no pattern in the scatterplots, all dots seem randomly distributed, indicates the linearity of the models.

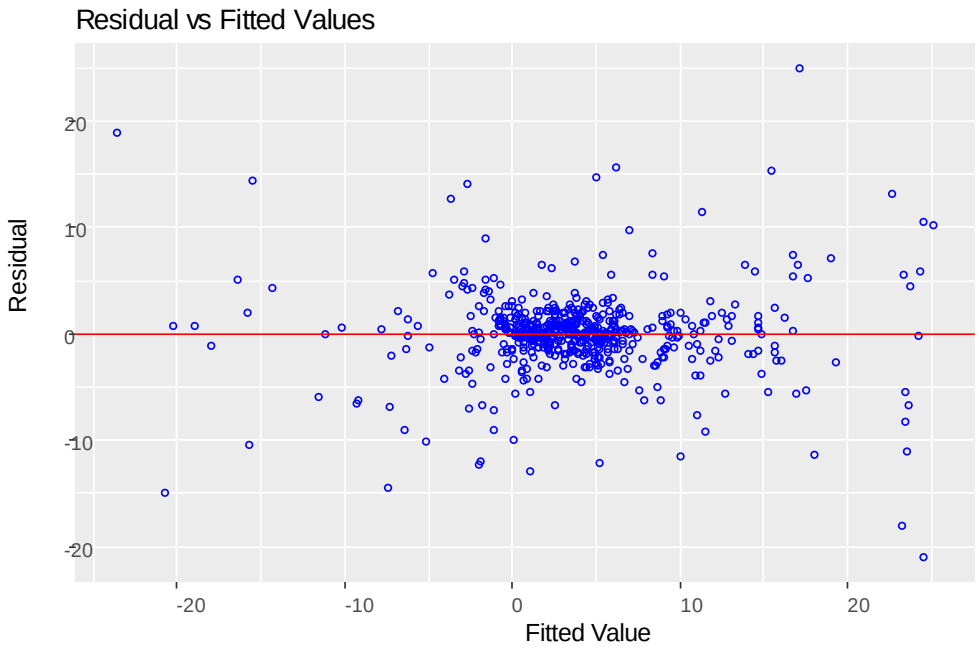

Figure 4. Residuals versus fitted values plot of Model 2.

5. Conclusion

5.1 Conclusion

Previous literature on the subject of the agency theory provides inconclusive results on the relationship between ownership concentration and firm performance. Some results stated that there was a significant positive relationship between ownership concentration and firm performance while other results indicated the absence of this relationship. Therefore, it remained inconclusive whether ownership concentration would be related to firm performance.

To contribute to this research, the main research question of this thesis was:

"*What is the relationship between ownership concentration and firm performance of Dutch companies over the time period of 2011-2018?*"

This research question would be answered by testing the following hypotheses:

Hypothesis 1: There is a positive relationship between ownership concentration and firm performance.

Hypothesis 2: There is no relationship between ownership concentration and firm performance.

The results of Models 1 and 2 show negative coefficients for ownership concentration. In addition, these coefficients also proved to be statistically insignificant. This led to rejecting hypothesis 1 and accepting hypothesis 2. Moreover, the results of Models 3 and 4 showed that when comparing the categories of ownership concentration, none of these categories proved to be statistically related to firm performance.

To conclude on the main research question, the results suggest that there is no statistically significant relationship between ownership concentration and firm performance of Dutch companies over the period of 2011-2018.

5.2 Limitations and recommendations

This thesis examined the relationship between ownership concentration and firm performance, with the conclusion that there was no significant relationship. However, this insignificance may also be the result of omitting several variables that could explain certain parts of the variance of the return on assets. Agrawal and Knoeber (1996) tested several mechanisms that were employed by firms to control agency costs. One of these methods was board structure, which is sometimes used as a substitution for ownership structure in reducing agency costs. Since the data on board structure was not available for most of the firm-year observations of the sample used in this thesis, it was not possible to control for this potential effect. Therefore, adding board structure variables to the models would be a recommendation for further research.

Another limitation was the fact that we only used the return on assets as an indication of firm performance. Previous literature (e.g. Holderness & Sheehan, 1988; McConnell and Servaes, 1990) suggests using alternative measures, such as Tobin's Q, as well. However, for many of the firm-year

observations of our sample, the information for this variable was unavailable. The second recommendation for further research is therefore to examine the relationship of ownership concentration and firm performance, based on Tobin's Q.

A final possible limitation of this research was the violation of the normality and homoscedasticity assumption for the models used. The coefficients found could have been estimated more accurately if another type of regression model would have been used. Further research could therefore explore the possibility of using different methods in estimating the relationship of ownership concentration and firm performance.

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