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Family Firms & Diversification Through M&A: Evidence From Norway

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Abstract

This study examines the behavior of family firms on whether they are more inclined to engage in diversifying M&As than non-family firms due to their high value of control. To analyse this theory, data has been manually collected where ownership, deal, and financial data were available, for completed M&A transactions in Norway from 2000 through 2018. **First**, we find evidence that family firms are more inclined to pursue diversifying acquisitions. However, we find no significant evidence that family firms with a high value of control, proxied by their leverage, are more inclined to undertake diversifying M&As. **Second,** when restricting the transactions to only cash financing, it is clear that family firms are still willing to engage in diversifying acquisitions, and significantly more inclined when the value of control increases. **Third,** we find no significant proof that family firms have a higher preference to issue long-term debt than short-term debt. **Finally,** we implement additional robustness regression, with an alternative family firm definition. Based on these results, the study shows an increase in significance for most of the findings, which provides a better understanding of family firm's behavior in terms of their value of control.

Keywords: Family firms, M&A, acquisitions, leverage, diversification, control motives, method of payment.

JEL classification: G32, G34.

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Table of contents

1.0 Introduction

Family firms have received significant attention after La Porta et al. (1999) pointed out the importance of corporate ownership structure around the world. Family firms are still very prevalent, and one of the common predominant type of organization and controlling blockholders. However, the existing research on family firms in the economic literature is limited since almost all family firms are private and only a small fraction of firms are widely held (La Porta et al., 1999). Consequently, high-quality data on private firms are rarely available, and this can lead to struggles in obtaining the relationship between the owners. Given that most family firms are privately held, the lack of research on these firms carries over to family firms (Berzins, Bøhren, & Stacescu, 2018). Norway represents a particularly attractive setting to look at where Norwegian firms make a significant contribution to the economy. Norwegian business and industry consist of family firms that often includes one family in control of the resources. In fact, more than 2/3 of corporations represent one family that holds at least half of the shares (Bøhren, 2011).

There exist different characteristics that separate family firms from non-family firms, where ownership concentration and emotional attachment are the most important ones. The controlling owners in family firms are known to be more attached emotionally toward the firm and sociologically related to each other compared to non-family firm owners (Barclay & Holderness, 1989). Due to this unique and strong connection the owners have toward the firm, family firms are likely to have a long-term commitment and longer investment horizon (James, 1999). This is true not only in terms of cash flow to be consumed in the presence, but also as the value of history, culture and assets to be passed on to the future generation (Casson, 1999; Chami, 2001). Thus, their continuing existence is vital for family owners forcing them to pay particular attention to how corporate policies affect the likelihood of survival. Family firms are, therefore, often perceived as risk-averse and less willing to take actions that could lead to bankruptcy or loss of ownership.

An important way to control a firm's risk is by diversifying their cash flows, which can be achieved by allocating capital into assets with low correlation. There

exist several methods for investors to diversify through, for instance, by investing in assets, commodities, gold, or bonds. However, for a firm, it is more common to go through a merger and acquisition (M&A). By engaging in an M&A transaction, family firms can diversify their risk into various investments, either as a majority or minority shareholder, mitigating the firm's risk. As a result, family firms can reduce the volatility of their earnings, which provides a greater financial security to the family (Faccio et al., 2001). Moreover, the likelihood of survival will increase when family firms diversify. This is ultimately essential for family members, as their future welfare and wealth are tied to one organization. Nevertheless, there is also a potential cost to this type of diversification since it implies that firms can experience a reduction in the ownership concentration by issuing new equity, which could result in a reduction of control over the firm. Hence, family firms are often unwilling to reduce ownership by accepting new investment funded by equity issues, making them less diversified than non-family firms (Harris & Raviv, 1988; Eisenmann, 2002; Hautz, Mayer, & Stadler, 2011).

To achieve the benefits of diversification, family firms require new funds obtained from issuing new stocks or through debt financing. These external investors (i.e., stockholders or creditors) pose a threat as they have the capacity to exert some influence and control of the strategic direction of the firm. However, as family firms main concern is the control of the firm, they are more inclined to use debt financing (Miller et al., 2009). As a result, the value of control and leverage go hand in hand. Since a higher degree of debt will reflect a greater incentive to maintain control, family firms will have a stronger independence and ability to choose the direction of the firm. In other words, family firms prefer to use internal funds or debt, as this reduces external dependence (Casson, 1999). However, the high degree of leverage for family firms is also a concern as this increases the firm's risk. Family firms with strong control motives, described in the firm's leverage ratio, perform more cross-industry acquisitions than non-family firms (Aktas et al. 2016). This allow family firms to diversify their personal wealth without reducing their control motives.

This thesis will compare family firms' and non-family firm's propensity to engage in cross-industry acquisitions. Leverage, in terms of both short- and long-term debt will be a crucial factor, as it will be a proxy for the value of control motives

in family firms. The leverage will be closely linked to the method of financing, which is a choice between equity and debt financing. There exist several reasons to how a firm would choose the method of payment. Therefore, this paper would also like to see how the method of payment is affected by the debt capacity and the already existing leverage in a firm, and if there are significant differences in family firms and non-family firms. Regardless of the payment method, the ultimate purpose of performing a cross-industry acquisition is to stabilize the family firm's cash flows by acquiring, e.g., a firm with a low correlating cash flow (Faccio et al., 2011). This can be done by acquiring a firm in a different industry, or that has a different product market compared to the family firms', which results in a non-comparable cash flow stream. This method to diversify gives virtually the same effect as it would be to diversify the firm's assets through a different type of equity, but in this case, without being the need to give up control.

Our sample consists of all completed M&A deals by Norwegian firms over the period of 2000 through 2018, where ownership and financial data is available. From our empirical results, we find evidence that family firms are more inclined to engage in cross-industry acquisitions, as they would like to diversify their wealth without selling shares or lose control by issuing new equity (Miller et al., 2010). We do not, however, find significant evidence that highly levered firms have a higher propensity to pursue diversifying acquisitions, which from previous literature is dominant as high leverage can be closely linked to a high value of control (Ellul, 2008). Nevertheless, we do find evidence in our third model specification, shown in Table 5, that family firms with high leverage have a higher propensity to finance diversifying M&A transactions with cash. This happens when continued corporate control is threatened, and as family firms have stronger control motives than non-family firms, they are more inclined to finance their transactions with cash (Faccio & Masulis, 2005). Additionally, family firms are more willing to issue long-term debt rather than short-term debt as the former is considered to have a lower risk (Croci et al., 2011). However, from our fourth model specification, we do not find significant evidence that family firms are more inclined to finance new acquisitions with long-term debt than short-term debt, but based on the necessary coefficient estimates, it indicates that family firms are more willing to do so.

To test for significant changes in our variables of interest, we implement four additional robustness regressions where the ownership requirement, in order to be defined as family firm, is lowered. From these tests, evidence indicates that several of our independent variables of interest become more significant. The reported results suggest that as family firms with a weaker ownership concentration are included, they have a higher propensity to both participate in diversifying transactions, and even more so finance these with cash. In addition, the last regression, checking for propensity to finance with long-term and short-term debt, is now highly significant and gives evidence that family firms are more inclined to finance new acquisitions with long-term debt.

In the following section, we will provide a literature review in the context of how likely Norwegian family firms are to engage in M&As as an alternative method of diversifying the business and present the hypotheses for this thesis. In section 3, we will provide and describe the data used with an explanation of the variables and emphasize the methodology applied. Part 4 will contain the analysis of the result retained from the data on how the control of Norwegian family firms affects their propensity to undertake diversifying acquisitions. In section 5, necessary additional robustness measures will be applied to get an accurate outcome of the data. In addition, an alternative definition for family firms will be employed to check if we get significantly different results. When we have thoroughly examined our results in both our analysis and the robustness tests, we will provide a conclusion for the paper, presented in section 6.

2.0 Theory and literature review

Previous literature review on family firms and their propensity to engage in diversifying M&A transaction will be presented and applied in this section. This section starts by examining explanations to why family firms have a higher incentive to maintain control. This foundation illustrates an understanding of why family firms have a unique capital structure, and how the value of the control can be reflected in their method to finance new acquisitions. With this background information and theory from previous researchers, four hypotheses are established, which are going to be tested in this paper.

2.1 Literature review

The relevance of family firms and their value of control have been broadly discussed in both the economic and finance literature. Exceptionally, around 70 - 80 % of the firms in Continental Europe are either owned or controlled by families, making family firms the most common organizational form in Europe (Alderson, 2011). In Norway, family firms represent more than 1/3 of the total 82 % of the Norwegian listed firms (Bøhren, 2011). The goal of family firms is in accordance with those of non-family firms, to maximize profit, both true when it comes to the firm and their concentration of wealth bound in the firm (Jensen, 2002). This is reflected in the firm's behaviour, which gives them several unique characteristics that are common for family owners. Such features could be valuable family history, ownership concentration of the board, size, culture, history, distribution of wealth to families, longer investment horizon, and most important the control of the firm (Bennedsen, Pérez- González, & Wolfenzon, 2007; James, 1999). A core characteristic of family blockholders is to preserve socioemotional wealth endowment (SWE). There exist several resources to derive this, such as the family owners feeling connected to the firm or having family members working for the firm, and thus creating an emotional bond (Berrone, Cruz, & Gomez-Mejia, 2012). This emotional attachment to the firm often leads to the aim of sustaining the control of the business in order to pass it on to future generations, and may therefore influence how the firm is managed through their strategic and managerial decisions (Casson, 1999; Fiss & Zajac, 2004; Baron, 2008; Berrone, Cruz, & Gomez-Mejia, 2012).

According to the portfolio theory, it is vital for investors to invest in many different assets to eliminate or reduce the idiosyncratic risk. As family firms would like to minimize unpredictable negative shocks to their cash flow and the likelihood of financial distress. It is necessary to look at the diversification structure of the firm, and how a family firm can mitigate the idiosyncratic risk. While there exist limitations to how a family firm can diversify, the most common and efficient method is through an M&A. Existing studies argue that family firms' involvement in diversification is lower than non-family firms'. This is supported by the work of Anderson and Reeb (2003b), who addresses the relationship between founding-families and their capital structure decisions. Similar results have also been found by Bauguess and Stegemoller (2008) and Caprio et al.

(2011). However, if family firms do engage in M&A activities, they prefer more diversifying ones to spread the risk (Miller et al., 2010). Instead, Anderson and Reeb (2003b) find two alternative methods for family firms to diversify themselves consisting of searching for capital forms that have a low chance of default or to undertake projects where the cash flow is imperfectly correlated with existing projects. Initiating in an M&A transaction in different industries or a different product market are examples of measures that could improve the long-term value of the firm and enhance a firm's viability (Aktas et al., 2016; Faccio & Masulis, 2005; Miller et al., 2010).

There exists an extensive literature on the propensity for family firms to undertake acquisitions. Research from Caprio et al. (2011) looks at the relationship between the ownership structure, family control, and the propensity to undertake M&As, both as an acquirer and as an acquired firm. Based on their results, family firms are less inclined to pursue acquisitions compared to non-family firms. Also, their finding shows that family firms with above 50 % ownership are more likely to pursue acquisitions, which is contrary to family firms with minority ownership, as there is a significantly smaller risk that the family will lose control. Recent work from Aktas et al. (2016), who studied the diversification of family firms, find supporting evidence that, on average, family firms have a lower propensity to carry out acquisitions as a diversification method, compared to non-family firms. The motivation behind this is the low willingness to take risks because of increased uncertainty and reduced expertise in other industries. Nevertheless, the probability of undertaking cross-industry acquisition increases when the control motives in the firm rises. This indicates that the willingness to participate in both diversifying and non-diversifying acquisitions increases with ownership concentration for the family firm. Based on these results, the main hypothesis of interest is formulated:

Hypothesis 1: Family-controlled firms make more diversifying acquisitions than non-family firms.

Previous research from Adhikari and Sutton (2016) suggests that family firms do not only diversify to minimize the risk of their personal portfolio of wealth, but also to help firms create value through lower cost of capital, consistent with the

theory of diversification. These results are in line with Stein (1997), who further explains that by determining the outcome of the diversifying transaction provides an opportunity to lower the cost of capital. Anderson and Reeb (2003b) also emphasize that the cost of capital is lower in family firms. However, Miller et al. (2010) do not share this view, as their result shows the reluctance to sell shares and to maintain control are the main priorities to why a family firm would pursue a diversifying acquisition.

Furthermore, there also exists a relationship between control motivation and capital structure decisions that has a significant impact on the propensity of family firms engaging in M&A deals. Studies from Ellul (2008) shows that the effect of corporate control, with respect to the use of leverage, by controlling blockholders, faces a trade-off. Investment opportunities through M&A can be financed from external financiers, such as from debtors or shareholders. With new shareholders, this results in a reduction of control and dilution of existing shareholders, which is a major concern for family firms. Financing with debt, on the other hand, may bear the potential risk of bankruptcy and financial distress costs. Stulz (1988) also adds that in corporate control concerning M&A, financing is highly influenced by the value of control and the management's private benefits. The value of control differs as ownership percentage varies for the controlling shareholder. According to Faccio and Masulis' (2005) paper on method of financing in M&A, controlling shareholders with voting power in the range of 20-60 % has particularly strong incentives to choose debt as a financing method, as further dilution could result in loss of control. Käsbach and Ludwigs (2014) also supports the higher aversion of equity financing when the voting stake of the family is relatively low. This induces family blockholders to have a higher leverage ratio in their capital structure. They preferer debt financing compared to non-family firms and family firms with low leverage and is especially important for those firms with insufficient shareholders' rights. This makes the incentive to diversify through M&A non-linear in leverage (Ellul, 2008; Croci et al., 2011; Faccio & Masulis, 2005). Therefore, our second hypothesis is carried out as follow:

Hypothesis 2: Family firms with high leverage are more inclined to pursue diversifying acquisitions than family firms with low leverage.

Family firms with strong control motives might be hesitant to diversify away their business by selling shares and use these cash proceeds to finance new acquisitions, as this would lead to a reduction of the owner's control of the firm. Therefore, the only way to diversify their wealth, which is mostly tied up in their business, is to diversify the business itself (Aktas et al., 2016). As a result, when assessing new M&A possibilities, it is highly relevant to evaluate the financial conditions as it has a strong influence on the method of payment. Essential variables that need to be considered are bidders' collateral, financial leverage, and their total asset value. Nevertheless, cash financing increases with collateral and total asset value, while their current leverage ratio decreases the likelihood of cash financing (Faccio & Masulis, 2005). Existing theories on debt also highlights that debt capacity has a negative function of asset volatility, where the potential bankruptcy costs can reduce the lender's willingness to finance new M&A transactions with cash (Hovakimian et al., 2011). However, Faccio and Masulis (2005) and Caprio et al. (2011) argue that family firms who highly values control are more inclined to use cash when financing M&A deals, especially when the voting power of shareholders are threatened as well as the risk of control loss rises. Hence, there is a reason to believe that there exists a positive relationship between family firms with high leverage and the use of cash financing when undertaking diversifying acquisitions. Based on this, we establish a third testable hypothesis that is carried out as follow:

Hypothesis 3: Family firms with strong control motives prefer to finance new diversifying acquisitions with cash instead of equity.

Additionally, credit markets tend to perceive family blockholders as risk-averse since most of their wealth is invested in the business, which helps discourage high risk-taking. The low willingness to take risk help reduce agency costs of debt that ultimately gives the firm more possibilities to access affordable long-term debt. This is supported by the studies from Croci, Doukas, and Gonenc (2011), where the evidence indicates that family firms are more likely to induce long-term debt rather than short-term debt. This results in our final hypothesis:

Hypothesis 4: Family firms have a higher propensity to finance new diversifying acquisitions with long-term debt.

3.0 Data, variables and methodology

This section starts by explaining ownership structures and what this paper defines as a family firm. This is then followed by the data collection process, where we also, in brief, explain some of the limitations in acquiring ownership data. Subsequently, we introduce our independent, dependent, and control variables, which can be seen in the following section for descriptive statistics. Lastly, the explanation of the methodology applied in the empirical analysis is outlined.

3.1 Definition of family firms

It is essential to distinguish the difference between family firms and non-family firms. There exists a variety of definitions of family firms in the economic literature, dependent on what the researchers aim to cover in their studies. A common definition includes features such as allocation of ownership, family involvement, and corporate governance, i.e., how committed families are toward the business (Aktas et al., 2016; Anderson & Reeb, 2003a; Miller et al., 2007). Based on these features, two definitions have been widely used in the literature: family control and ultimate ownership. The ultimate owner refers to a person, a family, or a firm who either directly or indirectly, through a chain of ownership, have effective control over the firm. The effective control is often measured by cash flow rights and voting rights held by the majority shareholder. Family control, however, is similar to the ultimate owner definition, but has its differences. The family and their relatives, by either blood or marriage, need to hold half of the voting rights or more to be considered as a family firm (Berzins et al., 2018; Bøhren, 2011; Anderson & Reeb, 2003a). The threshold of ownership seems to vary a lot in previous literature. Caprio et al. (2011) imply a 10 % threshold for the family or individual, while other studies also use a smaller ownership requirement, e.g., 20-25 % (Andres, 2008; Franks et al., 2012).

Another way to proxy for the family firm definition is through the board of director's representation. This is suggested by, among others, Anderson and Reeb (2003a) who argues that firms which are inherited through generations can be identified through their surname. However, as firms are passed to later generations, the surname may no longer be the same, and this would not be a proxy this paper would like to operate with. This thesis will rather classify a family firm as a firm owned by an individual or family that individually or

combined has 50 % or more of the voting power, directly or indirectly. As the majority shareholders oversee the firm, they have a strong influence on top managerial positions and able to better aligned interests to avoid agency costs. Moreover, as the majority shareholder is in charge, they have a significant impact on the strategic choices the firm undertakes. However, from The Norwegian Companies Act, there are restrictions to restructuring regarding capital structure changes, conversion of the company, mergers, and demergers, as it requires to have qualified majority of 2/3 to advance on these propositions (Lovdata, 2019). This will to some extent limit the power of a family firm if they fall within the 50-67 % ownership range. This thesis will not put much emphasis on this potential issue as it is likely to be insignificant in our sample.

3.2 Sample and data collection

The data used in this paper are retrieved from several sources. Firstly, the samples of M&A transactions were obtained from Refinitiv's database: SDC Platinum – Merger & Acquisition database. The reason behind this specific database is that this is the most commonly used data source for M&A research and due to the use from previous papers on similar topics (Aktas et al., 2016; Käsbach & Ludwigs, 2014; Basu et al., 2009). Further, as the database has data stretching back to 1970, we have decided to restrict it from January 2000 to December 2018, since both ownership and financial data was difficult to obtain prior to 2000. The database identified 1711 completed M&A transactions where the acquirer's headquarter was located in Norway without any restriction on the target firm's nationality. The sample also includes minority stake and acquisitions of remaining interest, as the purpose of an M&A transaction is not necessarily control, but rather to diversify over several companies (Aktas et al. 2016). Additionally, the sample contains all completed M&A transactions of a specific size, i.e., restricted the deal to a minimum value of 1 million USD. Furthermore, the Standard Industrial Classification (SIC) codes for the firms were also reported to analyse the propensity of cross-industry acquisitions for Norwegian family firms.

According to SDC Platinum Database, a firm is categorized as a family firm; *"*when at least a family or group of families control 20% of the firm, i.e., if either a founding family or a non-founding chairman owns a substantial stake, defined as 20%" (Thomson, 2019). However, this paper finds it more suitable to use a

threshold of 50 % to identify family firms, as this represent the ultimate owner's control of the firm. The ownership structure for each Norwegian firm are collected from both Proff and DN Investor, as these sources have detailed statistics about the ownership structure of each of the companies in the private industry. This gives us the ability to compare the ownership structure of family firms to non-family firms. The data collection process identified 184 family firms compared to 443 classified as non-family firms. However, a recent study from Berzins et al. (2018) reports that family firms in the aggregate account for approximately 66% of all firms during their sample period (2000-2015), which is way higher than what this paper reports. One of the main reasons for this is that the SDC Platinum Database reports all public firms, both listed and delisted, with available SEDOL number (Stock Exchange Daily Official List). Only these firms show up in the database when retrieving M&A deals. Additionally, most of the family firms are private rather than public (La Porta et al., 1999), and therefore, a significant number of family firms are excluded from the sample. Consequently, we had to eliminate several firms with incomplete ownership data, which reduced the sample size to 621.

In addition to the M&A data of deals, it is also necessary to collect both financial and accounting data for the Norwegian firms which were retrieved from Thomson Reuters Worldscope. To create appropriate variables, the accounting data that has been selected are the per year end prior to the announcement date of the transaction, i.e., over the period 1999-2018, simply because only available information at announcement date can be utilized to analyse the influence on the M&A deals.

3.3 Independent variables

The ambition of this paper is to study how variables have an impact on family firm's decisions when they engage in M&As, and how this is affected by the value of the control. Several independent variables are essential, but the primary variable of interest is the family variable. This variable is defined as *FamilyD*, which is a dummy variable that takes the value of 1, if it is represented by an ultimate family owner, and 0 otherwise. This dummy will be carefully compared to the leverage variable, which is broken down into two leverage terms. The motivation behind the separation is to investigate different debt maturity

structures and find reasons to why family firms decide to issue long-term or short-term debt. This has been examined by Croci et al. (2011), who studied the debt structures of family firms. They find supporting evidence that family firms are more likely to issue long-term debt rather than short-term debt. However, there exist issues with a high leverage structure. Stulz (1990) explains that firms with high leverage can suffer from underinvestment problems since potential shareholders wealth are expropriated by creditors. These variables are defined as *LongDebt* and *ShortDebt*, which are calculated by taking the book value of long-term debt and short-term debt divided by the total amount of assets. In addition, the important variable *Leverage* is constructed, which is measured as the acquirer's total debt divided by the book value of assets. Lastly, with the multiplication of *Leverage* and *FamilyD*, the variable *Leverage*FamD*, is created. This variable serves as an interaction term between the bidder's leverage ratio and the family firm's level of control. These variables are the main variables of interest in this paper, as they are expected to have a significant impact on the firm's propensity to undertake diversifying acquisitions.

3.4 Dependent variables

When assessing the value of control regarding M&A transactions, there are two situations that this thesis would like to investigate: the propensity for a family firm to engage in diversifying acquisitions and the preferred method to finance these deals. To identify diversifying M&As, this paper will investigate transactions that have been taken place between different industries. M&As are defined as an increase in ownership, where there is no lower limit on the ownership increase as minority stake is included in the sample. Previous work uses the concept of SIC-codes to identify if the transaction is cross-sectional (Bouzgarrou & Navatte, 2013; Käsbach & Ludwigs, 2014; Aktas et al., 2016). This variable is defined as *DiffIndustry*, which takes the value of 1, if the (SIC) code is different from the company's current industry, and 0 otherwise. Further, the financing of the diversifying M&A transactions is obtained in order to identify the preferred method to finance these deals. The payment method is typically either with cash or equity (stock) due to this being the most common ways to finance an acquisition (Faccio & Masulis, 2005). Therefore, the new variables *DiffIndustryCash* is implemented, which serves as a dummy variable that takes the value of 1, if these acquisitions are cross-industry and are financed with ≥ 50

% cash, and 0 otherwise. Hence, this thesis would like to see if family firms are more inclined to finance new diversifying acquisitions with cash in our sample.

3.5 Control variables

This paper would like to investigate firm characteristics for both the acquirer and target firm, which might have an impact on the family firm's M&A behaviour. Control variables are therefore essential as they give a deeper understanding of the relationship between the dependent and the independent variables. They also provide support to other reasons to why a firm would engage in a diversifying M&A transaction.

Return on assets (*ROA*) is the first control variable of interest. This is measured as earnings before interest, taxes, depreciation, and amortization (EBITDA) divided by total assets for the acquiring firm (WC18198/WC02999)[1]. *ROA* is also typically called operating performance and will generally generate a higher cash flow to finance acquisitions (Caprio et al., 2011; Croci et al., 2011).

Firm size (*MV*) is the size of the acquiring firm. Moeller et al. (2004) find supporting evidence that larger firms have lower abnormal returns compared to small firms. This is due to the high price they pay (premium) and negative dollar synergy gains. Further, they give reference to Malmendier and Tate (2005), where they describe overconfident managers as a critical problem since they make more acquisitions and that abnormal returns are lower. To measure the size of the firm, one takes the natural logarithm of the equity market value (WC07210).

Cash holding (*Cash*) is the cash of the acquiring firm, which is calculated by dividing cash and tradeable securities on total assets (WC02001/WC02999). Harford (1999) and Gao (2011) argued that acquiring firms with high excess cash reserves are more likely to engage in value decreasing acquisitions. This is because family blockholders are more inclined to make diversifying acquisitions, with fewer synergies and lower returns.

[1] Codes in the parenthesis represent identification-codes from the Worldscope database.

Diversification (*DivDegree*) is where the acquired company operates in a different industry, making the acquirer more diversified and less exposed to idiosyncratic risk. This variable is a count of how many SIC-codes firms have in different industries, resulting in a measure of the existing degree of diversification before the transaction takes place. Aktas et al. (2016) find evidence that, on average, family firms are less diversified as a result of the largest shareholder desire to preserve control of the firm, which is also in line with research from Bauguess and Stegemoller (2008). Moreover, family firms with high leverage ratios, make more diversifying acquisitions as this gives them the chance to diversify their wealth without any loss of control (Ellul 2008).

Tangible assets (*TangAssets)* are measured as net property, plant, and equipment (PPE) divided by total assets of the acquiring firm (WC02501/WC02999). Faccio and Masulis (2005) explain that tangible assets will have a positive effect on the acquirer's decision as they would like to have substantial debt capacity. However, with an existing high amount of fixed tangible assets tied up, they are less flexible. Aktas et al. (2016) find similar supporting evidence as firms with lower tangible assets are more inclined to participate in cross-industry acquisition activity.

Sales Growth *(SalesGth)* is calculated by taking annual growth of total sales over EBITDA (WC07240/WC18198). As survival is the primary concern for family firms, they are discouraged from pursuing high growth strategies which increases risk, resulting in a lower sales growth for family firms (Berzins et al., 2018). Caprio et al. (2011) also highlight that an increment in sales growth results in an increased probability of being a bidder.

Market-to-book ratio *(M/B)* is defined as the acquirers' market value of equity over the book value of equity (WC07210/WC07220), which measures the bidder's investment in growth opportunities (Faccio & Masulis, 2005). Previous literature finds that high market-to-book value buyers have a higher degree of stock financing (Jung et al., 1996). Thus, we expect it to have a negative coefficient in our regression on the propensity to undertake cross-industry acquisitions financed by cash.

3.6 Descriptive statistics

After obtaining the dataset and defining the ownership of family firms, we present an overview of our completed M&A transactions in Norway during 2000-2018, which is reported in Table 1.

Table 1. Overview of M&A transactions in Norway

	All acquisitions		**Non-family acquirers**		**Family acquirers**	
Year	N	% of total	N	% of year	N	% of year
2000	47	7.6%	32	68%	15	32%
2001	38	6.1%	28	74%	10	26%
2002	24	3.9%	20	83%	4	17%
2003	18	2.9%	12	66%	6	33%
2004	30	4.8%	21	70%	9	30%
2005	52	8.4%	26	50%	26	50%
2006	66	10.6%	37	56%	29	44%
2007	62	9.9%	42	68%	20	32%
2008	54	8.7%	40	76%	14	24%
2009	27	4.3%	21	78%	6	22%
2010	39	6.3%	31	79%	8	21%
2011	21	3.4%	13	62%	8	38%
2012	15	2.4%	12	80%	3	20%
2013	33	5.3%	22	66%	11	33%
2014	20	3.2%	18	90%	2	10%
2015	17	2.7%	12	71%	5	29%
2016	16	2.6%	11	69%	5	31%
2017	24	3.9%	22	92%	2	8%
2018	18	2.9%	17	94%	1	6%
Total	621	100%	437	70%	184	30%

Note: This table reports our overview of our merger and acquisition sample in Norway sorted by year. The sample includes transactions announced during 2000 – 2018 and the deals included are those equal or greater than 1 million USD. N denotes the number of observations.

Comparing family firms to non-family firms, one observes that, on average, 1/3 of these deals in the sample has a family firm involved as an acquirer, which is higher than what Aktas et al. (2016) reports for the European sample. The table also states that the overall proportion of the M&A activity for family firms was higher in the years 2000, 2003, 2005, 2006, 2007, 2011, 2013, and 2016 than the average.

Table 2. Summary of descriptive statistics for the M&A sample

	All firms		Non-family firms		Family firms	
	Mean	N	Mean	N	Mean	N
Dependent variables						
DiffIndustry	0.496	627	0.476	443	0.543	184
DiffIndustryCash	0.164	627	0.144	443	0.212**	184
Control variables						
$Leverage_{Acq}$	0.274	627	0.231	443	0.377***	184
$Ln(MV_{Acq})$	13.459	584	13.695	416	12.874***	168
$(M/B)_{Acq}$	2.487	585	2.604	417	2.197**	168
$Cash_{Acq}$	0.150	626	0.145	442	0.162	184
ROA_{Acq}	0.115	627	0.134	443	0.070***	184
$TangAssets_{Acq}$	0.289	627	0.259	443	0.359***	184
$SalesGth_{Acq}$	0.205	625	0.252	443	0.185***	182
$DivDegree_{Acq}$	2.429	627	2.573	443	2.082***	184
$ShortDebt_{Acq}$	0.066	627	0.060	443	0.081***	184
$LongDebt_{Acq}$	0.206	627	0.171	443	0.291***	184

Note: This table reports the summary of the descriptive statistics for the M&A samples. Definitions of the variables are presented in Table 11. ***, **, * denote the statistical significance at the 1%, 5% and 10% levels, respectively, differences in the means between family- and non-family firms. N indicates the number of observations in the sample.

Table 2 presents an overview of the descriptive statistics for the M&A sample used in this paper when constructing a univariate analysis. Included are both the mean and number of observations for the variables used in the sample. Table 2 shows that family firms are more inclined to undertake cross-industry diversification than non-family firms (0.54 and 0.48 for the sub-sample, respectively). This result is not in line with what most studies usually find, which is that family firm indeed tends to undertake less diversifying acquisition than their counterpart of non-family firms (Anderson & Reeb, 2003b; Faccio, Marchica, & Mura, 2011; Fahlenbrach, 2009). The reason behind this is that family firms are often perceived as more risk-averse and thus less diversified since cross-industry acquisition might be considered as a risky investment. Such investment might cause lack of synergies, expertise, and knowledge outside their industry, which can be observed from the table as the existing degree of diversification for family firms is lower. However, the differences in means between family and non-family firms for the *DiffIndustry* variable is insignificant. Hence, we find no evidence that there exists a relationship between the means in family firms and non-family firms.

Furthermore, the table shows the leverage ratio for the family firm sub-sample is higher than for non-family firm which is in accordance with the work of Ellul (2008), Stulz (1988), and Harijono (2005). Family firms tend to hold a more substantial portion of cash and issue more debt than shares when financing investment projects. This is true regarding that they are more risk-averse and do not want to lose control by issuing shares. In addition, based on the univariate analysis, one can observe that family firms are more inclined to issue long-term debt over short-term debt, 0.29 and 0.08, respectively, compared to non-family firms. This is in line with previous studies stating that family blockholders prefer long-term debt rather than short-term debt to prevent a loss of the control and their personal risk exposure (Croci et al., 2011; Ramalho et al., 2018). We already observe some results at this early stage after performing the t-tests. However, by running our desired regression, one can also control for other variables that may impact the M&A decisions as well as explain the variation of it.

3.7 Methodology

In our empirical analysis, we want to investigate four models with different specifications on how likely family firms are to engage in cross-industry acquisitions. Our regressions have dependent variables that are dummy or dichotomous that takes the value of either 1 or 0. It is therefore favourable to use a probit model over a linear probability model due to the limited values, which would otherwise not be the case. With this model, the marginal effect (ME) is implemented, which measures the marginal effect of a one-unit change in the independent variable, holding all other variables constant. The binary response model describes the response probability $\Pr(y_i = 1|x_i)$ of the dependent dummy variables y_i as:

$$\Pr(y_i = 1|x_i) = F(x_i'\beta)$$

This model explains x_i' as a (K+1)-dimensional vector of the explanatory variables, which are both our independent variables of interest and control variables. Further, the probit model assumes that the transformation F is the cumulative density function (CDF) of the standard normal distribution (Schimidheiny, 2018).

$$F\ (x_i'\beta) = \ \Phi\ (x_i'\beta)$$

With this specified, we can model our first regression for a firm's propensity to engage in diversifying cross-industry M&As. This is done by using the *DiffIndustry* dummy as the dependent variable. This variable takes the value of 1, if the acquirer and target firm belong to different industries, defined by the 2-digit SIC code identifier, and 0 otherwise. This study would like to check if family firms and non-family firms have differences in their propensity to undertake cross-industry M&As. Hence, we test this dependent variable against our explanatory variables. Based on all the explanatory variables, we put most emphasis on the independent variables of interest, which is *FamilyD* and *Leverage*. Lastly, the control variables are added to test the impact on the regression results and to get a deeper understanding of the relationship between the dependent and the independent variables.

Pr (Transaction) = Φ ($\alpha_0 + \beta_1$*Leverage* + β_2*FamilyD* + $\beta_{3\text{-}9}$*Control Variables*)

The second model specification will test if family firms with strong control motives, measured by their leverage ratio, are more inclined to undertake diversifying M&As. This regression is similar to our first regression, and will still take *DiffIndustry* as the dependent variable. Our independent variables of interest are in this regression *Leverage*FamD* and *Leverage*, as these are the variables that potentially capture the strong control motives in family firms. The control variables are equal to those used in the first regression.

Pr (Transaction) = Φ ($\alpha_0 + \beta_1$*Leverage* + β_2*FamilyD* + β_3*Leverage*FamD* + $\beta_{4\text{-}10}$*Control Variables*)

The third model would like to test if family firms are more inclined to finance their acquisitions with cash, instead of equity (i.e., stocks) compared to non-family firms. Here, a new dummy variable is constructed: *DiffIndustryCash*, which takes the value of 1, if the acquirer and target belong in different industries defined by the 2-digit SIC codes and ≥ 50 % of the acquisition is financed by

cash, and 0 otherwise. The variables of interest and control variables are identical to the second model.

$$\Pr(\text{Transaction}) = \Phi\ (\alpha_0 + \beta_1 Leverage + \beta_2 FamilyD + \beta_3 Leverage*FamD + \beta_{4\text{-}10} Control\ Variables)$$

The fourth and final regression will look deeper into the independent variable of interest, *Leverage*, which is divided into the variables: *LongDebt* and *ShortDebt*. Family firms tend to have a higher incentive to finance acquisitions with long-term debt, as this type of debt has a lower cost of debt (Croci et al., 2011). It is therefore interesting to test this hypothesis and see if family firms are more inclined to finance M&A transactions with long-term debt for our sample. The dependent variable is the same as in the first regression, *DiffIndustry*, while the variables *LongDebt* and *ShortDebt* are added to the independent variables of interest. In addition, the interaction term of *ShortDebt*FamD* and *LongDebt*FamD* are constructed, in order to compare financing decisions for only family firms to the full sample.

$$\Pr(\text{Transaction}) = \Phi\ (\alpha_0 + \beta_1 ShortDebt + \beta_2 LongDebt + \beta_3 FamilyD + \beta_4 ShortDebt*FamD + \beta_5 LongDebt*FamD + \beta_{6\text{-}12} Control\ Variables)$$

4.0 Empirical results

This section looks at the empirical findings from the models presented in the methodology section. With these results, we will be able to assess our four hypotheses and test if our results are in line with previous research. The four regressions will be divided into separate subsections, where we will go in dept and evaluate reasons to why the results are similar or different to our hypotheses.

4.1 Cross-industry diversification

The first regression, presented in Table 3, shows the propensity to undertake cross-industry diversification for both family firms and non-family firms. This is tested by using *DiffIndustry* as the dependent variables. The first variable of interest is the family firm dummy, which is significant at the 1 % level and

positive. This indicates that family firms are more likely to undertake cross-industry diversification through M&As compared to non-family firms and consistent with our results in the descriptive statistics shown in Table 2.

Table 3. Propensity to undertake cross-industry diversification

	All Firms		Family Firms		Non-Family Firms	
Variables	Coef.	ME	Coef.	ME	Coef.	ME
$Leverage_{Acq}$	0.7413	0.2738	1.3747	0.4835	0.3449	0.1265
	(1.64)		(1.34)		(0.66)	
FamilyD	0.3698	0.1366				
	(2.77)***					
$Ln(MV)_{Acq}$	-0.0887	-0.0328	-0.1122	-0.0395	-0.1032	-0.0378
	(2.44)**		(1.33)		(2.43)**	
$(M/B)_{Acq}$	0.0061	0.0023	-0.1239	-0.0436	0.0459	0.0168
	(0.20)		(1.80)*		(1.29)	
$Cash_{Acq}$	0.9836	0.3633	0.0515	0.0181	1.4073	0.5160
	(1.95)*		(0.05)		(2.44)**	
ROA_{Acq}	0.6583	0.2432	0.9339	0.3285	0.2134	0.0782
	(1.22)		(0.89)		(0.33)	
$TangAssets_{Acq}$	-0.7683	-0.2838	-1.6383	-0.5762	-0.2812	-0.1031
	(2.28)**		(2.56)**		(0.68)	
$SalesGth_{Acq}$	0.0371	0.0138	0.0619	0.0220	0.0425	0.0157
	(0.92)		(0.86)		(0.85)	
$DivDegree_{Acq}$	0.2298	0.0849	0.2141	0.0753	0.2214	0.0812
	(5.69)***		(2.19)**		(4.87)***	
Constant	0.2183		1.2974		0.2973	
	(0.47)		(1.26)		(0.55)	
Pseudo R^2	0.07		0.11		0.07	
Industry	Yes		Yes		Yes	
N	581		166		415	

Note: This table describes the propensity to undertake cross-industry diversification through a probit regression. The dependent variable is *DiffIndustry*, which takes the value of 1 if the acquirer and target are in the same industry, and 0 otherwise. The first two columns represent the entire sample, while the following columns are for just the family and non-family firm samples, respectively. *Leverage* and all control variables are obtained from t_{-1} to the completed transaction and winsorized at the 2.5 % and 97.5 %, except for dummy variables. For a detailed description of the independent variable, please refer to Table 11. Z-statistics are reported in the parenthesis below the coefficients based on Huber/White standard robust standard errors, where ***, **, and * denotes statistical significance at the 1 %, 5 %, and 10 % levels, respectively. ME denotes marginal effect and shows the impact of one-unit change and everything else constant. N denotes the number of observations in the sample. All specification includes industry dummy.

This result is contrary to most of the previous research. We believe this is due to the considerable variation in ownership definitions, where a significant amount of research uses a family firm definition in the range of [10 - 25 %]. This results in a lower propensity to undertake diversifying acquisitions, as family firms in their sample have a weaker ownership concentration. Given that our definition of family ownership is ≥ 50 % by an individual or family, we are more likely, in our

paper, to capture the high control motives. This results in a higher incentive for family firms to engage in M&As to diversify their wealth and reduce their idiosyncratic risk. From the marginal effect, we discover that family firms are 13.66 % more inclined to undertake cross-industry acquisitions compared to non-family firms. Similar results can also be observed from the constant of the two sub-samples, where the family firm sample has a coefficient of 1.29, while from the non-family firm, it is only 0.29. The constants are not significant, but they give further support to our results. From these results, we therefore conclude that the family firms in our sample do in fact make more diversifying acquisitions than non-family firms, which is in line with our first hypothesis.

From the control variables, *MV* has a negative coefficient and is significant at the 5 % level, where this could be reasoned by large firms having conflicts of interest, and therefore being more reluctant to undertake acquisitions (Moelle et al., 2004). Further by looking at the sub-samples, this variable is only significant for the non-family firms, which confirms this theory, as these shareholders, in general, are less concentrated. *Cash* has a positive coefficient, and significant at the 10 % level. This shows that cash-rich firms are more likely to pursue diversification through acquisitions (Harford, 1999). *TangAssets* have a negative coefficient and significant at the 5 % level, which could be an indication that when a large proportion of their leverage is already heavily invested, it is more challenging to finance new acquisitions. From the regression results, it is also clear that undiversified firms have a higher propensity to engage in diversifying acquisitions, as the firm would like to reduce their idiosyncratic risk. This can be observed from the highly significant variable *DivDegree*, which has a positive coefficient, and a minimal difference in the two sub-samples.

4.2 Cross-industry diversification with high value of control

The second regression is similar to the first model. However, in this regression, we are interested in looking closer at the value of control measured by *Leverage*FamD* and if it has a significant impact on family firm's propensity to undertake diversifying acquisitions. The results are presented in Table 4. The main variables of interest in this regression are the interaction term *Leverage*FamD* and *Leverage* for the family sub-sample. Given that *FamilyD*

and constants are already discussed in Table 3, these are not going to be deliberated in this subsection.

Table 4. Propensity to undertake cross-industry diversification with high value of control

	All Firms				Family Firms		Non-Family Firms	
Variables	Coef.	Me	Coef.	ME	Coef.	ME	Coef.	ME
$Leverage_{Acq}$	0.7413	0.2738	0.5789	0.2137	1.3747	0.4835	0.3449	0.1265
	(1.64)		(1.18)		(1.34)		(0.66)	
FamilyD	0.3698	0.1366	0.1763	0.0651				
	(2.77)***		(0.67)					
$Leverage_{Acq}$ * FamD			0.6033	0.2227				
			(0.85)					
$Ln(MV)_{Acq}$	-0.0887	-0.0328	-0.0883	-0.0326	-0.1122	-0.0395	-0.1032	-0.0378
	(2.44)**		(2.43)**		(1.33)		(2.43)**	
$(M/B)_{Acq}$	0.0061	0.0023	0.0068	0.0025	-0.1239	-0.0436	0.0459	0.0168
	(0.20)		(0.22)		(1.80)*		(1.29)	
$Cash_{Acq}$	0.9836	0.3633	1.0252	0.3784	0.0515	0.0181	1.4073	0.5160
	(1.95)*		(2.03)**		(0.05)		(2.44)**	
ROA_{Acq}	0.6583	0.2432	0.5868	0.2166	0.9339	0.3285	0.2134	0.0782
	(1.22)		(1.07)		(0.89)		(0.33)	
$TangAssets_{Acq}$	-0.7683	-0.2838	-0.8059	-0.2975	-1.6383	-0.5762	-0.2812	-0.1031
	(2.28)**		(2.37)**		(2.56)**		(0.68)	
$SalesGth_{Acq}$	0.0371	0.0138	0.0358	0.0133	0.0619	0.0220	0.0425	0.0157
	(0.92)		(0.89)		(0.86)		(0.85)	
$DivDegree_{Acq}$	0.2298	0.0849	0.2281	0.0842	0.2141	0.0753	0.2214	0.0812
	(5.69)***		(5.64)***		(2.19)**		(4.87)***	
Constant	0.2183		0.2618		1.2974		0.2973	
	(0.47)		(0.56)		(1.26)		(0.55)	
Pseudo R^2	0.07		0.07		0.11		0.07	
Industry	Yes		Yes		Yes		Yes	
N	581		581		166		415	

Note: This table describes the propensity to undertake cross-industry diversification for family firms with high control motives through a probit regression. The dependent variable is *DiffIndustry*, which takes the value of 1 if the acquirer and target are in the same industry, and 0 otherwise. The first four columns represent the entire sample, while the following columns are for just the family and non-family firm samples, respectively. *Leverage* and all control variables are obtained from t_{-1} to the completed transaction and winsorized at the 2.5 % and 97.5 %, except for dummy variables. For a detailed description of the independent variable, please refer to Table 11. Z-statistics are reported in the parenthesis below the coefficients based on Huber/White standard robust standard errors, where ***, **, and * denotes statistical significance at the 1 %, 5 %, and 10 % levels, respectively. ME denotes marginal effect and shows the impact of one-unit change and everything else constant. N denotes the number of observations in the sample. All specification includes industry dummy.

Both of our variables of interest are not significant, which indicates that family firms with a high value of control, measured by their high degree of leverage, are not more inclined to diversify through M&As. However, both variables are positive, inducing that the potential effect would increase the likelihood to

undertake diversifying acquisitions. Comparing *Leverage* and the marginal effect for the two sub-samples makes it clear that leverage has a greater impact on the propensity for family firms, compared to non-family firms, as the coefficients are 1.37 and 0.34, respectively. The explanation behind this result is that family firms that have high control motives, increasing with the leverage ratio, are more reluctant to sell shares and thus lose control. Moreover, by engaging in cross-industry acquisitions, they can diversify their concentration of wealth across industries instead of binding the risk in one industry. From the regressions in the sub-sample, one can observe that the marginal effect of leverage for family firms compared to non-family firms are 48.35 % and 12.65 %, respectively. This confirms our intuition that the existing leverage is more important for family firms than non-family firms, when deciding whether to undertake diversifying M&As. Similar results can be observed from the marginal effect of *Leverage*FamD* of 22.27 %, which indicates that if the variable was significant, it would have a positive and substantial impact on family firm's propensity to undertake diversifying acquisitions. From these results, we do therefore not find evidence to our second hypothesis that family firms with high control, proxied by their leverage, are more inclined to undertake diversifying acquisitions. However, we believe this is reasoned by our limited sample, and that our results instead serve as an indication that family firms with a high degree of leverage have a higher propensity to undertake cross-industry diversification.

4.3 Cross-industry diversification financed with cash

After testing for family firm's attitude towards control when undertaking cross-industry acquisitions, it is interesting to examine how family firms with high leverage chose to finance these acquisitions. Previous studies have shown that the choice of payment method in M&A transactions depend on several determinants such as corporate control threats, which are something to be concerned about in family firms due to their control motivation. To explore this, we assume that family firms who highly values control, proxied by the leverage ratio, tend to use cash rather than stock to finance their M&A transactions. To test this assumption, we repeat the analysis in Table 4, but with a sample of cash deals instead. The results are presented in Table 5.

Table 5. Propensity to undertake cross-industry diversification financed with cash

	All Firms				Family Firms		Non-Family Firms	
Variables	Coef.	ME	Coef.	ME	Coef.	ME	Coef.	ME
$Leverage_{Acq}$	-0.3707	-0.0879	-0.9781	-0.2305	0.4373	0.1232	-0.8912	-0.1905
	(0.67)		(1.54)		(0.41)		(1.32)	
FamilyD	0.4932	0.1169	-0.0240	-0.0057				
	(3.13)***		(0.08)					
$Leverage_{Acq}$ * FamD			1.7496	0.4124				
			(2.05)**					
$Ln(MV)_{Acq}$	-0.0034	-0.0008	-0.0015	-0.0004	0.0761	0.0214	-0.0116	-0.0025
	(0.08)		(0.03)		(0.81)		(0.22)	
$(M/B)_{Acq}$	-0.0622	-0.0147	-0.0613	-0.0145	-0.1258	-0.0354	-0.0382	-0.0082
	(1.55)		(1.52)		(1.49)		(0.83)	
$Cash_{Acq}$	1.0690	0.2535	1.1811	0.2784	0.4127	0.1163	1.5381	0.3288
	(1.89)*		(2.07)**		(0.35)		(2.33)**	
ROA_{Acq}	1.5312	0.3631	1.3714	0.3232	0.6235	0.1757	1.6163	0.3455
	(2.27)**		(2.00)**		(0.54)		(1.87)*	
$TangAssets_{Acq}$	-0.4610	-0.1093	-0.5833	-0.1375	-0.8054	-0.2269	-0.4808	-0.1028
	(1.09)		(1.34)		(1.17)		(0.83)	
$SalesGth_{Acq}$	0.0537	0.0127	0.0493	0.0116	0.0213	0.0060	0.0980	0.0208
	(1.11)		(1.02)		(0.28)		(1.48)	
$DivDegree_{Acq}$	0.0665	0.0158	0.0634	0.0149	0.1265	0.0356	0.0426	0.0091
	(1.49)		(1.41)		(1.43)		(0.78)	
Constant	-1.2433		-1.1196		-1.6951		-1.1214	
	(2.23)**		(1.99)**		(1.44)		(1.67)*	
Pseudo R^2	0.04		0.05		0.04		0.05	
Industry	Yes		Yes		Yes		Yes	
N	581		581		166		415	

Note: This table describes the propensity to undertake cross-industry diversification with cash through a probit regression. The dependent variable is *DiffIndustryCash*, which takes the value of 1 if the acquirer and target are in the same industry and the acquisition is financed with ≥ 50 % cash. The first four columns represent the entire sample, while the following columns are for just the family and non-family firm samples, respectively. *Leverage* and all control variables are obtained from t_{-1} to the completed transaction and winsorized at the 2.5 % and 97.5 %, except for dummy variables. For a detailed description of the independent variable, please refer to Table 11. Z-statistics are reported in the parenthesis below the coefficients based on Huber/White standard robust standard errors, where ***, **, and * denotes statistical significance at the 1 %, 5 %, and 10 % levels, respectively. ME denotes marginal effect and shows the impact of one-unit change and everything else constant. N denotes the number of observations in the sample. All specification includes industry dummy.

The dependent variable, in this case, is *DiffIndustryCash*, which identifies all the cross-industry M&A transactions that are financed with ≥ 50 % cash. In this subsection, the main variables of interest are *FamilyD* and *Leverage*FamD* in the full sample. These coefficient estimates are both positive and significant, indicating that family firms, on average, have a higher probability of pursuing cross-industry diversification financed with cash. The motivation behind this is

that firms tend to choose cash financing rather than stock particularly when the voting control of their dominant shareholders is threatened and when their intermediate level of voting power lies within a threshold of 20-60 % (Faccio & Masulis, 2005). This is due to the stock issuance dilutes a shareholder's voting power in the firm. In addition to these two variables, *Leverage* in the family firm sub-sample is also of interest. This variable still reports to be insignificant and positive, similar to the first regression. However, there is a significant decrease in the coefficient from 1.37 to 0.44. This is unexpected and contrary to previous research (Aktas et al., 2016), which might be a result of the limited sample in this paper. From the marginal effect in the variable *Leverage*FamD* for the full sample, this study observes an increase of 85 % (0.22 to 0.41), indicating that family firms with a great incentive to maintain control of the firm have a higher propensity to finance diversifying acquisitions with cash. The sub-sample for family firms has a negative constant, which is contrary to our other results as it would imply that family firms are less inclined to pursue diversifying acquisitions financed by cash. However, as it is not significant, it has no impact on our results. Therefore, we can confirm the third hypothesis that family firms with a high value of control are more inclined to finance diversifying M&A transaction with cash. This is also in line with previous work (Aktas et al., 2016; Faccio & Masulis, 2005; Martin, 1996).

4.4 Cross-industry diversification with leverage split

Given that the leverage is a proxy of the family firm's control motivation, it is important to test their debt maturity structure. Previous studies show that family firms issue more long-term debt rather than short-term debt and that their existing debt is higher due to their risk-aversion (Croci et al., 2011; Díaz-Díaz et al., 2016). To analyse this, we again replicate the analysis in Table 4, but now splitting the leverage variable for the acquirer firm into two components: short-term and long-term debt. The results are presented in Table 6.

When comparing the coefficient estimate of *ShortDebt* and *LongDebt* across regressions, one observes that family firms are more inclined to issue long-term debt rather than short-term debt compared to non-family firms, where the result is opposite. This can be shown in the coefficient estimate of *LongDebt*, which is positive (1.19), while for *ShortDebt*, it is negative (-0.96) in the family firm sub-

sample. This is also supported by the output of the interaction term of the family dummy with short-term debt and long-term debt separately, -1.63 and 0.85, respectively, for the full sample.

Table 6. Propensity to undertake cross-industry diversification with leverage split into short- and long-term debt

	All Firms				Family Firms		Non-Family Firms	
Variables	Coef.	ME	Coef.	ME	Coef.	ME	Coef.	ME
$ShortDebt_{Acq}$	1.1747	0.4341	1.6658	0.6141	-0.9613	-0.3385	1.6281	0.5943
	(1.31)		(1.60)		(0.48)		(1.54)	
$LongDebt_{Acq}$	0.4178	0.1544	0.1432	0.0528	1.1972	0.4216	-0.1024	-0.0374
	(0.84)		(0.26)		(1.09)		(0.18)	
FamilyD	0.3925	0.1450	0.2939	0.1083				
	(2.92)***		(1.06)					
ShortDebt * FamD			-1.6303	-0.6010				
			(0.78)					
LongDebt * FamD			0.8512	0.3138				
			(1.11)					
$Ln(MV)_{Acq}$	-0.0874	-0.0323	-0.0846	-0.0312	-0.1084	-0.0382	-0.0979	-0.0357
	(2.40)**		(2.32)**		(1.27)		(2.30)**	
$(M/B)_{Acq}$	0.0054	0.0020	0.0038	0.0014	-0.1240	-0.0437	0.0413	0.0151
	(0.17)		(0.12)		(1.80)*		(1.16)	
$Cash_{Acq}$	0.9756	0.3605	1.0843	0.3997	-0.1693	-0.0596	1.5814	0.5772
	(1.92)*		(2.11)**		(0.15)		(2.68)***	
ROA_{Acq}	0.6551	0.2421	0.6864	0.2531	1.0412	0.3667	0.3306	0.1207
	(1.21)		(1.24)		(0.98)		(0.50)	
$TangAssets_{Acq}$	-0.6369	-0.2354	-0.6979	-0.2573	-1.5709	-0.5532	-0.1669	-0.0609
	(1.89)*		(2.04)**		(2.40)**		(0.40)	
$SalesGth_{Acq}$	0.0375	0.0139	0.0424	0.0157	0.0785	0.0280	0.0528	0.0194
	(0.93)		(1.05)		(1.06)		(1.04)	
$DivDegree_{Acq}$	0.2303	0.0851	0.2306	0.0850	0.2207	0.0777	0.2219	0.0810
	(5.69)***		(5.68)***		(2.26)**		(4.86)***	
Constant	0.2050		0.1789		1.4424		0.1709	
	(0.44)		(0.38)		(1.39)		(0.31)	
Pseudo R^2	0.07		0.07		0.11		0.07	
Industry	Yes		Yes		Yes		Yes	
N	581		581		166		415	

Note: This table describes the propensity to undertake cross-industry diversification where leverage is split into short- and long-term debt through a probit regression. The dependent variable is *DiffIndustry*, which takes the value of 1 if the acquirer and target are in the same industry, and 0 otherwise. The first four columns represent the entire sample, while the following columns are for just the family and non-family firm samples, respectively. *ShortDebt, LongDebt,* and all control variables are obtained from t_{-1} to the completed transaction and winsorized at the 2.5 % and 97.5 %, except for dummy variables. For a detailed description of the independent variable, please refer to Table 11. Z-statistics are reported in the parenthesis below the coefficients based on Huber/White standard robust standard errors, where ***, **, and * denotes statistical significance at the 1 %, 5 %, and 10 % levels, respectively. ME denotes marginal effect and shows the impact of one-unit change and everything else constant. N denotes the number of observations in the sample. All specification includes industry dummy.

One of the reasons behind this preference for long-term debt is to mitigate agency conflicts between shareholders and creditors. Moreover, this can also be explained by the family firm's concerns about, e.g., long-term firm survival, firm's reputation in addition to the fact that family firms are being characterized as risk-averse on managerial decisions (Anderson et al., 2003; Croci et al., 2011).

Nevertheless, short-term debt is more exposed to interest rate swings and liquidity bottlenecks compared to long-term debt that reduces these risks. On average, when including all firms, it is clear that short-term debt is more preferred than long-term debt when undertaking a cross-industry diversification. Marginal effects give further evidence to family firm's preference to use long-term debt, as from the sub-sample of family firms one-unit of change in short-term and long-term debt is, -33.85 % and 42.16 %, respectively. We cannot give evidence to our fourth hypothesis being correct as we do not find any significance regarding long-term and short-term debt on family firms' propensity to engage in diversifying acquisitions. However, we believe that the significance of these variables will be improved if the sample size was more sufficient and larger. This gives us reason to believe that these variables would be significant in a larger sample and in line with previous research from Aktas et al. (2016).

5.0 Robustness and additional testing

In this section, we are interested in examining other specifications by giving our family ownership an alternative definition to test for significant changes in our results. We also implement and explain potential biases in our data and how they might be solved.

5.1 Heteroscedasticity

Based on previous papers, there seems to be a common problem with heteroscedasticity (Ben-Amar & André, 2006; Bouzgarrou & Navatte, 2013; Käsbach & Ludwigs, 2014; Aktas et al., 2016), which is the case if the error term does not have a constant variance (Brooks, 2014). One of the ways to detect heteroscedasticity or homoscedasticity in our data, according to Brooks (2014), is to plot the estimated residuals $\hat{u}_t$ against the explanatory variable, which rarely reveals anything. Therefore, in our paper, we will default to use Huber/White's test, which will reveal if the standard errors are as we would like them to be, i.e., homoscedastic. Another reason why we default to white robust standard errors is due to the extensive use in previous academic literature. As we use the statistical software STATA, it already has a built-in function called "*Robust*", which will be used to solve this potential problem (Yamano, 2009). This approach will give us

unbiased standard errors and better accuracy of the significance level for each variable.

5.2 Different threshold for defining a family firm

We test the robustness of our results by using a different threshold to identify a family firm. Previous papers have used a threshold between 10-25 %, while in this paper, a threshold of ≥ 50 % is used to establish if firms are categorized as family firms, as explained in section 3.1. Many results in the family firm literature are sensitive to how family firms are defined. Given that this paper's threshold is rather high, it classifies most firms as non-family firms, resulting in a limited sample for family firms. This gives rise to high standard errors for some of the variables, and we hope by lowering our threshold, this can lead to more significant variables for our sub-sample of family firms. La Porta et al. (1999) and Faccio and Lang (2002) both use a threshold level of 20 % as family firm identification, while Aktas et al. (2016) use 25 %. Faccio and Masulis (2005) explained that blockholders with a threshold level between the range of 20-60 % are the ones that are most vulnerable to a loss of control. Thus, decreasing the threshold level from 50 % to 25 % seems reasonable to test for significant changes. We therefore replicate all the baseline models with a new family dummy taking the value 1, if a family holds more than 25 % of the stake in the firm, and 0 otherwise. This leads to an identification of 263 family firms and 318 non-family firms.

The results of our first robust regression, presented in Table 7 below, shows that *FamilyD* is still significant and positive. However, it is no longer significant at the 1 % level, but instead at the 5 % level. Interestingly, we observe that *Leverage* is now significant and positive for the full sample and the family sub-sample, which will be discussed in more detail in the second robust regression. In addition, the coefficient estimate for the family sub-sample is positive at 1.50 and significant at the 10 % level, giving further evidence that family firms are more inclined to pursue diversifying M&A transactions, compared to non-family firms.

Table 7. Propensity to undertake cross-industry diversification - robustness regression

	All Firms		Family Firms		Non-Family Firms	
Variables	Coef.	Me	Coef.	ME	Coef.	ME
$Leverage_{Acq}$	0.7873	0.2913	2.7292	0.9739	-0.4287	-0.1510
	(1.74)*		(3.87)***		(0.65)	
FamilyD	0.3166	0.1171				
	(2.55)**					
$Ln(MV)_{Acq}$	-0.0793	-0.0294	-0.1588	-0.0567	-0.1157	-0.0408
	(2.15)**		(2.30)**		(2.28)**	
$(M/B)_{Acq}$	0.0140	0.0052	-0.0675	-0.0241	0.0362	0.0128
	(0.45)		(1.21)		(0.91)	
$Cash_{Acq}$	0.9261	0.3427	0.4503	0.1607	1.8853	0.6640
	(1.83)*		(0.63)		(2.46)**	
ROA_{Acq}	0.6748	0.2497	0.2040	0.0728	1.1302	0.3981
	(1.24)		(0.27)		(1.34)	
$TangAssets_{Acq}$	-0.7504	-0.2777	-1.9377	-0.6915	0.5177	0.1823
	(2.23)**		(3.98)***		(0.97)	
$SalesGth_{Acq}$	0.0327	0.0122	-0.0165	-0.0060	0.1372	0.0479
	(0.81)		(0.29)		(2.09)**	
$DivDegree_{Acq}$	0.2184	0.0808	0.1202	0.0429	0.2837	0.0999
	(5.50)***		(1.85)*		(5.20)***	
Constant	0.0531		1.5000		0.1111	
	(0.11)		(1.82)*		(0.17)	
Pseudo R^2	0.07		0.09		0.10	
Industry	Yes		Yes		Yes	
N	581		263		318	

Note: This table represents the robustness check for firm's propensity to undertake cross-industry diversification through a probit regression. The dependent variable is *DiffIndustry*, which takes the value of 1 if the acquirer and target are in the same industry, and 0 otherwise. The first two columns represent the entire sample, while the following columns are for just the family and non-family firm samples, respectively. *Leverage* and all control variables are obtained from t_{-1} to the completed transaction and winsorized at the 2.5 % and 97.5 %, except for dummy variables. For a detailed description of the independent variable, please refer to Table 11. Z-statistics are reported in the parenthesis below the coefficients based on Huber/White standard robust standard errors, where ***, **, and * denotes statistical significance at the 1 %, 5 %, and 10 % levels, respectively. ME denotes marginal effect and shows the impact of one-unit change and everything else constant. N denotes the number of observations in the sample. All specification includes industry dummy.

The second robustness regression is an extension of the first robust regression and investigates the value of control after changing the ownership percentage. The results are shown in Table 8 below. Interestingly, we observe that *Leverage*FamD* is now significant and is explained as family firms with high control motives are more inclined to undertake cross- industry diversification, which can be seen from the sizeable marginal effect of 54.45 %. This outcome can also be observed from the sub-sample for family firms as *Leverage* is now also highly significant at the 1 % level and positive (2.73). This indicates that family firms with a high amount of leverage have a higher likelihood to diversify, which

is in line with research from Ellul (2008). There are also some minor changes in the control variables, but they are to a large degree similar to previous results.

Table 8. Propensity to undertake cross-industry diversification with high control motives – robustness regression

	All Firms				Family Firms		Non-Family Firms	
Variables	Coef.	Me	Coef.	ME	Coef.	ME	Coef.	ME
$Leverage_{Acq}$	0.7873	0.2913	0.0263	0.0097	2.7292	0.9739	-0.4287	-0.1510
	(1.74)*		(0.05)		(3.87)***		(0.65)	
FamilyD	0.3166	0.1171	-0.0722	-0.0265				
	(2.55)**		(0.33)					
$Leverage_{Acq}$*FamD			1.4815	0.5445				
			(2.20)**					
$Ln(MV)_{Acq}$	-0.0793	-0.0294	-0.0734	-0.0270	-0.1588	-0.0567	-0.1157	-0.0408
	(2.15)**		(1.99)**		(2.30)**		(2.28)**	
$(M/B)_{Acq}$	0.0140	0.0052	0.0100	0.0037	-0.0675	-0.0241	0.0362	0.0128
	(0.45)		(0.32)		(1.21)		(0.91)	
$Cash_{Acq}$	0.9261	0.3427	0.8941	0.3286	0.4503	0.1607	1.8853	0.6640
	(1.83)*		(1.77)*		(0.63)		(2.46)**	
ROA_{Acq}	0.6748	0.2497	0.5091	0.1871	0.2040	0.0728	1.1302	0.3981
	(1.24)		(0.93)		(0.27)		(1.34)	
$TangAssets_{Acq}$	-0.7504	-0.2777	-0.8901	-0.3272	-1.9377	-0.6915	0.5177	0.1823
	(2.23)**		(2.58)**		(3.98)***		(0.97)	
$SalesGth_{Acq}$	0.0327	0.0122	0.0369	0.0136	-0.0165	-0.0060	0.1372	0.0479
	(0.81)		(0.92)		(0.29)		(2.09)**	
$DivDegree_{Acq}$	0.2184	0.0808	0.2161	0.0794	0.1202	0.0429	0.2837	0.0999
	(5.50)***		(5.43)***		(1.85)*		(5.20)***	
Constant	0.0531		0.2098		1.5000		0.1111	
	(0.11)		(0.43)		(1.82)*		(0.17)	
Pseudo R^2	0.07		0.07		0.09		0.10	
Industry	Yes		Yes		Yes		Yes	
N	581		581		263		318	

Note: This table represents the robustness check for firm's propensity to undertake cross-industry diversification with a high value of control through a probit regression. The dependent variable is *DiffIndustry*, which takes the value of 1 if the acquirer and target are in the same industry, and 0 otherwise. The first four columns represent the entire sample, while the following columns are for just the family and non-family firm samples, respectively. *Leverage* and all control variables are obtained from t_{-1} to the completed transaction and winsorized at the 2.5 % and 97.5 %, except for dummy variables. For a detailed description of the independent variable, please refer to Table 11. Z-statistics are reported in the parenthesis below the coefficients based on Huber/White standard robust standard errors, where ***, **, and * denotes statistical significance at the 1 %, 5 %, and 10 % levels, respectively. ME denotes marginal effect and shows the impact of one-unit change and everything else constant. N denotes the number of observations in the sample. All specification includes industry dummy.

There are several significant changes in our variables of interest when looking at the third robustness regression, showing a firm's propensity to undertake cross-industry diversification that are financed mainly with cash. The results are presented in Table 9 below, and we observe some reduction in the coefficient and significance for *FamilyD*. However, *Leverage*FamD* has increased in term of coefficient estimates, significance, and marginal effect. The increase shows that firms with high leverage are more inclined to finance diversifying acquisitions with cash. Leverage for the full sample is negative at the 5 % level. This can be

explained by the sub-sample for non-family firms as this variable is now significant, resulting in non-family firms with high leverage are less likely to undertake diversifying M&As. However, similar to regressions from Table 5, one can observe that the constant term for the family firm sub-sample is highly negative and now significant, which would imply that family firms have a lower propensity to undertake diversifying acquisitions financed with cash. This result is in line with previous literature from Aktas et al. (2016) as only family firms with high control motives are more inclined to finance diversifying acquisitions with cash.

Table 9. Propensity to undertake cross-industry diversification financed with cash – robustness regression

	All Firms				Family Firms		Non-Family Firms	
Variables	Coef.	ME	Coef.	ME	Coef.	ME	Coef.	ME
$Leverage_{Acq}$	-0.2271	-0.0543	-1.7392	-0.4097	0.5185	0.1390	-1.5859	-0.3226
	(0.42)		(2.20)**		(0.70)		(1.76)*	
FamilyD	0.3556	0.0849	-0.2205	-0.0519				
	(2.38)**		(0.88)					
$Leverage_{Acq}$ * FamD			2.5025	0.5894				
			(2.79)***					
$Ln(MV)_{Acq}$	0.0024	0.0006	0.0170	0.0040	0.1269	0.0340	-0.0520	-0.0106
	(0.05)		(0.38)		(1.56)		(0.79)	
$(M/B)_{Acq}$	-0.0528	-0.0126	-0.0613	-0.0144	-0.0613	-0.0164	-0.0504	-0.0102
	(1.32)		(1.51)		(0.95)		(0.96)	
$Cash_{Acq}$	1.0049	0.2401	0.9125	0.2149	0.1288	0.0345	1.6497	0.3356
	(1.78)*		(1.60)		(0.17)		(1.85)*	
ROA_{Acq}	1.4457	0.3454	1.2503	0.2945	0.7637	0.2046	1.7136	0.3486
	(2.18)**		(1.83)*		(0.87)		(1.56)	
$TangAssets_{Acq}$	-0.4002	-0.0956	-0.6358	-0.1498	-0.8712	-0.2335	-0.1275	-0.0259
	(0.96)		(1.46)		(1.64)		(0.16)	
$SalesGth_{Acq}$	0.0478	0.0114	0.0560	0.0131	0.0280	0.0076	0.1022	0.0207
	(0.98)		(1.14)		(0.44)		(1.22)	
$DivDegree_{Acq}$	0.0553	0.0132	0.0578	0.0136	0.0176	0.0047	0.1290	0.0262
	(1.25)		(1.29)		(0.25)		(2.00)**	
Constant	-1.3641		-1.1768		-2.3089		-0.8022	
	(2.38)**		(2.03)**		(2.31)**		(1.02)	
Pseudo R^2	0.03		0.05		0.02		0.08	
Industry	Yes		Yes		Yes		Yes	
N	581		581		263		318	

Note: This table represents the robustness check for firm's propensity to undertake cross-industry diversification with cash through a probit regression. The dependent variable is *DiffIndustryCash*, which takes the value of 1 if the acquirer and target are in the same industry, and the acquisition is financed with ≥ 50 % cash. The first four columns represent the entire sample, while the following columns are for just the family and non-family firm samples, respectively. *Leverage* and all control variables are obtained from t_{-1} to the completed transaction and winsorized at the 2.5 % and 97.5 %, except for dummy variables. For a detailed description of the independent variable, please refer to Table 11. Z-statistics are reported in the parenthesis below the coefficients based on Huber/White standard robust standard errors, where ***, **, and * denotes statistical significance at the 1 %, 5 %, and 10 % levels, respectively. ME denotes marginal effect and shows the impact of one-unit change and everything else constant. N denotes the number of observations in the sample. All specification includes industry dummy.

Regarding the last robustness regression, shown in Table 10 below, we find compelling results as our variable of interest, *LongDebt*, is now significant at the 1 % level.

Table 10. Propensity to undertake cross-industry diversification with leverage split into short- and long-term debt – robustness regression

	All Firms				Family Firms		Non-Family Firms	
Variables	Coef.	ME	Coef.	ME	Coef.	ME	Coef.	ME
$ShortDebt_{Acq}$	1.0743	0.3979	0.8960	0.3295	2.2210	0.7996	1.2822	0.4474
	(1.19)		(0.77)		(1.55)		(1.03)	
$LongDebt_{Acq}$	0.5121	0.1897	-0.4156	0.1528	2.5877	0.9316	-1.0439	-0.3642
	(1.04)		(0.64)		(3.49)***		(1.42)	
FamilyD	0.3297	0.1221	-0.0427	0.0157				
	(2.65)***		(0.19)					
ShortDebt * FamD			0.6697	0.2463				
			(0.38)					
LongDebt * FamD			1.6851	0.6198				
			(2.25)**					
$Ln(MV)_{Acq}$	-0.0782	0.0290	-0.0719	0.0264	-0.1597	0.0575	-0.1119	-0.0390
	(2.12)**		(1.94)*		(2.31)**		(2.20)**	
$(M/B)_{Acq}$	0.0140	0.0052	0.0102	0.0037	-0.0579	0.0208	0.0314	0.0110
	(0.45)		(0.32)		(1.06)		(0.80)	
$Cash_{Acq}$	0.9011	0.3338	0.8872	0.3263	0.3108	0.1119	2.0725	0.7231
	(1.77)*		(1.74)*		(0.44)		(2.66)***	
ROA_{Acq}	0.6585	0.2439	0.5135	0.1889	0.0823	0.0296	1.3273	0.4631
	(1.21)		(0.93)		(0.11)		(1.56)	
$TangAssets_{Acq}$	-0.6287	0.2329	-0.7649	0.2813	-1.8155	0.6536	0.6758	0.2358
	(1.86)*		(2.21)**		(3.75)***		(1.25)	
$SalesGth_{Acq}$	0.0329	0.0123	0.0395	0.0146	-0.0155	0.0057	0.1562	0.0537
	(0.82)		(0.98)		(0.27)		(2.34)**	
$DivDegree_{Acq}$	0.2182	0.0808	0.2155	0.0793	0.1206	0.0434	0.2829	0.0987
	(5.48)***		(5.41)***		(1.86)*		(5.13)***	
Constant	0.0481		0.1861		1.5656		-0.0098	
	(0.10)		(0.38)		(1.89)*		(0.02)	
Pseudo R^2	0.07		0.07		0.09		0.11	
N	581		581		263		318	

Note: This table represents the robustness check for firm's propensity to undertake cross-industry diversification where leverage is split into short- and long-term debt through a probit regression. The dependent variable is *DiffIndustry*, which takes the value of 1 if the acquirer and target are in the same industry, and 0 otherwise. The first four columns represent the entire sample, while the following columns are for just the family and non-family firm samples, respectively. *ShortDebt, Longdebt*, and all control variables are obtained from t_{-1} to the completed transaction and winsorized at the 2.5 % and 97.5 %, except for dummy variables. For a detailed description of the independent variable, please refer to Table 11. Z-statistics are reported in the parenthesis below the coefficients based on Huber/White standard robust standard errors, where ***, **, and * denotes statistical significance at the 1 %, 5 %, and 10 % levels, respectively. ME denotes marginal effect and shows the impact of one-unit change and everything else constant. N denotes the number of observations in the sample. All specification includes industry dummy.

This now supports that family firms tend to issue more long-term debt than short-term debt. From the full sample, it also shows that *LongDebt*FamD* is significant and has a positive coefficient, compared to *LongDebt* for the full sample, which is negative and insignificant. This gives further evidence that family firms are more

reluctant to finance new acquisitions with short-term debt. In addition, *ShortDebt* for the family sub-sample has now become positive, but is still insignificant, and therefore has no impact on their family firm's propensity to undertake diversifying M&As.

Taking everything from the robustness regression into account, one can observe some clear differences in our results. From these regressions, we can conclude that all our hypotheses are in line with our results for the threshold of ≥ 25 %. We believe that with a larger sample, we would get more significant variables of interest in our intended threshold, as a result of lower standard errors, giving more similar results for both thresholds. As our ownership, financial and deal data is collected manually and often restricted, we are satisfied with our sample, but would be interested to see further research on this topic with a larger and more sufficient sample.

5.3 Multicollinearity

It is essential to check for multicollinearity in the variables, which can be explained as a relationship between two or more variables (Brooks, 2014). This is a major concern when the degree of multicollinearity increases as more variables are added to the regression, and this could result in unstable coefficient estimates and inflated standard errors (Anderson et al., 1995). Generally, multicollinearity can be identified by high goodness of fit (R^2) and variables with high standard errors. However, this paper will default to use variance inflation factor (VIF), which helps us identify if our variables contain multicollinearity. The results are shown in Table 12, where we report estimates of VIF, √VIF, tolerance, and R^2 for all variable in each of our three regressions of interest. When assessing these results, we mainly look at VIF and tolerance as these give a good explanation if there exists multicollinearity, and we see that only *FamilyD* or any combination of *FamilyD* multiplied by another variable have a higher variance inflation factor. The largest value from our regression on firm's propensity to engage in diversifying M&A transactions financed by cash for the variable *Leverage*FamD* is 6.35, where it is necessary to understand if this is beyond the critical value. Previous research expresses that VIF-values should not exceed 10 and 5, respectively (Anderson et al., 1995; Kutner et al., 2005; Kennedy, 2008; Ringle, Wende, & Becker, 2015). This adds some uncertainty as there is no clear

definition of what the critical value is. Our largest value is above 5, which is then beyond the critical value from some researchers. However, from our paper, it is only expected that the *FamilyD* and *Leverage*FamD* have some collinearity as they are in many ways similar. Along with the largely accepted threshold of 10, we believe that these results are appropriate. This variable also has the lowest tolerance of 0.1576, which is another way to measure multicollinearity, and with a threshold of 10, it would have to be less than 0.1 to contain multicollinearity.

6.0 Conclusions

Family firms represent a unique group of long-term owners, with a high value of control. Using a sample of 621 Norwegian M&A transactions during the period 2000-2018, we examine the propensity for family firms to undertake diversifying M&A transactions and the preferred method of financing. In this paper, we have defined family ownership as one individual or a group of family member controlling ≥ 50 % of the stake in the firm.

From our empirical results, we find that family firms are more inclined to pursue diversifying M&As, which is contrary to research from Anderson and Reeb (2003b), Aktas et al. (2016), Bauguess and Stegemoller (2008) and Caprio et al. (2011). We also see that family firms are more inclined to finance new acquisitions with cash, compared to non-family firms. Here, we also provide evidence that highly levered family firms, which is an indication of the high value of control, are significantly more inclined to finance new acquisitions with cash. These results are in line with previous research from Faccio and Masulis (2005), as controlling blockholders in the threshold of 20-60 % have a weaker ownership concentration and are more inclined to maintain control by financing M&A transactions with cash. Lastly, previous research finds evidence that family firms have a higher propensity to finance new acquisitions with long-term debt, which is to some extent in line with this paper (Aktas et al., 2016; Croci et al., 2011; Díaz-Díaz et al., 2016). We do not find significant evidence that family firms have a higher likelihood to use long-term debt, but from our coefficient for long-term (1.19) and short-term debt (-0.96) we can observe a clear preference towards issuing long-term debt.

When lowering the threshold of ownership to ≥ 25 % to define family firms, we discover that several of our variables of interest achieve a higher degree of significance. These regressions are shown in Table 7 to Table 10 and give strong evidence that family firms with a high value of control, measured by their leverage, are more inclined to pursue diversifying acquisitions and finance it with cash. In addition, these results also give evidence to the theory that family firms have a higher propensity to finance new M&A transactions with long-term debt, instead of short-term debt. These additional regressions show that when ownership concentration in a family firm becomes weaker, they have a stronger incentive to maintain control. Based on our empirical and robustness results it would therefore be interesting to see further research on this topic, preferably with a more sufficient sample.

7.0 Appendix

Table 11: Description of variables

Variables	Description
FamilyD	Dummy variables taking the value of 1 if the firm is a family firm, otherwise 0.
DiffIndustry	Dummy variables taking the value of 1 if the acquirer and target have different SIC-codes, otherwise 0.
DiffIndustryCash	Dummy variables taking the value of 1 if the acquirer and target have different SIC-codes and ≥ 50 % financed by cash, otherwise 0.
$Leverage_{Acq}$	Measure of leverage of the acquiror. Calculated by taking total debt divided by the book value of assets (WC03255/WC02999).
ROA_{Acq}	Measure of return on assets of the acquiror. Calculated by taking EBITDA divided by total assets (WC18198/WC02999).
$SalesGth_{Acq}$	Measures the annual growth rate of total sales for the acquirer. Calculated by taking the growth of total sales divided by EBITDA (WC07240/WC18198).
$Ln(MV)_{Acq}$	Measures the size of the acquirer. Calculated by taking the natural logarithm of the equity market value (WC07210).
$Cash_{Acq}$	Measures the cash of the acquirer. Calculated by taking cash and tradeable securities over total assets (WC02001/WC02999).
$TangAssets_{Acq}$	Measure of the tangible assets of the acquirer. Calculated by taking the net property, plant, and equipment (PPE) divided by total assets (WC02501/02999).
$(M/B)_{Acq}$	Measure of market-to-book value of the acquirer. Calculated by taking the market value of equity over the book value of equity (WC07210/WC07220)
$LongDebt_{Acq}$	Measure the long-term debt of the acquirer. Calculated by taking book value of long-term debt divided by total assets (WC03251/WC02999).
$ShortDebt_{Acq}$	Measure of the short-term debt of the acquirer. Calculated by using $Leverage_{Acq}$ and subtracting for $LongDebt_{Acq}$.
$DivDegree_{Acq}$	Measure of how diversified the acquirer is. The degree of diversification is measured by counting how many different SIC-codes the firm operates in, resulting in a measure of the acquirer's existing degree of diversification.

Note: This table defines each variable and how they are calculated. Codes in the parenthesis represent identification-codes from the Worldscope database.

Table 12. Multicollinearity – Variance inflation factor (VIF)

First regression					Second regression					Third regression				
Variables	VIF	√VIF	Tolerance	R^2	Variables	VIF	√VIF	Tolerance	R^2	Variables	VIF	√VIF	Tolerance	R^2
DiffIndustry	**1.10**	1.05	0.9082	0.0918	DiffIndustryCash	**1.04**	1.02	0.9625	0.0375	DiffIndustry	**1.10**	1.05	0.9074	0.0926
$Leverage_{Acq}$	**2.65**	1.63	0.3772	0.6228	$Leverage_{Acq}$	**2.65**	1.63	0.3773	0.6227	$ShortDebt_{Acq}$	**1.50**	1.22	0.6664	0.3336
FamilyD	**4.98**	2.23	0.2009	0.7991	FamilyD	**4.98**	2.23	0.2010	0.7990	$LongDebt_{Acq}$	**2.68**	1.64	0.3728	0.6272
$Leverage_{Acq}$ * FamD	**6.32**	2.51	0.1582	0.8418	$Leverage_{Acq}$ *FamD	**6.35**	2.52	0.1576	0.8424	FamilyD	**5.44**	2.33	0.1837	0.8163
$Ln(MV)_{Acq}$	**1.99**	1.41	0.5024	0.4976	$Ln(MV)_{Acq}$	**1.97**	1.40	0.5079	0.4921	ShortDebt * FamD	**2.71**	1.65	0.3694	0.6306
$(M/B)_{Acq}$	**1.15**	1.07	0.8667	0.1333	$(M/B)_{Acq}$	**1.16**	1.08	0.8636	0.1364	LongDebt * FamD	**5.31**	2.30	0.1884	0.8116
$Cash_{Acq}$	**1.36**	1.17	0.7327	0.2673	$Cash_{Acq}$	**1.37**	1.17	0.7325	0.2675	$Ln(MV)_{Acq}$	**2.00**	1.41	0.4997	0.5003
ROA_{Acq}	**1.56**	1.25	0.6414	0.3586	ROA_{Acq}	**1.57**	1.25	0.6387	0.3613	$(M/B)_{Acq}$	**1.16**	1.08	0.8615	0.1385
$TangAssets_{Acq}$	**2.31**	1.52	0.4336	0.5664	$TangAssets_{Acq}$	**2.29**	1.51	0.4367	0.5633	$Cash_{Acq}$	**1.41**	1.19	0.7105	0.2895
$SalesGth_{Acq}$	**1.91**	1.38	0.5246	0.4754	$SalesGth_{Acq}$	**1.89**	1.38	0.5288	0.4712	ROA_{Acq}	**1.58**	1.26	0.6317	0.3683
$DivDegree_{Acq}$	**1.17**	1.08	0.8577	0.1423	$DivDegree_{Acq}$	**1.10**	1.05	0.9059	0.0941	$TangAssets_{Acq}$	**2.35**	1.53	0.4252	0.5748
										$SalesGth_{Acq}$	**1.92**	1.39	0.5203	0.4797
										$DivDegree_{Acq}$	**1.17**	1.08	0.8544	0.1456
Mean VIF	**2.41**					**2.40**					**2.33**			

Note: This table tests for multicollinearity in the variables for each of our three regressions, presented in table 3-5. VIF stands for variance inflation factor, and we would like to obtain results below 10. Tolerance is a similar measure, and we would like to see results above 0.1.

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