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HOW FAMILY OWNERSHIP AFFECTS FIRM PERFORMANCE: EVIDENCE FROM THE KOREAN EXCHANGE

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ABSTRACT

The main purpose of this study is to find out if family ownership of firms has any effect on firm performance. And if there is an effect, to see if it leads to a positive or negative impact on the performance of a firm. A large share of firms is controlled by families worldwide. Korea is well known as a country that has a high percentage of family-owned firms. South Korea also has special ownership structures for firms, including the large conglomerates known as Chaebol, of which most are family-owned. As previous studies of Korean firms tend to focus on the Chaebols, this study instead focuses on smaller firms listed on the Korean Exchange.

Data is collected for 307 non-financial companies that were continuously listed on the KOSPI SmallCap index during the years 2013-2017, giving 5 years of balanced data. The measures used to assess firm performance were both a market measure (Tobin's Q) and accounting measures (ROE and two measures of ROA).

Firms were defined as family-owned if any of three conditions were satisfied: if the CEO or a family member of the CEO is a board member, or if the CEO and/or the family members own more than 20% of the firm's equity, or if the current CEO is a family member of the previous CEO or the founder of the firm.

So far, many previous studies have shown that family ownership will solve the issue of the agency problem, which leads to the result that family-owned firms outperform non-family firms. In this paper, using pooled OLS regression, the relationship between family ownership and firm performance was examined using Tobin's Q, ROA and ROE.
The regression results show at a significant level that family-owned firms have higher ROE and ROA values than non-family owned firms, while family-owned firms had lower values for Tobin's Q than non-family owned firms.

KEYWORDS: Family firm, Firm performance, OLS model, Panel Data, Agency Theory

1. INTRODUCTION

In the previous few decades, various family-owned firms had a great impact on developing the economies of countries. Family-owned firms are prevalent around the world. Large, controlling shareholders have been found to be highly common among public firms, and the majority of them are families, the founders and their descendants (Shleifer & Vishny, 1997; La Porta, Florencio Lopez-de-Silanes, & Shleifer, 1999). European cross-country studies have shown that family-owned firms account for over 50% of firms (Barontini & Caprio, 2006; Maury, 2006). Anderson & Reeb (2003b) found that family ownership is both prevalent and substantial, with 35% of the firms on the S&P 500 in the U.S. being family-owned. These family-owned firms were also found to perform better than non-family owned firms. Moreover, another analysis showed that when the CEO position is served by family members, the firm outperforms firms with outside CEOs. The results of some studies thus seem to indicate that family ownership is an effective ownership structure.

In Asian countries, most firms (over half) are family-owned, and families or individuals regulate more than half of all companies (Claessens, Djankov, & Lang, 2000; Faccio, Larry, & Young, 2001). The typical problem in many emerging countries is that families are dominant in most aspects of the firms. In comparison, the controlling families present a unique problem in Korean firms as they control firms by pyramidal equity ownership through affiliated firms, even though they directly own only a small fraction of shares. In 2002, despite families among the top 10 business groups holding a low ownership fraction of only about 8.62% of shares, the families could still exercise control using affiliated firms (An & Naughton, 2009). Lim & Kim (2005) examined the ownership structures of Korean conglomerates as of December 1995 and found that pyramidal ownership with a low family stake is a common ownership structure among Korean conglomerates. A common misconception about Korean firms, especially chaebols in academia and the popular media is that the CEO or chairman of chaebol groups are referred to as the “owners”. This is not strictly correct, as the families achieve control with a small ownership concentration (Kim, 2006).

There are a few reasons why families in South Korea were able to enjoy practically undisputed control with low ownership concentration. One reason is that the laws that protect small shareholders have been comparably weak, which allowed the controlling shareholders to keep their low fractional ownership. As an example, in the period 1993–1997 before the Asian financial crisis, shareholders had to have an ownership stake of at least

five percent in order to exercise rights such as demanding a meeting, filing a derivative suit or inspecting account books. Due to this, small shareholders did not have tools for monitoring the controlling family. The minimum ownership stake required was lowered in 1998 after the crisis. Another reason allowing for control with a low ownership stake is that the voting rights of institutional investors in listed companies had restrictions. Shadow voting regulations required institutional investors to remain neutral: they had to cast their votes proportionate to other votes. Due to this fact, the institutional investors did not pose a threat to the controlling families although they held significant ownership stakes in Korean firms (Kim, 2006).

Compared to other firms that are not owned by families, family ownership of firms has a significantly different effect on performance. South-Korea in particular has several major conglomerates and those firms have had a few issues about agency problems. They have also had issues with illegal financial behavior, a recent example being when the chairman of Lotte Group and Samsung Group's de facto chief were jailed for bribery charges in connection to a scandal led to the ousting of South Korea's President Park Geun-Hye in 2017 (their sentences were later suspended) (Yang, Park, & Wardell, 2019). The South Korean government has sought to reduce the country's economic reliance on these large family-run conglomerates by supporting small- and medium-sized enterprises (SMEs) (Song, 2014). In 2017, the Ministry of SMEs and Startups was established by the government for this purpose (Lee, 2017).

1.1 Purpose of the study

Considering the prevalence of family firms worldwide, it is important to investigate how family ownership affects firm performance. Hence, this thesis aims to investigate the impact family ownership has on firm performance for firms in South Korea, or if it has any impact at all. A literature review is combined with an empirical study of data on listed firms in South Korea.

Many previous papers have studied the large Korean conglomerates (known as chaebols), and it is well-established that families play a significant role in these firms. This thesis aims to contribute by looking at smaller publicly listed firms that include family-owned firms that are not affiliated with chaebols. This will make it possible to see if there is a difference in performance between large firms affiliated with chaebol families and non-

chaebol family firms in South Korea. As such, this thesis will focus on how family ownership affects firm performance, with evidence from firms listed on the KOSPI SmallCap index in South Korea during the years 2013–2017.

1.2 Hypothesis

Jensen & Meckling (1976) suggest that a widely-mentioned setback of family ownership is the agency problem, which comes from the compound of ownership and control power that makes concentrated shareholders improve their profits from private rents. Shleifer & Vishny (1997) examine how family-owned firms tend to treat the firm as a family employment service or a private bank.

However, when the manager of a firm is also the owner of a firm, it can also reduce agency problems. Families are undiversified investors who tend to have invested the majority of their wealth into the family business, and so their financial well-being is very much tied to the performance of the firm. Alternatively, even if an outside CEO manages the firm, the family still has a strong incentive to closely monitor the management of the firm. Also, as families tend to be present in the firm for a long time, they can have an advantage when it comes to knowledge of some specific technology related to the firm or the market. The long-term presence of the family also allows the family firm to create a good reputation among its customers and bondholders. The stronger relationship between the family-owned firm and the bondholders reduces the conflicts between them (Andres, 2008).

This thesis examines the association between family ownership and company performance in South Korea. A considerable number of studies have shown that family-owned firms have several strengths. In this thesis, the focus will be on how family ownership has a positive effect on companies' operation and firm performance in South Korea.

The hypothesis of this thesis is whether family-owned firms outperform non-family owned firms.

H_1 = Family-owned firms outperform non-family owned firms.

2. LITERATURE REVIEW

Anderson & Reeb (2003b) show that family-owned firms significantly outperform non-family owned firms. Data from 1992 until 1999 was investigated for a sample of 403 firms listed on the S&P 500. Banks and public utilities were excluded from the sample because of challenges in calculating Tobin's Q for banks, and because government regulations can affect firm performance. Family-owned firms had 6.65% higher ROA than firms that are not family-owned. Also, their test suggests that the greater profitability in family-owned firms, relative to non-family owned firms, stems from those firms in which a family member serves as the CEO. Additional evidence which shows that family-owned firms perform at least as well as non-family owned firms can be found from market-based measures of firm performance. Especially, with univariate test and multivariate analysis, it was shown that family-owned firms have higher Tobin's Q values than non-family owned firms. These results are significant statistically and economically.

In contrast, Faccio et al. (2001) examined that family ownership in East Asia causes severe problems. They found that systematic expropriation of outside shareholders occurred, allowing the controlling shareholders to extract high returns from projects that give negative results to the firm. As these projects accumulated along with their debt that could not be repaid, it helped trigger the 1997 East Asian financial crisis. Particularly good opportunities for expropriation come up when a firm is affiliated with a group of firms that are all controlled by the same shareholder. Faccio et al. (2001) found that this was true for about half of the firms that they examined in both Western Europe and in East Asia. Insiders can expropriate corporate wealth by setting unfair terms for sales of goods and services within the group and transferring assets and control stakes. Dividends can be used to decrease expropriation by controlling shareholders. Firms in Western Europe paid substantially higher dividend rates than in East Asia. Additionally, when there were several large shareholders present, the dividend rates were higher in Western Europe, but lower in East Asia. So in Western Europe, the other large shareholders helped limit the controlling shareholder's expropriation of minority shareholders, but in East Asia, they colluded in the expropriation. Similar results for Western Europe were reported by Sacristán-Navarro et al., who also found that large shareholders seem to monitor managers and decrease the private benefits of control enjoyed by families (Sacristán-Navarro, Gómez-Ansón, & Cabeza-García, 2011). Faccio et al. (2001) also mention that the problems the family-owned firms have are connected not only to corporate governance but also to the political environment.

2.1 Possible advantages and disadvantages of family firms.

Demsetz & Lehn (1985) insist that investors who have high ownership are offered substantial financial profit to diminish conflicts related to agency problems and maximize firm value. Shyu (2011) and Burkart, Panunzi, & Shleifer (2003) mention that concentrated ownership authorizes family members to manage their profits more than other shareholders can. Many hypotheses have been presented for how ownership concentration impacts the performance of a firm. However, it is not always clear how ownership concentration affects firm performance. Concentrated ownership can give both benefits and disadvantages to the performance of a firm (Kim, 2006).

2.1.1 Extended investment horizons

The long-term characteristic of family ownership relieves family members, giving them a tendency to have a longer investment horizon compared to other investors. The extended horizons of family firms have been suggested as a reason for family firms performing better than similar non-family firms in the same industry group (James, 1999). Although the combination of ownership and management can minimize principal-agent problems and lower monitoring costs, the firm value can decrease as the owner-manager may choose not to maximize the value of the firm, but instead engage in "on-the-job" non-pecuniary consumption and preferring immediate consumption instead of carrying out optimal investment decisions (Demsetz, 1983). When the ownership and management of a firm are separated, managers make investments according to the market investment rule, however, the value of the firm is decreased by higher monitoring costs and agency problems. According to James (1999), family firms do not have these issues, unlike non-family firms.

A manager of a firm who is a member of the family sees a connection between his actions in the firm and the welfare of other family members, which gives the family manager a longer perspective of time. Due to this, family managers may be less likely to choose their personal interests over family considerations. One of the main strengths of families is the view that present-time sacrifices eventually lead to long-run benefits for every member of the family. This can be a reason for managers to extend their time horizons, changing the performance of the family firm over time. Family wealth is strongly connected to firm performance; therefore, family members have a great incentive to monitor managers and enhance firm performance (James, 1999). Anderson & Reeb (2003b) also agree on James' (1999) view that family firms make long-term investments, as family members view the

company as something to give to their descendants, thus preferring investments that are profitable in the long-term.

Shareholders with a long-term investment horizon can decrease the problem of managerial myopia. Managerial myopia is caused by managers fearing takeover of the firm by having the firm bought out at an undervalued price, leading them to focus more on short-term profits over long-term goals. If there are no short-term pressures, the managers will not have any significant motivation to allocate resources to assure that the stock is not undervalued at any point in time. Instead, they can focus on making investment decisions that are more efficient over the long-term (Stein, 1988).

The concentrated ownership of family firms could contribute to their extended investment horizons. As entrenched blockholders, families can be more inclined to make firm-specific investments, for instance, firm-specific human capital investments and research and development. But it can also be argued that firms being widely held can contribute to extended investment horizons. This is because widely held firms can provide improved liquidity of stocks and better risk diversification for investors. So with a higher investor turnover, firms can take on more risky projects for innovations than firms with a concentrated ownership structure (Kim, 2006).

James (1999) also mentioned that there are factors that can diminish or erase the extended horizons of family firms. One problem is tax-related laws for the transfer of the family firm to the next generation, for example, if the transfer is costly or there are other restrictions. Another problem is that family members may not want to join the firm or there might not be any competent family members that want to take over the family firm. Even if there are family members willing to take over the firm, there might also be non-family employees who are equally or more qualified, which can lead to serious conflicts for control of the company between family and non-family members. Nepotism, where family members are chosen instead of more qualified non-family workers, is also a problem. Unstable families, where family members struggle among themselves for control of the firm, might not have the intergenerational loyalty which gives managers the extended investment horizon. However, there can also be downsides to maintaining family stability. For example, family members might choose not to express their opinions or disagree with the managers of the firm in order to avoid offending or causing conflicts with other family members. This leads to new ideas not being introduced or hinders an effective response to changes in the economic environment of the firm.

2.1.2. Risk aversion

Many studies show that family firms use debt financing more conservatively than non-family firms. McConaughy, Matthews, & Fialko (2001) compared the debt financing in founding family-controlled firms and non-founding family-controlled public firms in the US for the period 1986 to 1988. The authors hypothesized that founding-family controlled firms are more efficient, and choose less risky capital structures. These factors in turn affect the firm value, so it was also hypothesized that founding-family controlled firms have higher market-to-book equity ratios. The authors' also proposed that family owner-managers have greater incentives than non-family managers to increase the value of the firm. McConaughy et al. (2001) also saw some issues in family firms, such as family managers having an unclear financial vision, the complexity of relationships among family members, and that authority and responsibility are not defined well in the organizational structure of family firms.

In the study by McConaughy et al. (2001), the capital structures of founding family-controlled firms and non-founding family-controlled firms were compared using cash dividend payout ratios and total debt to total assets. The results showed that founding family-controlled firms have more conservative capital structures than firms that do not have family members as managers. Founding family-controlled firms used less debt (especially short-term debt) than non-founding family-controlled firms. Founding-family controlled firms were also more efficient and had higher market-to-book equity ratios. McConaughy et al. (2001) stated that these differences are more likely affected by family ownership than the management of the firm by family members.

Mishra & McConaughy (1999) proposed that firms controlled by the founding family are less likely to use debt financing than non-founding family-controlled firms because they are more averse to control risk, the risk of losing control. The study on a sample of public US firms by Mishra & McConaughy (1999) showed that firms controlled by the founding family use less long-term debt and short-term debt than non-founding family-controlled firms. Founding family-controlled firms were significantly more averse to use short-term debt than non-founding family-controlled firms. Mishra & McConaughy (1999) stated that this aversion to debt financing could lead to the firms giving up profitable opportunities for growth, which in turn could cause conflicts of interests between outside shareholders and family shareholders.

Fama & Jensen (1985) examine how big, undiversified stockholders can have a different purpose when they make a financial decision compared to small stockholders. They may choose to make decisions based on their own preference of risk instead of based on the market cost. Thus, as families often are large, concentrated shareholders, with most of their wealth invested in the firm, they can be more careful and make more conservative investment decisions than managers in firms that are widely held (Shleifer & Vishny, 1986). Barclay & Holderness (1989) insist that a big stockholder may influence others' interests to invest in a firm. This decreases the effectiveness of stock trading and decreases the value of the firm.

Other than debt financing, firms' aversion to risk can also be compared through their investments into R&D. The future growth of a firm is strongly related to new innovations. R&D investments are risky but are a significant contributor to a firm's future survival. For instance, the study by Villalonga & Amit (2006) on family firms included a comparison between the differences in R&D investments by family firms and non-family firms using the R&D-to-sales ratio, with the results showing that family firms spent less on R&D than non-family firms at a statistically significant level.

Usually, most of the wealth of families is tied up in the family firm, making them large and undiversified investors. Due to this, families might try to implement risk reduction strategies. There are basically two methods to decrease the risk of the firm. The first strategy is to allocate firm investments towards projects that are not related to the main business of the firm. This allows for the controlling family to diversify their investments, which is favorable to them. However, it may not be beneficial to smaller shareholders who diversify their investments themselves. Families might also reduce their risk by seeking less risky forms of financing (i.e. lower default probability). This is achieved by relying more on equity financing or by using less debt overall in the firm's capital structure. Thus, the family restricts the ability of the firm to raise external funds for investment projects, and the potential advantage of a higher debt tax shield is given up. These strategies for reducing risk generate costs for well-diversified minority shareholders of the family firm. Contrary to these arguments stated by Anderson & Reeb (2003a), they found that family firms listed in the S&P 500 from 1993 to 1999 are less diversified and have similar leverage ratios to non-family firms.

The results in a study by Anderson, Duru & Reeb (2012) supported the theory that family firms are prone to risk aversion. The study examined the impact family shareholders have on corporate investment policy for 2000 of the largest public non-financial, non-utility

firms in the US from 2003 to 2007. The authors found that as a fraction of total assets, family firms spend about 7.50% less on long-term investments than non-family firms. The evidence provided suggested that families with high ownership levels and high levels of firm risk mainly account for this difference. After controlling for endogeneity concerns, the results still suggested that family firms spend less on investments relative to non-family firms.

For the two types of firm investment, R&D spending and capital expenditures, R&D spending has a larger effect on firm risk than capital expenditures. Capital expenditures are allotted to projects that have quite well-defined economic benefits and/or existing products. The assets that capital investments are made up of are relatively easy to sell in case of project failure. The outcomes of R&D investments are less predictable. This implies that R&D spending should be especially sensitive to family firms' tendencies for risk aversion Anderson et al. (2012).

In the study by Anderson et al. (2012), when the long-term investment was split up into R&D spending and capital expenditures, it was found that family firms, as a fraction of total investment, spend about 15.55% more on capital expenditures than non-family firms. Moreover, the authors found that family owners seem to limit R&D spending, as family firms spent about 31.05% less capital on R&D investments relative to non-family firms. The results thus suggest that undiversified or concentrated investors have a preference for making investments in the form of less risky capital expenditures over riskier R&D investments. However, one possible explanation for the smaller spending on R&D by family firms is that the families are strong and committed monitors that significantly improve the productive and efficient use of resources on R&D. In an additional test performed by the authors, they found that family firms obtain fewer patents and patent citations per dollar invested into R&D compared to non-family firms, which implies that family monitoring does not explain why family firms spend less on R&D. Further analysis showed that outside investors discount family firms with lower R&D investments compared to non-family firms in the same industry.

Anderson, Mansi and Reeb (2003) studied a sample of firms from the Lehman Brothers Bond database and S&P 500, and they found that when firms are owned by founding families, there seems to be a decrease in agency conflicts between the shareholders and bondholders of the firm. This in turn reduces the cost of debt. The reasons proposed by the authors for this reduction in agency conflicts are the long-term horizon of family firms,

familial pressure and the undiversified portfolios held by founding family owners. In contrast, diversified shareholders might have incentives to expropriate the wealth of bondholders by making investments in high-risk, high expected-return projects, because they obtain the excess return if the investments succeed, while bondholders have to pay for the costs of failure. Due to this conflict of interest, bondholders demand higher interest rates. Due to the lower cost of debt financing enjoyed by family firms, bondholders appear to hold the view that founding family ownership is an organizational structure that is better at protecting their interests. However, when a descendant of the founder is the CEO of the firm, the cost of debt financing seems to increase. Although overall, regardless of who holds the CEO position, the cost of debt financing was found to be lower for family firms compared to non-family firms.

2.2 Previous studies in the US and Canada

McConaughy, Walker, Henderson, & Mishra (1998) used a matched-pairs methodology to compare the performance of 219 US founding-family controlled firms with non-family firms for the years 1986 to 1988. The matched-pairs methodology pairs family-owned firms with non-family owned firms that have similar characteristics and features. Market-to-book equity ratios, similar to Tobin's Q, and market returns were used to assess firm performance. Sales growth and accounting ratios were used to determine the operating efficiencies of the firms. The results proved that founding-family controlled firms are more efficient and are more valuable with regard to the market-to-book equity ratios when compared against firms that are in the same industry, of the same size, and have similar ownership levels by management.

Lee (2006) examined the performance of family-owned firms compared to firms owned by diverse owners on a sample very similar to the sample of Anderson & Reeb (2003b). Like the sample of Anderson & Reeb (2003b), the sample consisted of firms listed on the S&P 500, excluding public utilities and banks, but the sample period was extended from 1992–1999 to 1992–2002. By extending the sample period, a full business cycle is examined as both the economic growth period from 1992 until March 2001 and the economic recession of 2001 is included. The study used the same definition for a family firm as Anderson & Reeb (2003b), giving the same share of family firms for the sample at about 35%. Unlike most other studies which focus on financial performance, this study focused on the economic performance of a firm. Firm performance was measured using revenue

growth, gross income growth, employment growth and net profit margin. The findings indicated that family firms have faster growth and are more profitable than non-family firms. Even though family firms grow faster, there was no evidence for them being less stable than non-family firms in the long run. It was also found that founding family member participation in management could improve the performance even more.

Villalonga and Amit (2006) studied the performance of all Fortune-500 firms listed during 1994–2000. Tobin's Q was used as the measure of firm performance. Family ownership was found to add value when the founder serves as the CEO or as the Chairman with a non-family CEO. However, if descendants serve as the CEO or Chairman, family ownership destroys value. Family firms that use control-enhancing mechanisms are less valuable than family firms without them, but they still outperform non-family firms.

Miller, Le Breton-Miller, Lester & Cannella (2007) studied a sample of 896 industrial and service firms from the Fortune 1000 for the years 1996 to 2000, while a random sample of 100 smaller U.S. firms was also studied to check for selection bias. Tobin's Q was used as the measure of firm performance. Unlike several previous studies, they distinguished between lone founder firms that have one or several founders without any relatives in the business, with family firms, which have several executives or major owners simultaneously or over time from the same family. The results for the Fortune 1000 sample showed that lone founder firms outperform non-family firms, while family-owned firms do not outperform non-family firms. For the sample of 100 smaller firms, neither family-owned nor lone founder firms outperformed other firms.

King & Santor (2008) studied the relationship between family ownership and firm performance for a sample of 613 Canadian non-financial firms for the period 1998 to 2005. Family firms from their sample had superior ROA, but their Tobin's Q ratio was lower compared to other firms. The reason proposed for this was that family-owned firms might have higher profitability, but that future expectations on cash flows are lower because investors see a threat of expropriation by the controlling shareholders. A further test divided the family firms into those with a single share class and those with dual-class shares. These results showed that compared to other firms, family firms with a single share class have superior ROA, while the Tobin's Q ratios are similar. The Tobin's Q ratios were 17% lower for family firms with dual-class shares compared to other firms, while ROA was similar. From this, the authors concluded that family ownership does not have a negative impact on the performance of Canadian firms, but the use of control-enhancing mechanisms decreases the valuation of firms.

Martikainen, Nikkinen, & Vähämaa (2009) investigated the relationship between family ownership and production efficiency on a sample of 159 manufacturing firms listed on the S&P for the years 1992–1999. Family firms appeared to have higher Tobin's Q and ROA than non-family firms. The aim of the study was to find out if differences in production technologies and production efficiency lead to the higher valuation and profitability experienced by family firms. The study found that the production technologies of family firms and non-family firms are not different, and that family firms have a higher production output than non-family firms. As differences in production technologies did not cause the differences in production output, it was concluded that family firms are considerably more productive than non-family firms.

Kashmiri & Mahajan (2014) compared the performance of family-owned firms and non-family owned firms during recessions using Tobin's Q as the measure of performance. The sample included 275 large companies publicly listed in the US over the period 2000-2009. The results showed that family firms perform better than non-family firms during recessions and also during non-recession years. In fact, the superior performance of family firms increases additionally during recessions. However, after family ownership reaches a certain level, additional increases in family ownership lower firm performance.

2.3 Previous studies in Europe

Some studies examined the performance of family firms across multiple countries in Europe. Barontini & Caprio (2006) investigated the performance of a sample of 675 large corporations traded publicly in 11 countries in continental Europe for the years 1999–2001 and concluded that family ownership improves firm performance. Tobin's Q and ROA were used as measures of firm performance. Family ownership had a very positive impact on firm performance if the founder is still active either as CEO or non-executive director. Family ownership was also positive when the descendants were active, provided that they were limited to non-executive roles. When descendants took on the role of CEO, the relationship between firm performance and family ownership was just non-negative. Only family firms where the family was not represented on the board seemed to fare worse than non-family firms.

Maury (2006) examined the performance of family-controlled firms compared to non-family firms in Western Europe using Tobin's Q and ROA as measures of firm performance. The sample consisted of 1672 non-financial firms from 13 different countries. Firms with active family ownership, defined as when a family member holds at least one of the top two officer positions, were found to have improved profitability. Firms with passive family ownership did not have higher performance compared to nonfamily firms. Also, the higher performance of family firms occurred in nonmajority-controlled firms, while there was no notable relation between family ownership and firm performance in majority-controlled firms. This suggests that family opportunism may increase at higher control levels.

Barth, Gulbrandsen, & Schønea (2005) compared the performance of family-owned firms against non-family firms for a sample of 438 Norwegian firms for the year 1996. Productivity was used as the measure of performance. The results showed family-owned firms to be less productive than non-family firms, with the difference in productivity being estimated to be around 10%. The authors presented differences in management regimes as the reason for this difference. Family-owned firms that were managed by an outside manager were as productive as non-family firms. Family-owned firms with a manager from the owning family were estimated to be about 14% less productive than non-family firms.

Sraer & Thesmar (2007) investigated the performance of about 420 non–financial, non–real estate firms per year listed on the French stock exchange between 1994 and 2000. The measures of firm performance used were ROA, ROE, payout ratio (evaluated only for firms with positive pre-tax profit, defined as dividends divided by pre-tax profit) and the market-to book-ratio (defined as the sum of market capitalization and the book value of assets minus book value of equity divided by the book value of total assets). The results showed that family firms outperform non-family firms.

Andres (2008) examined the relationship between founding-family ownership and firm performance for a sample of 275 non-financial German listed companies for the period 1998 to 2004. ROA and Tobin's Q were used as measures of firm performance. The author found that family firms are more profitable than other firms with a controlling shareholder and firms with a dispersed shareholder structure. However, only family firms in which the founding family is still actively exercising control either on the executive or the supervisory board have superior performance, with the positive effect being the greatest when the founder serves as CEO. Andres also noted that family ownership might even be disadvantageous for some industries, as very few family firms were found in capital-

intensive industries. The reason for this is that as the family aims to maintain control, it could present an obstacle to access external funds.

Kowalewski Talavera, & Stetsyuk (2010) investigated a sample of 217 Polish companies listed on the Warsaw Stock Exchange from 1997 to 2005. ROA, operating ROA (oROA), and ROE were used as measures of firm performance, and it was found that these were significantly higher for family-owned firms compared to non-family owned firms. However, when looking at the degree of family ownership, an inverted U-shaped relationship was found. That is, the firm performance rises with an increasing share of family ownership up until a certain point when it starts to drop. This result is in agreement with the results of the study by Anderson & Reeb (2003b). It was also found family members being involved in the management of the firm, either by having a higher share of voting rights or having a family member as the CEO, affected firm performance positively at a significant level. But when family management of the firm was represented by the presence of family board chairmen, there was no significant relationship with firm performance.

Sacristán-Navarro, Gómez-Ansón, Cabeza-García (2011) did not find any significant relationship between firm performance (measured with ROA) and family ownership for a sample consisting of 118 nonfinancial Spanish firms for the period 2002 to 2008. However, family control seemed to negatively affect firm performance (the presence of family members in management and/or on the board of directors).

Galve-Górriz & Salas-Fumás (2011) examined the difference in performance between family and non-family firms for a sample of 51 non-financial, non-regulated firms listed on the Spanish Stock Exchange between 1990 and 2004. The performance measures used were the accounting measures ROA, ROA/r (ROA divided by the cost of debt) and a market measure, Tobin's Q. The performance of family firms did not differ from those of non-family firms using these measures. The study also evaluated differences in productive efficiency were using Solow's Total Factor Productivity (TFP). Family firms were found to be more productive as the TFP of family firms was higher than for non-family firms. Also, the production technologies of family firms and non-family firms were found to be different, with family firms using less capital-intensive technologies. The reason proposed for this difference in productivity was that family firms have a lower limit on investments because they prefer to maintain control, so they can reduce this limitation by having more productive technology.

Schank, Murgea & Enache (2017) analyzed the firm performance of companies in Romania and Germany using return on assets (ROA) and return on equity (ROE) as measures of financial performance. The results showed that family ownership leads to improved firm performance in both countries.

2.4 Previous studies in East Asia

Choi, Park & Yoo (2007) found that family ownership of firms has a negative impact on firm performance in South Korea. Firm performance was measured with Tobin's Q. The sample analyzed consisted of about 460 non-financial firms listed on the Korea Stock Exchange from 1999 to 2002. The authors stated that a likely reason for the negative effects of family ownership is the entrenchment of family manager-owners. Although the founders initially contribute as entrepreneurs, it seems like the costs exceed the benefits of continuing to keep the firm ownership and management under the family.

Allouche, Amann, Jaussaud & Kurashina (2008) conducted a study on pairs of non-financial family and non-family listed Japanese companies for the years 1998 and 2003. The year 1998 represents the time of the Asian financial crisis, while by the year 2003 the Japanese economy had recovered. The matched pairs were in the same industry and of the same size. The 1998 sample had 87 pairs of firms, and the 2003 sample had 156 pairs. The family firms found in the 1998 sample were also found in the 2003 sample, while the non-family firms could differ. The measures of firm performance used in the study were ROA, ROE and return on invested capital (ROIC). It was concluded that family businesses perform better than non-family businesses for all of the measures of firm performance. It was also found that strongly controlled family businesses have better firm performance compared to weakly controlled family businesses, showing that the level of family control has a strong impact on performance.

Tsao, Chen, Lin, & Hyde (2009) studied the performance of 688 Taiwanese publicly listed firms for the years 2004 to 2006. Return on Assets (ROA) and ROE was used to measure firm performance. Their findings suggested that founding-family ownership does not seem to have any significant association with firm performance.

Chu (2011) evaluated the performance of 1154 public non-financial companies in Taiwan for the years 2002 to 2007. ROA was used to measure firm performance, and the results showed that founding-family ownership positively affects firm performance. In addition,

the results seemed to indicate that the positive effects of family-ownership occur when the firm is actively managed and controlled by the family. The positive relationship was also more significant for small- and medium-sized enterprises than for large companies.

Shyu (2011) also studied the performance of Taiwanese listed firms. The sample consisted of 465 firms for the period 2002 to 2006, using ROA and Tobin's Q as firm performance indicators. The results for both indicators showed that family-owned firms perform better than non-family firms. Moreover, the results showed that ROA increases with increasing family ownership until a family ownership percentage of 30%, after which it starts to decline.

An & Naughton (2009) investigated how family ownership affects firm value and earnings quality of non-financial firms listed on the Korean Stock Exchange (KSE) during the period after the Asian financial crisis from 2000 to 2005. The sample consisted of 3054 firm-year observations, with ROA and Tobin's Q used as measures of firm performance. The results proved that family ownership increases firm value.

2.5 Endogeneity

Some studies investigating the relationship between family ownership and firm performance have mentioned the issue with the endogeneity of results (Anderson & Reeb, 2003b; Andres, 2008). Results that show that family firms perform better than non-family firms could be due to reversed causality. So the question is if it is the family firm ownership structure that gives better firm performance or does the good performance of a firm have an impact on whether the firm is controlled by a family or not (Andres, 2008). When business is going well for the firm, it might make the family decide that they want to hold on to their ownership of the firm. And then, when the firm starts to perform worse or the future prospects look bad, the family might choose to sell their shares in the company (Anderson & Reeb, 2003b). Hence, this could make it look like family firms perform better than non-family firms when investigating the relationship between family ownership and firm performance.

Andres (2008) argued against endogeneity being a problem. One argument against this is that the families owning the firms in Andres (2008) sample of German firms have held their ownership in the firms for 82 years. During the whole sample period of 1998–2004,

the average family ownership stayed at about 60%. This shows that family firms hold on to their shares and do not choose to sell when the economy is not going well. Another argument by Andres (2008) is that although families do indeed have an information advantage when it comes to knowing the future prospects of their firms, it is not likely that they can predict the performance for many decades. The same argument against endogeneity was also presented by Anderson & Reeb (2003b), as the family firms from the sample of S&P 500 firms had held their stake in the firms for about 75.9 years on average. They also added that it would be doubtful that families have more special insights than those of large institutional investors when it comes to finding out the future performance of a firm.

3. FEATURES OF OWNERSHIP

3.1 Definition of a family firm

The definition of a family firm is still argued about. Each firm has different ownership structures resulting in a myriad of different structures. The views of researchers are also different. The different criteria used to establish if a business is a family business include active management by family members, percentage of ownership, voting control, power over strategic direction and management by several family members from the same generation or from different generations (Shanker & Astrachan, 1996).

The amount or the proportions of family members in the board of directors in a firm, including the owner, can be a measurement for defining family firms. Also, fractional ownership can give family executives certain rights to control the management of the firm. Thus, a proportionally large number of shares allow family members to manage firms directly and indirectly. The "narrow" definition for a family firm given by Shanker & Astrachan (1996) defines a family firm as one in which multiple generations actively exercise control, and that more than one member of the owning family has significant management responsibility.

Another definition of the family firm is given by Anderson & Reeb (2003b), who classified firms as family firms when the family who founded the firm has an equity stake in the firm and/or there are family members present on the board of directors (Anderson & Reeb, 2003b). Barontini & Caprio (2006) classify a firm as a family firm if the largest stockholder has at least 10% of the ownership rights or when either the family or the largest stockholder controls more than 51% of the voting rights. These definitions and other definitions used in the previous studies that were mentioned in chapters 2.2–2.4 have been compiled in Table 1. Only unique definitions are listed as some studies used the same definition. Through this list containing various definitions of family firms, it is possible to conclude that there is no universal agreement on the definition of a family firm among researchers. Some studies also used a numerical measure for the ownership, which indicates the equity percentage that family members hold.

Table 1. Definitions of the family firm used in previous studies**.**

Authors, Year	Family firm definition
McConaughy, Walker, Henderson & Mishra (1998)	Founding family controlled firm – The CEO is either the founder or a member of the founder's family.
Anderson & Reeb (2003)	Family firm – shares are owned by founding family members or descendants, or they are present on the firm's board of directors
Barth, Gulbrandsen, Schøne (2005)	Family firm – The family or one person owns at least 33% of the shares of a firm.
Barontini & Caprio (2006)	Family firm – the family holds more than 51% of the voting rights or have more than double of the direct voting rights that the second-largest shareholder has
Villalonga & Amit (2006)	Family firm – a founder or a family member is an officer or a director, or the family members together own at least 5% of equity
Maury (2006)	Family firm – 10% of voting rights are held by the family or the family controlling shareholder is an unlisted firm
Miller, Le Breton-Miller, Lester & Cannella (2007)	Family firm – Multiple family members are officers or directors, or own at least 5% of equity at the same time or over the company's lifetime as family descendants
Sraer & Thesmar (2007)	Family firm – The family holds at least 20% of the voting rights of the firm
Andres (2008)	Family firm – The founder and/or family members hold more than 25% of the voting rights, or a family holds at least 5% shares while a family member is represented on the supervisory or the executive board
Kowalewski, Talavera, Stetsyuk (2010)	Family firm – An individual, an unlisted family firm or a family hold at least 25% of the voting rights of the firm
Sacristán-Navarro, Gómez-Ansón, Cabeza-García (2011)	Family firm – A family or an individual hold more than 10% of the voting rights of the firm
Galve-Górriz & Salas-Fumás (2011)	Family firm – The sum of shares held directly and indirectly by shareholders with the same surname is the largest block holder in the company, and family members should be involved in the board and the management of the firm
Shyu (2011)	Family firm – the total ownership by family members exceed 10%, or more than half of the board seats are occupied by family members

Miller et al. (2007) studied 28 different papers concerning family ownership, and also found a variety of definitions for the family firm. Miller et al. (2007) stated that the definition of family firms has a large significance, and came to the conclusion that the reason that family firms can be found to out-perform non-family firms is a result of how the family firms are defined. As was earlier mentioned in chapter 2.2, their study found that when the definition includes firms with large personal owners who do not have any relatives associated with their firm, family firms outperform non-family firms. When lone-founder firms are not included in the family firm category, the evidence of superior market valuations for family firms is gone. The sample of Fortune 1000 firms in their study that had relatives as owners or managers never outperformed in market valuation, even during the first generation. Only firms with a lone founder outperform. For a sample of 100 smaller randomly chosen firms, neither family firms nor lone founder firms had superior valuation over non-family/lone founder firms.

Family control of a firm does not have to mean direct ownership of a majority stake in the shares of a public firm. Control can also be held through pyramids, cross-shareholdings, and dual-class shares. Pyramid ownership is common in Asian countries and also in some European countries. Dual-class shares mean that shares of different classes have different voting rights (Brealey, Myers, & Allen, 2011). The owner of a company could for example put voting rights only on the part of shares that will be held by him/her, while not assigning voting rights to the other shares (Lim & Kim, 2005). Firms with dual-class shares are common in South Korea. The value of control block votes in South Korea is almost half of the firm's market value. There is thus a large premium on shares with voting rights in South Korea (Nenova, 2003).

Cross-shareholding is when a network of companies are connected horizontally, so one company holds shares of the other and vice versa. This enables an investor with a limited quantity of resources to become a controlling minority shareholder, exercising control power over a network of associated firms (Lim & Kim, 2005). A "controlling minority structure" is a structure that allows a shareholder to control a firm despite only possessing a small fraction of the equity claims on a company's cash flows (Bebchuk, Kraakman, & Triantis, 2000). A pyramidal ownership structure is when family firms own their subsidiary firms indirectly through interfirm shareholdings. The operating companies are found at the bottom of the pyramid, with several layers of holding companies above them. A holding company is a firm that only holds shares in other companies (Brealey et al., 2011).

3.2 Family ownership of firms in South Korea

In less developed economies or emerging markets, business groups have a better ability to use limited resources, overcoming market imperfections through internal capital markets and intragroup trading. When the economy develops, the possible benefits of overcoming the market imperfections decrease, while there may be a rise in the cost of agency problems and conflicts of interest between controlling family shareholders and minority shareholders (Joh, 2003).

The large conglomerate groups in South Korea, known as chaebol, came to exist following the Second World War. The South Korean government allowed chaebol groups to take loans with low interest to develop their industries and other benefits to create wealth for the country after the Second World War. The South Korean government focused on specific fields such as the machinery industry. But the offers by the government were limited to the chaebol groups only. The chaebol system was dramatically successful, it made the South Korean economy grow significantly. GNP of South Korea in 1985 was 20-times of what it was in 1965 (Chang & Chang, 1994).

Most of these chaebol groups are managed by founding families or the owners' family member executives. In South Korea, chaebols and family ownership are strongly connected. A group of firms is defined as a chaebol by the Korean Fair Trade Law if the group's controlling shareholder and its affiliate companies hold combined ownership of each firm which is greater than 30% of the outstanding shares (Lim & Kim, 2005).

In South Korea, most firms are owned, controlled, and managed by families. As reported by Claessens et al. (2000), 67.9% of firms are controlled by families with a cutoff level for ultimate control at 10% of voting rights. With a cutoff level of 20%, the share of family firms is 48.4%. 80.7% of firms are managed by the controlling family (the CEO, board chairman and/or vice-chairman is from the controlling family), and 42.6% of firms are controlled through pyramidal ownership structure. Cross-holdings of affiliated firms are also used to some extent by controlling families to enhance their control. According to Bae, Kang, & Kim (2002), the use of cross-shareholdings is more popular than the use of pyramidal ownership structures in Korean business groups. This contrasts with the findings of Claessens et al. (2000), which showed that pyramidal ownership was more common.

Claessens et al. (2000) insist that firms with families as the ultimate owners may not be concerned about the interests of minority shareholders. Joh (2003) examined the relationship between corporate governance structure and firm performance for a sample of 5,829 Korean firms for the period 1993–1997, which is before the 1997 Asian financial crisis took place. He noted that for many firms, controlling minority structures as described by Bebchuk et al. (2000) were present. In Korea, this ownership structure allows for controlling families to have dominant power at every level of management and facilitates the expropriation of outside shareholders. According to the IMF and the World Bank, this dominant family control using affiliated firms was one of the main causes of the financial crisis in 1997, and it is the biggest obstacle in improving corporate governance in Korea (An & Naughton, 2009).

Another problem with firms affiliated with chaebols is their high reliance on debt financing. Before the Asian financial crisis, a generally held view was that an implicit guarantee by the government meant that there was no risk of default for the chaebols. Thus, chaebols could take on riskier projects than non-chaebols. Successful projects would generate profits for the chaebols, and the cost of failed projects would be paid by the government and the taxpayers in the end (Kim, 2006).

Joh (2003) showed that chaebol groups have a tendency to transfer their profits and wealth from one subsidiary firm to another. When this transfer of resources occurred, the resources were often wasted, which lead to lower firm profitability. These results imply that tunneling took place, the controlling shareholders extracted resources out of the firm to increase their own wealth. Share values can be expropriated by chaebol owners by moving profits from subsidiary firms in which the family has a low stake to those firms in which it has a high stake (Kim, 2006). Although the firms belonging to a chaebol are independent firms, they aim to maximize the value of all affiliated firms in the chaebol group, not only the individual value of firms (Park, Kim, Ha, & Park, 2014). Joh (2003) found that independent firms outperform firms that are affiliated with chaebols. The profitability of a firm was found to be lower when the controlling family's ownership was lower, after controlling for industry, firm and macro-economic effects. Furthermore, firm profitability decreased the larger the difference between control rights and cash-flow rights. The negative effects of the gap in control rights and cash flow rights, and the inefficiency in the internal capital market, were more severe in publicly traded firms than in privately held firms.

Samsung Group provides an example of how minority shareholders of member firms in a chaebol were expropriated. To pave the way for his son to succeed him as the chairman, Samsung Group's Chairman Lee Kun-Hee made Samsung SDS sell a total of 3.21 million shares of its bonds with warrants (BWs) to his son, Lee Jae-Yong, and three other family members for a price of only 7,150 Korean won per share. The BWs issued by Samsung SDS had a price of 55,000 KRW per share in the over-the-counter market at the time when these controversial share transfers took place. Clearly, the minority shareholders of Samsung SDS lost, while the wealth of the family of the controlling shareholder increased. Lee Jae-Yong's stake in Samsung SDS increased to 10.1 percent. Lee Kun-Hee also received criticism for transferring BWs in other Samsung Group companies in a similar way, such as Samsung Electronics, Samsung Everland and Samsung S1 (Bae et al., 2002).

There have been many previous studies looking at the characteristics and significance of the largest chaebols of South Korea. This thesis intends to take a different approach by investigating the link between family ownership and firm performance for firms listed on the KOSPI SmallCap index during 2013-2017.

4. AGENCY THEORY

Agency theory is a theory of the relationship between principals and an agent of the principals. Conventional agency problems are produced by separating ownership and management. This separation creates difficulty in controlling the firm through managers by supervisors. The owner-manager conflict is referred to as Agency Problem I by Villalonga & Amit (2006). The conflicts between shareholders' and managers' objectives cause agency problems. The agency problem increases when agents work for principals. The shareholders are principals; the managers of the firm are their agents. Agency costs are created when managers do not try to maximize firm value and costs are created by shareholders in their efforts to monitor the managers and constrain their behaviors. A company's board of directors is selected by the shareholders, and they are tasked with monitoring the management of a firm. The board of directors has a responsibility to represent the shareholders of the firm. Nowadays, boards also meet in sessions without the CEO present. In recent times, more chief executives have been forced out (Brealey et al., 2011).

Jensen & Meckling (1976) classify an agency relationship as an agreement of an outside person to behave for another person when the firm's principal gives the rights to an agent to make decisions for the firm. To make it clear that the agent works for the firm's profit, agency costs occur. The principals of a firm usually give several incentives to make the agent work for the owner or executives' interest. Another type of cost caused by the agency relationship is bonding costs. Bonding costs occur when the agent spends resources on ensuring that the actions that he/she takes will not harm the principal, or to see that the principal is compensated if such an action does take place. An example of a bonding cost would be limitations set in the manager's contract on his/her decision-making power. Despite the agency costs and bonding costs undertaken to steer the agent towards making decisions that optimally favor the principal, there will still be some differences between the decisions made by the agent and the decisions which would maximize the principal's welfare. The third cost of the agency relationship is the monetary value of this decrease in the welfare of the principal caused by these differences, referred to as the residual loss.

If a manager completely owns the company he manages, the decisions made by the manager aim to maximize his/her utility. These decisions do not only include monetary returns, but also the utility derived from different non-pecuniary aspects of being a manager for the company, such as spending on a luxurious office, facilities and cars. If other shareholders own equity in the company, agency costs arise as the interests of the shareholders

and owner-manager differ. The smaller the share of equity owned by the owner-manager, the smaller his/her share of the outcomes is. This can make the owner-manager try to allocate more of the corporate resources in the form of perks, which will make the outside shareholders want to spend more resources on monitoring the owner-manager's behavior (Jensen & Meckling, 1976).

The most important agency conflict may be that as the ownership claim of the manager decreases, the manager's incentive to dedicate considerable effort to creative actions such as searching for new profitable projects decreases. The manager might decide to avoid such attempts because it would take too much effort to manage or to learn about new technologies. This is also a form of utility for the owner-manager, which can result in the value of the firm being lower than it potentially could be (Jensen & Meckling, 1976).

The agency problem inevitably causes costs for the owners of a firm. The most common case is for large, global listed corporations. They have millions of small owners who do not hold a significant proportion of the firm, and the firm is controlled by agents hired from outside of the firm (Bodie, Kane, & Marcus, 2014). Nevertheless, the separation of management and ownership is necessary for big firms. But in a family-owned firm, there is little opportunity to anticipate advantages from this separation. The reason is that it is hard to be free from the power of the head of the firm when the firm's discretion is limited to family members. Even if managers from the outside are used, family ownership can still have a mitigating effect on Agency Problem I. This is because family owners, as large shareholders of the firm, have greater incentives to monitor the manager. But if family members are present in the management of the firm, this can lead to the elimination of Agency Problem I in the firm. When the owners have their trusted family members acting as agents, they do not need to spend resources on monitoring. If the CEO of the firm is a family member, the CEO has the same interests as the family. However, the gains from the mitigating effect family management can have on Agency Problem I can be offset if professional managers hired from the outside would be better at managing the firm than family members Villalonga & Amit (2006).

However, the controlling position held by family owners can give rise to another problem, called Agency Problem II by Villalonga & Amit (2006). In family firms, conflicts of interest may arise between minority shareholders and family shareholders. Family members, with their large concentrated ownership of the firm's equity, can use their controlling position in the firm to extract private benefits instead of trying to maximize the overall value of the firm. The minority shareholders then bear the cost of this behavior. The main

agency problem in corporations worldwide is to restrict the expropriation of minority shareholders by controlling shareholders. This agency problem between minority and controlling shareholders can be more serious when there is a lack of mechanisms to protect minority investors and govern the discretionary power of large shareholders (Bae et al., 2002). In fact, families having a high concentration of control of major firms in developing economies in East Asia can have led to the legal protection of minority shareholders being limited. The controlling families could also use their power to "lobby" public officials and government agencies for preferential treatment, for example through preferential public contracts, trade barriers, non-market-based financing, or through other ways (Claessens et al., 2000).

If the large shareholder of a firm is an institution instead of a family firm, for example, a bank, a widely held corporation, or an investment fund, the private benefits extracted from minority shareholders would be shared among several independent owners. This decreases the incentives of the large shareholder for expropriating minority shareholders, but at the same time, the incentives for monitoring the manager is also smaller. Thus, Agency problem I can be more of a problem in firms with an institution as the largest shareholder, while Agency Problem II can be the more significant problem in family-owned firms (Villalonga & Amit, 2006).

5. DATA AND METHODOLOGY

5.1 Data selection

The data collected is from firms listed on the Korean Composite Stock Price Index (KOSPI) SmallCap index on the Korea Exchange (KRX).
The data is gathered for a period of five years, from the year 2013 to 2017. A list of companies listed on the KOSPI SmallCap index at the end of each year for this period was gathered from the KRX website (Korea Exchange, 2020). The KOSPI SmallCap Index shows companies that are listed on the KOSPI market, whose market capitalization is lower than the top 300 firms.

In total, 460 companies were listed on the KOSPI SmallCap index at the end of 2013. However, in order to have balanced panel data, only companies that were continuously on the KOSPI SmallCap index during the whole period were included. Only 354 of the companies were listed on the KOSPI SmallCap index during the whole sample period. This means that companies that were delisted during this period were excluded, which can cause survivorship bias, as only the companies that do well enough to be continuously listed are included. But as the sample is limited to firms on the KOSPI SmallCap index, it means that firms that grew and moved to the KOSPI MidCap index, for instance, were also excluded. This can slightly counteract the survivorship bias. Furthermore, in order to have comparable data for the firms, only firms that had their financial closing year at the end of the year in December were included in the final data sample. Also, as has been standard in other studies on the performance of family firms, financial companies were excluded from the data sample.

Firms were counted as family firms or non-family firms based on the equity held by family members and/or family relationships between the members of the board of directors at the end of 2013 and 2017 (so it was assumed that firms do not e.g. change from being a family firm to a non-family firm and then back to being a family firm again during the sample period). From the sample of firms, five firms changed their ownership structure from being a family firm to a non-family firm, and one non-family firm changed to being a family firm during the sample period. These firms were removed from the sample, thus addressing possible endogeneity concerns for firms that changed ownership structure during the sample period. Only firms that were also found in the Orbis database were included. Two firms were excluded because they were just ship investment companies (their

only business was operating a single ship) which missed basic data, such as sales. In the end, the final sample consisted of 307 companies listed on the KOSPI SmallCap index for 5 years

The process for determining if a firm is a family-firm or a non-family firm is shown in Figure 1. A firm was defined as a family firm if the CEO was also a board member, and/or if the family members of the CEO were a part of the board of directors. A firm was also determined to be a family firm if the family members owned more than 20% of the equity of a firm, or a lone CEO owned more than 20% of the firm's equity. The firm was also determined to be a family firm if the CEO was related to the founder of the firm or the previous CEO (the firm was passed on to the next generation).

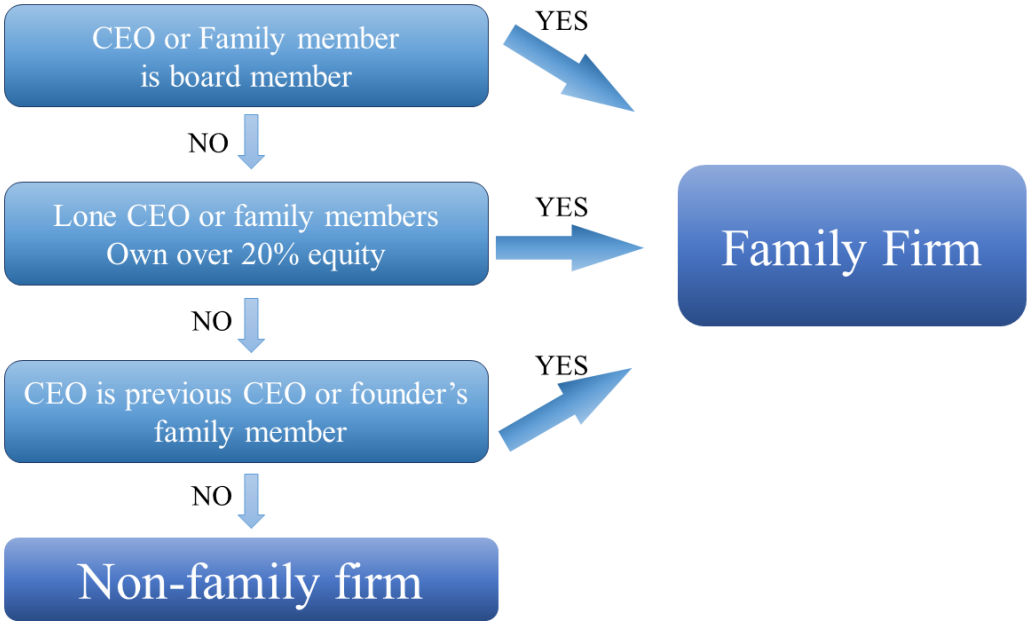

Figure 1. Process for determining ownership of firms.

In order to determine whether a firm is family-owned or not, the firms' annual reports obtained from the Repository of Korea's Corporate Filings DART (Data Analysis, Retrieval and Transfer System), a government agency which offers all info and data submitted to the financial supervisory service, were used (Financial Supervisory Service, 2020). From the annual report, the status of shareholders, the status of employees and the composition of the board of directors were obtained. In the annual reports' list of major shareholders in the firms, the percentage of shares held by the major shareholders and the re-

lationship between them is stated. For many firms, the type of family relationship is directly mentioned. It was for example possible to observe in many cases that uncles, siblings and other relatives shared a big portion of the shares in the firm. Then, in many cases, the same names as those found on the list of major shareholders were also on the list of members of the board of directors, making it easy to determine if the firm is a family firm even if the equity held did not exceed 20%.

For some firms, the type of family relationship was not directly stated, it was instead mentioned as a "special relationship". When family members were not listed as major shareholders of the firm, I used the Korean search engine NAVER to look up information about possible family relationships between the members on the board of directors in order to determine if the firm is a family firm. If a family relationship was found, the firm was considered as a family firm. The list of major shareholders also mentions if there is no relationship between the major shareholders. If the firm was a part of a pyramid ownership structure, I searched for the names of the family members' in the parent firms' list of major shareholders, and if the family members' were found there, I calculated their ultimate ownership in the firm to see if their equity ownership in the firm exceeded 20%, and if that was the case, the firm was considered to be family-owned.

The financial data for the sample firms were largely obtained from the Orbis database, using the unconsolidated reports of the firms. Market capitalization was obtained from the list of KOSPI SmallCap firms found on the KRX website. However, for some companies, the data for some fields were missing in Orbis. These missing data were thus handpicked from the unconsolidated financial statements and income statements from the annual reports of the companies retrieved from DART. The industry classifications of the companies were collected from the KRX website. The Korea Standard Industrial Classification (KSIC) was used to determine the industry of the companies.

5.2 Measures of Firm performance

In total, four different measures of firm performance were used. One, Tobin's Q, is a market measure of firm performance. The three other measures are accounting measures of firm performance. They include two different measures for the return on assets (ROA) and return on equity (ROE).

5.2.1 Tobin's Q

Tobin's Q was used as a market measure of firm performance, as many previous studies have used Tobin's Q as a measure of firm performance (Anderson & Reeb, 2003b; Andres, 2008; Martikainen et al., 2009).

Tobin's Q is the ratio of the market price of a company to the replacement cost of its assets and the ratio should ideally, eventually reach 1. This ratio can give views regarding the expected future cash flows of the firm. It can be calculated by dividing the market value of assets by the estimated replacement cost (Bodie et al., 2014). If Tobin's Q is high, the firms' commercial value is higher than the cost of replacing the capital.

Tobin's Q is a measure that looks at the future performance of a firm by comparing the value that the market puts on the firm to the book value. It can be used to show the growth opportunities of a firm (King & Santor, 2008).

Tobin's Q is calculated using the following definition (Shin, Park, Cho, & Choi, 2019):

(1) $$Tobin's\ Q = \frac{Market\ Capitalization}{Total\ Assets}$$

5.2.2 Return on Assets

Return on Assets (ROA) is the most common way to measure firm performance. ROA has been used as an accounting measure of firm performance in many previous studies (Anderson & Reeb, 2003b; Andres, 2008; Martikainen et al., 2009).

The formula for calculating ROA uses EBITDA, EBIT, or net income, the firm's annual earnings as the numerator. EBITDA, EBIT and net income can be found from the income statements of firms. Total assets is used as the dominator in this formula. Total assets includes firm assets, current assets and fixed assets (Brealey et al., 2011). In contrast to Tobin's Q, ROA looks at the past. ROA is a measure showing the past profitability of a firm (King & Santor, 2008).

In this study, ROA is calculated in two different ways. Total assets is used as the denominator, while ROA1 uses EBITDA as the numerator, and ROA2 uses net income as the numerator.

(2) $$ROA1 = \frac{EBITDA}{Total\ Assets}$$

(3) $$ROA2 = \frac{Net\ Income}{Total\ Assets}$$

5.2.3 Return on Equity

Return on Equity (ROE) is also one basic factor showing the firm's growth rate of earnings. Unlike ROA, ROE does not take into account debt when measuring profitability. ROE focuses on the profitability of equity investments (Bodie et al., 2014). ROE is calculated by dividing net income with shareholders' equity.

(4) $$ROE = \frac{Net\ Income}{Shareholders\ Equity}$$

5.3 Model

This paper focuses on the difference between family-owned firms' performance and non-family owned firms' performance. Firm performances will be measured with Tobin's Q, two types of ROA and ROE. The regression model I use is similar to the one used by Anderson & Reeb (2003b).

(5) $$Firm\ performance = \beta_0 + \beta_1(Family\ firm) + \beta_2(control\ variables) + \beta_3(industry\ \ dummies) + \beta_4(year\ dummies) + \varepsilon$$

The dependent variables are the four measures of firm performance and the independent variable is firm ownership (if the firm is a family-owned firm, the value used is 1, otherwise 0 is used as the dummy variable.)

Industry dummies are created using the KSIC definitions. The year dummies have a value of 1 for each year.

Firm age is used as a control variable. The age of a firm is calculated as the natural logarithm of the difference between the observation year and the founding year of the firm. It has been suggested that a significant cost can be imposed when a large shareholder insists on being involved in the management of a firm, despite no longer being competent for the role. This means that the firm age for a family firm could be negatively related to firm performance (Anderson & Reeb, 2003b).

The next control variable used is firm size. The firm size is calculated as the natural logarithm of the total assets of a firm. Larger and older firms can be more liquid, have improved disclosure, receive more attention from analysts, and be more diversified, which decreases the risk of financial distress. But smaller and younger firms can have better opportunities for growth (Claessens, Djankov, Joseph, & Larry, 2002). However, the increased diversification of a large firm may also have a negative impact, because it may result in increased bureaucratic and agency costs. Similarly, age can also have a negative impact. An older firm may be more complex, which can lead to more agency problems (Choi et al., 2007).

Another control variable used is leverage. Leverage shows the debt in the capital structure of a firm. It can express the riskiness of a firm: the more debt a firm takes on, the riskier it is. It is more likely that firms with a high leverage ratio will experience financial distress during economically bad times when the positive aspects of leverage decrease at the same time as well (Kim & Lee, 2003). Leverage is measured here as the total debt divided by total assets as by Andres (2008):

$$Leverage = \frac{Total\ Debt}{Total\ Assets} \tag{6}$$

The following control variable used is capital intensity, evaluated by dividing the tangible fixed assets of the firm by the total assets (Schank et al., 2017).

(7) $$Capital\ Intensity = \frac{Tangible\ Fixed\ Assets}{Total\ Assets}$$

For investors, it could be easier to directly monitor firms that are more reliant on tangible assets, and because the firms are easier to monitor, it could lead to better governance. For firms with more intangible assets, it is the opposite, as they can be harder to monitor, it could lead to weaker governance (Black, Jang, & Kim, 2006). The value-maximizing size of a firm tells how large a firm should be in order to be competitive in a certain industry. A larger value-maximizing size means that it is more expensive to own a certain fraction of the firm and to concentrate the ownership to a few shareholders. So the more capital intensive a firm is, the external financing that a firm requires in order to obtain the value-maximizing size is larger, which in turn dilutes family ownership in the firm. So family ownership may be less present in firms with a high capital intensity (Villalonga & Amit, 2010). The results of Villalonga & Amit (2010) showed this to be true for their sample of publicly traded US firms.

The turnover of a firm is also used as a control variable. Turnover is calculated by dividing sales by total assets. The ratio of sales to total assets (ATO) can be used as an indicator of the efficiency of the firms' usage of assets (Bodie et al., 2014). This control variable is therefore used in this study, as it has been used in previous studies (Abdullah, Shah, Gohar, & Iqbal, 2011).

(8) $$Turnover = \frac{Sales}{Total\ Assets}$$

The Tobin's Q, ROA and ROE variables are slightly modified by 1% winsorizing in order to limit extreme values in data and reduce the effect of possible outliers.

6. EMPIRICAL ANALYSIS

6.1 Descriptive statistics

All of the 307 sample firms are listed according to their industry classification in Table 2. The names of the individual companies, their ticker symbols, industry classification and ownership type can be viewed in Appendix 1.

Table 2. Companies listed on the KOSPI SmallCap index according to their industry.

Industry	**Number of companies**	**Percent**
Chemicals	40	13.03
Communication	1	0.33
Construction	16	5.21
Distribution	24	7.82
Electrical & Electronic Equipment	24	7.82
Electricity & Gas	3	0.98
Fishing	1	0.33
Food & Beverages	16	5.21
Iron & Metal Products	27	8.79
Machinery	24	7.82
Medical & Precision Machines	2	0.65
Medical Supplies	13	4.23
Mining	1	0.33
Non-metallic Mineral Products	9	2.93
Other Manufacture	5	1.63
Paper & Wood	18	5.86
Services	31	10.1
Textile & Wearing Apparel	15	4.89
Transport & Storage	11	3.58
Transport Equipment	26	8.47
Total	**307**	**100**

As can be seen in Table 2, the industry with the largest amount of firms is the Chemicals industry with about 13 percent share of the total amount of firms, followed by Services and Transport Equipment. The industries Communication, Mining and Fishing only had one company each.

It can be seen that for this sample of firms from the KOSPI SmallCap Index, a large number of firms are in industries related to manufacturing, such as Machinery, Iron & Metal Products and Electrical & Electronic Equipment. In fact, 219 firms, or slightly over 70% of the firms belong under the Manufacturing industry supersector of the KSIC. The industries that belong to the manufacturing industry supersector can be viewed in Appendix 2.

Table 3. Family firm distribution per industry.

Industry	**Family firm**	**Non-family firm**	**Family Firm in %**
Chemicals	28	12	70.0%
Communication	0	1	0.0%
Construction	6	10	37.5%
Distribution	12	12	50.0%
Electrical & Electronic Equipment	14	10	58.3%
Electricity & Gas	3	0	100.0%
Fishing	1	0	100.0%
Food & Beverages	14	2	87.5%
Iron & Metal Products	20	7	74.1%
Machinery	17	7	70.8%
Medical & Precision Machines	1	1	50.0%
Medical Supplies	5	8	38.5%
Mining	1	0	100.0%
Non-metallic Mineral Products	7	2	77.8%
Other Manufacture	3	2	60.0%
Paper & Wood	13	5	72.2%
Services	14	17	45.2%
Textile & Wearing Apparel	13	2	86.7%
Transport & Storage	7	4	63.6%
Transport Equipment	20	6	76.9%
Total	**199**	**108**	**64.8%**

Table 3 shows in more detail the distribution of family firms and non-family firms per industry. For the whole sample, 64.8% of the firms were family firms, which is 199 firms out of a total of 307 firms. As some industries have only a few companies, such as Medical & Precision and Electricity & Gas, it is hard to tell the actual ratio of family firms to non-family firms for these industries.

However, some industries with a larger number of firms show a high rate of family firms. The industries Chemicals, Food & Beverages, Iron & Metal Products, Machinery, Paper & Wood, Textile & Wearing Apparel and Transport Equipment have a larger number of firms, and they all have a percentage of family firms above 70%. They fall under the manufacturing industry supersector of KSIC. The percentage of family firms for the manufacturing industry sector is 70.78%, which is higher than for the whole sample of firms. But family firms are actually a majority in most of the industries, not only those under the manufacturing supersector. There are only a few industries that have a ratio lower than 50% of family firms to non-family firms: Construction, Medical Supplies and Services.

Table 4 shows the descriptive summary statistics for all firms. The table shows the mean, standard deviation, and minimum and maximum numbers for the dependent variables and the control variables. The total number of companies observed is 307, with observations for 5 years, thus the total observations per variable are 1535.

Table 4. **S**ummary statistics for all companies.

Variables	**Obs**	**Mean**	**Std. Dev**	**Min**	**Max**
Tobin's Q	307	0.64	0.59	0.07	3.57
ROA (EBITDA)	307	2.42	6.09	-21.85	17.81
ROA (Net income)	307	-0.06	9.07	-43.31	16.36
ROE (Net income)	307	-3.23	27.16	-162.84	37.24
Total Assets (ln)	307	18.96	0.85	15.78	21.64
Turnover	307	0.91	0.51	0.01	4.12
Age (ln)	307	3.50	0.70	0.00	4.79
Leverage	307	0.43	0.21	0.01	1.13
Capital Intensity	307	0.31	0.21	0.00	0.96

Total assets are calculated as the natural logarithm of total assets, and the age variable is also evaluated with the natural logarithm. The mean value of Tobin's Q for the whole sample is 0.64, which is rather low. The average ROA using EBITDA is positive at 2.42, while the mean of ROA using net income is negative, -0.06. The average ROE is -3.23.

Table 5 and Table 6 show the summary statistics for family-owned firms and non-family firms respectively. Family firms have a higher mean value for all of the accounting measure variables of firm performance. But the market measure of firm performance, Tobin's

Q, is much lower for family firms. Family firms show less variation, as the standard deviation of every variable is smaller for family firms than it is for non-family owned firms.

Table 5. Summary statistics for family-owned companies.

Variables	Obs	Mean	Std. Dev	Min	Max
Tobin's Q	199	0.54	0.45	0.07	3.57
ROA (EBITDA)	199	3.27	4.54	-18.81	17.81
ROA (Net income)	199	1.68	6.12	-43.31	16.36
ROE (Net income)	199	1.00	19.12	-162.84	37.24
Total Assets (ln)	199	19.09	0.80	16.79	21.64
Turnover	199	0.95	0.49	0.01	3.74
Age (ln)	199	3.62	0.57	0.69	4.62
Leverage	199	0.43	0.20	0.01	1.09
Capital Intensity	199	0.32	0.18	0.00	0.95

Table 6. Summary statistics for non-family owned companies.

Variables	Obs	Mean	Std. Dev	Min	Max
Tobin's Q	108	0.83	0.75	0.07	3.57
ROA (EBITDA)	108	0.85	8.00	-21.85	17.81
ROA (Net income)	108	-3.26	12.22	-43.31	16.36
ROE (Net income)	108	-11.04	36.47	-162.84	37.24
Total Assets	108	18.71	0.90	15.78	20.66
Turnover	108	0.85	0.55	0.04	4.12
Age	108	3.27	0.85	0.00	4.79
Leverage	108	0.42	0.23	0.01	1.13
Capital Intensity	108	0.30	0.24	0.00	0.96

Table 7 shows the correlation between the dependent variables, independent variables and control variables. When it comes to the accounting measures, ROA (EBITDA), ROA (Net income) and ROE (Net income), family firms have a strong positive correlation with a better firm performance which is in agreement with the hypothesis H_1. The correlation between the family firm dummy variable and all dependent variables is statistically significant at the 1% level. However, family firms have a negative correlation coefficient with Tobin's Q, -0.237. Besides that, the family firm dummy variable has a strong positive correlation with total assets, turnover ratio and age, also significant at the 1% level as well.

Table 7. Correlation matrix.

	TQ	ROA1	ROA2	ROE	FF	TA	TO	AGE	LEV	CapInt
TQ										
ROA1	-0.128***									
ROA2	-0.144***	0.746***								
ROE	-0.054**	0.596***	0.829***							
FF	-0.237***	0.190***	0.260***	0.212***						
TA	-0.561***	0.203***	0.241***	0.145***	0.210***					
TO	-0.123***	0.250***	0.223***	0.162***	0.086***	0.074***				
AGE	-0.114***	-0.069***	0.007	0.025	0.237***	0.153***	0			
LEV	-0.382***	-0.178***	-0.247***	-0.314***	0.026	0.318***	0.238***	0.107***		
CapInt	-0.229***	0.103***	0.046*	0.011	0.046*	0.140***	-0.098***	-0.039	0.139***	

***, **, * denote significance at the 1%, 5% and 10% levels.

6.2 Univariate test

Table 8 clearly shows the difference between family firms and non-family firms. Except for leverage and capital intensity, the result for every variable is statistically significant at the 1% level when comparing family firms and non-family firms.

Table 8. Univariate test table, summary statistics for the sample firms.

Variable	Family Firm	Non-family firm	t-values
Tobin's Q	0.5395	0.8340	8.2942***
ROA (EBITDA)	3.2735	0.8460	-6.5088***
ROA (Net income)	1.6750	-3.2640	-8.8117***
ROE (Net income)	1.0045	-11.0379	-7.1571***
Total Assets (ln)	19.0871	18.7121	-8.1048***
Turnover	0.9450	0.8529	-3.2411***
Age (ln)	3.6225	3.2735	-8.5189***
Leverage	0.4337	0.4224	-0.9614
Capital Intensity	0.3153	0.2954	-1.669*

***, **, * denote significance at the 1%, 5% and 10% levels.

Having obtained the results of the univariate test in Table 8, the values found in Table 5 and Table 6 can be compared with those from Table 8 in order to observe the differences between family-owned firms and non-family owned firms. When it comes to the market performance measure, Tobin's Q, the average is 0.54 for family firms while it is 0.83 for non-family firms. The test shows that Tobin's Q is lower for family firms compared to non-family firms. The result is statistically significant at the 1% level.

Another significant result that can be observed from the tables is that the values of the accounting measures, both ROA measures (EBITDA and Net Income) and ROE, show that family firms have superior performance to non-family firms. ROA using Net Income and ROE even have negative average values (-3.26 and -11.04) for non-family firms, while family-owned firms have positive values (1.68 and 1). These results support the hypothesis H_1, that family firms outperform non-family firms.

So the market measure and the accounting measures show opposite results. This result is quite similar to the result of King & Santor (2008): family firms from their sample had higher ROAs but lower Tobin's Q compared to other firms. As earlier mentioned, the reason proposed for this was that family-owned firms might have higher profitability, but that future expectation on cash flows are lower because investors see a threat of expropriation by the controlling shareholders. So the same may be true for the sample of family firms in this thesis. Family firms have higher profitability as shown by ROE and ROA, but investors might fear expropriation and so they do not have higher expectations on cash flow for the family firms. An interesting topic for future research could be to divide the family firms into those that use dual-class shares, and those with a single-class share, to see if the firms using dual-class shares accounted for the negative market performance, as in the study by King & Santor (2008).

An alternative explanation for the opposite results for the market measure and the accounting measures could be that the market does not reflect the firm value properly in the stock price for firms on the KOSPI SmallCap index, perhaps due to the small size of the firms.

Tobin's Q had a negative relationship with ROE and ROA in the correlation matrix as well. The regression result has the same direction of correlation which is negative and statistically significant.

Family firms are larger than non-family firms, as the values for the natural logarithm of total assets is greater for family firms. The turnover ratio of family firms is also greater with significance at the 1% level. The leverage for family firms is slightly greater, but it is not statistically significant. So unlike the results of several previous studies, family firms do not seem to take on less debt than non-family firms. Family firms have greater capital intensity at a 10% significance. The result for the linear logarithm of age shows that family firms are older than non-family firms, at a 1% significance level. With an average age of 42 years, family firms are older than non-family firms, which have an average age of 34 years. Clearly, families tend to hold on to their ownership in the firms, so endogeneity should not be a concern.

6.3 Multivariate test

Table 9 shows the results from Pooled OLS regressions for the four different dependent variables, Tobin's Q, ROA1 (EBITDA), ROA2 (Net income) and ROE. All firm performance variables have an exceptionally statistically significant linear relationship with family-owned firms at 1%. Age had a strong correlation with Tobin's Q in the correlation matrix table, however, the correlation is lost in regression. More notably, the family firm variable had a negative relationship with Tobin's q. Also, the sample firms of this paper had a negative relationship between total assets and Tobin's Q. Same as in the results of the univariate test, Table 9 again strongly shows that family firms perform better than non-family firms with accounting measures, while they perform worse according to the market measure.

Table 9. Family ownership and firm performance.

Variable	**Tobin's Q**	**ROA1**	**ROA2**	**ROE**
Family Firm	-0.159***	1.725***	3.523***	8.501***
Total Assets (ln)	-0.311***	1.839***	3.298***	7.389***
Turnover	-0.050**	3.727***	5.168***	13.069***
Age (ln)	0.001	-0.852***	-0.458	0.219
Leverage	-0.586***	-9.994***	-18.357***	-59.177***
Capital Intensity	-0.394***	4.016***	3.556***	8.010***
Intercept	7.050***	-30.930***	-61.183***	-138.527***
Adjusted R-square	0.394	0.236	0.294	0.248

***, **, * denote significance at the 1%, 5% and 10% levels.

Table 10 is carried out as a Pooled OLS but with controlled year and industry variables. The data of this study is composed of panel data. In other words, the data has mixed characteristics of cross-sectional data and time-series data as the company's repeating year. In this study, following (Gow, Ormazabal, & Taylor, 2010), the t-value is calculated using standard error two-way company-year clustering. If we do not use this method, there can be a correlation in the cluster. There is a possibility to have a standard error lower than it actually should be in the result.

Table 10. Family ownership and firm performance with the year and industry dummy variables.

Variable	Tobin's Q	ROA1	ROA2	ROE
Family Firm	-0.114**	1.758***	3.295***	8.382***
Total Assets (ln)	-0.291***	1.889***	3.244***	8.014***
Turnover	-0.022	3.816***	4.800***	12.730***
Age (ln)	-0.023	-0.649	-0.551	0.218
Leverage	-0.476***	-9.451***	-18.387***	-59.243***
Capital Intensity	-0.413***	3.843***	2.453	9.522*
Intercept	6.525***	-31.708***	-57.486***	-150.272***
Adjusted R-square	0.48	0.281	0.323	0.259

***, **, * denote significance at the 1%, 5% and 10% levels.

The result of the regression with the year and industry dummies in Table 10 shows the difference compared to Table 9, the direction of the relationship is still strongly consistent. Family firms tend to have a low Tobin's Q value compared to non-family owned firms, although the result is now significant at the 5% level instead of the 1% level. Accordingly, as family firms have higher values for ROA and ROE, it shows that family ownership has a positive effect on the accounting measures for firm performance. The results for the accounting measures are still significant at the 1% level.

There are some changes in the coefficients with the values being smaller in Table 10 compared to Table 9. But Table 10 still has a similar result as Table 9, as the direction of the relationship is the same, and the majority of variables keep their statistical significance. Only a few variables lose their statistical significance. The regression results were checked with the sandwich estimator of White (1980) and the clustered sandwich estimator as mentioned by Froot (1989) to check for heteroscedasticity. The check with the estimators gave the same results, so any concerns of heteroscedasticity could be dismissed.

With the obtained results, the hypothesis H_1, that family firms outperform non-family firms, is accepted. The null hypothesis that the ownership of a firm does not have a significant effect on firm performance, is rejected.

7. SUMMARY AND CONCLUSIONS

The purpose of this study was to find out if family ownership affects firms' performance for companies that are listed during 2013–2017 on the KOSPI SmallCap index on the Korea Exchange. The ownership structure of firms can affect the management or behavior of firms in various ways, and this in turn would have an effect on the performance of firms. This topic has been examined in a vast number of studies in the field and some interesting results have been shown.

Korea has become well known as a country that has special ownership structures and its own culture also has special characteristics for the family itself. It was thought that studying Korean small-cap firms would make for an interesting research topic which would add some new value, as there have already been many studies on the large chaebol firms that are characteristic of Korea.

It was found out that that family ownership clearly had an impact on the sample of listed Korean companies and the effect was positive for accounting measures of firm performance. This thesis used Pooled OLS regression to find out the association between firm performance and family ownership of firms. Firm performance was measured with Tobin's Q, two measures of ROA (EBITDA and Net Income) and ROE, and family ownership was used as the dummy variable, telling whether the firm is family-owned or not. A firm was decided to be a family-owned firm in three ways: if the CEO is also a board member or if family members of the CEO are also members on the board of directors, or if the family or lone CEO owns more than 20% equity of firm, or if the CEO is a family member of the firm founder or the previous CEO.

The regression results of this paper show that the family firms of the sample have a tendency of being larger, having larger values for total assets. Family firms also had larger turnover ratios. On average, also leverage and capital intensity are higher for family-owned firms than for non-family owned firms. With the fact that the average age of family firms is longer than the average age of non-family owned firms, it shows that families tend to maintain their firms for a long time and they do not release their hold of the firm, which removed the worries of endogeneity.

Most importantly, this paper could show a clear result for accounting measures of performance that family firms outperform non-family firms. It proves that family ownership has an effect on firm performance and that the effect is positive, as it was shown that the

results were statistically significant at the 1% level. For the market measure, however, family firms performed worse than non-family firms, and the results were significant at the 5% level. Regardless, the hypothesis H_1, that family firms outperform non-family firms, was accepted.

For possible further research, it would be great if family ownership could be sorted into different categories instead of only using a dummy variable which states whether the firm is a family firm or not. For instance, taking into account different rates of equity ownership by the family, while only measuring equity ownership and no other types of ownership (family members on the board of directors or next-generation CEO). This could add value. Alternatively, one could also distinguish between the type of CEO (lone CEO or CEO with family members), or if the firm is held by a large number of family members who each hold a small fraction of the firm's equity, but it adds up to a large sum. Also, family firms could be divided into those which have dual-class shares, and those which have single-class shares, to see if the negative market performance of family firms is caused by the use of dual-class shares. One could also conduct the same research for firms on the KOSPI MidCap index and compare the results with these results for firms on the KOSPI SmallCap index.

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APPENDIX

Appendix 1: The sample companies and their ownership type.

Company name	Ticker symbol	Industry classification	Family firm
DONGWHA PHARM CO.,LTD.	000020	Medical Supplies	no
KR MOTORS CO.,LTD.	000040	Transport Equipment	yes
SUNGCHANG ENTERPRISE HOLDINGS LIMITED	000180	Services	yes
DAYOU PLUS CO.,LTD.	000300	Transport Equipment	no
DAEDONG INDUSTRIAL CO.,LTD.	000490	Machinery	yes
GAON CABLE CO.,LTD.	000500	Electrical & Electronic Equipment	yes
SAMIL PHARM. CO.,LTD.	000520	Medical Supplies	yes
CHUNIL EXPRESS CO.,LTD.	000650	Transport & Storage	Yes
HWACHEON MACHINE TOOL CO.,LTD.	000850	Machinery	yes
BOHAE BREWERY CO.,LTD.	000890	Food & Beverages	yes
UNION CORPORATION	000910	Non-metallic Mineral Products	yes
CHONBANG CO.,LTD.	000950	Textile & Wearing Apparel	yes
PAPER COREA INC.	001020	Paper & Wood	no
TAIHAN TEXTILE CO.,LTD.	001070	Textile & Wearing Apparel	Yes
KUKBO CO.,LTD.	001140	Transport & Storage	no
KUMHO ELECTRIC INC.	001210	Electrical & Electronic Equipment	yes
NAMKWANG ENGINEERING & CONSTRUCTION CO., LTD.	001260	Construction	no
PAIKKWANG INDUSTRIAL CO.,LTD.	001340	Chemicals	yes
SAMSUNG PHARMACEUTICAL CO.,LTD.	001360	Medical Supplies	no
SG CHOONGBANG CO.,LTD.	001380	Transport Equipment	no
KG CHEMICAL CORPORATION	001390	Chemicals	yes
TAEWON MULSAN CO.,LTD.	001420	Transport Equipment	yes
BYC CO.,LTD.	001460	Textile & Wearing Apparel	yes
DI DONGIL CORPORATION	001530	Textile & Wearing Apparel	yes
CHOBI CO.,LTD.	001550	Chemicals	yes
CHEIL GRINDING WHEEL IND. CO.,LTD.	001560	Non-metallic Mineral Products	yes
KUMYANG CO.,LTD.	001570	Chemicals	yes
KBI DONGKOOK IND. CO., LTD.	001620	Transport Equipment	yes
SHINHWA SILUP CO.,LTD.	001770	Iron & Metal Products	yes
TS CORPORATION	001790	Food & Beverages	yes

SAMWHA CAPACITOR CO.,LTD.	001820	Electrical & Electronic Equipment	no
SAMHO INTERNATIONAL CO.,LTD	001880	Construction	NO
NAMYEUNG VIVIEN CORPORATION	002070	Textile & Wearing Apparel	yes
KYUNGNONG CORP.	002100	Chemicals	yes
KOREA INDUSTRIAL CO.,LTD.	002140	Food & Beverages	Yes
DOHWA ENGINEERING CO.,LTD.	002150	Services	yes
SAMYANG TONGSANG CO.,LTD.	002170	Other Manufacture	yes
KOREA EXPORT PACKAGING IND. CO.,LTD.	002200	Paper & Wood	yes
DONG SUNG PHARM. CO.,LTD	002210	Medical Supplies	yes
HANIL IRON & STEEL CO.,LTD.	002220	Iron & Metal Products	yes
ALVOGEN KOREA CO LTD	002250	Medical Supplies	no
HANKUK PAPER MFG. CO.,LTD.	002300	Paper & Wood	yes
ASIA PAPER MFG. CO.,LTD.	002310	Paper & Wood	yes
SH ENERGY CHEMICAL CO.,LTD.	002360	Chemicals	no
BUMYANG CONSTRUCTION CO.,LTD.	002410	Construction	no
THE CENTURY CO.,LTD.	002420	Services	yes
HWASUNG INDUSTRIAL CO.,LTD	002460	Construction	yes
CHOHEUNG CORPORATION	002600	Food & Beverages	yes
SHINIL ELECTRONICS CO.,LTD.	002700	Distribution	yes
TCC STEEL CORP.	002710	Iron & Metal Products	yes
KUKJE PHARMA CO.,LTD.	002720	Medical Supplies	yes
BOLAK CO.,LTD.	002760	Chemicals	yes
SUNCHANG CORPORATION	002820	Paper & Wood	yes
MIWON COMMERCIAL CO.,LTD.	002840	Chemicals	yes
SHINPOONG PAPER MFG. CO.,LTD.	002870	Paper & Wood	Yes
DAYOU AUTOMOTIVE SEAT-TECHNOLOGY CO.,LTD	002880	Transport Equipment	yes
TONGYANG MOOLSAN CO.,LTD.	002900	Machinery	yes
YOOSUNG ENTERPRISE CO.,LTD.	002920	Transport Equipment	yes
HAEIN CORPORATION	003010	Distribution	yes
APROGEN PHARMACEUTICALS,INC.	003060	Medical Supplies	no
SUNGBO CHEMICALS CO.,LTD.	003080	Chemicals	yes
HEUNG-A SHIPPING CO.,LTD.	003280	Transport & Storage	no
HANKOOK COSMETICS MANUFACTURING CO.,LTD.	003350	Chemicals	Yes
IHQ,INC.	003560	Services	no
NEXT SCIENCE CO.,LTD.	003580	Mining	yes
MICHANG OIL IND. CO.,LTD.	003650	Chemicals	yes
HANSUNG ENTERPRISE CO.,LTD.	003680	Food & Beverages	yes

SAMYOUNG CHEMICAL CO.,LTD.	003720	Chemicals	Yes
CHIN YANG INDUSTRY CO.,LTD.	003780	Chemicals	yes
DAEHAN SYNTHETIC FIBER CO.,LTD.	003830	Chemicals	no
SAJO DAERIM CORP.	003960	Food & Beverages	yes
SG CORPORATION	004060	Distribution	no
SHINHUNG CO.,LTD.	004080	Distribution	Yes
KOREA PETROLEUM IND. CO.,LTD.	004090	Non-metallic Mineral Products	yes
TAEYANG METAL IND. CO.,LTD.	004100	Transport Equipment	yes
DONGBANG TRANSPORT LOGISTICS CO.,LTD.	004140	Transport & Storage	yes
KOREA DEVELOPMENT CORPORATION	004200	Construction	no
NPC CO.,LTD.	004250	Chemicals	yes
NAMSUNG CORPORATION	004270	Distribution	Yes
SAMICK THK CO.,LTD	004380	Machinery	yes
SEOUL FOOD INDUSTRIAL CO.,LTD.	004410	Food & Beverages	Yes
SAMHWA CROWN & CLOSURE CO.,LTD.	004450	Machinery	Yes
KLEAN NARA CO.,LTD.	004540	Paper & Wood	yes
HYUNDAI BNG STEEL CO.,LTD.	004560	Iron & Metal Products	yes
WOORIDUL PHARMACEUTICAL LIMITED	004720	Medical Supplies	no
SUNNY ELECTRONICS CORP.	004770	Electrical & Electronic Equipment	yes
DUKSUNG CO.,LTD.	004830	Chemicals	yes
T WAY HOLDINGS INCORPORATION.	004870	Electrical & Electronic Equipment	yes
DONGIL INDUSTRIES CO.,LTD.	004890	Iron & Metal Products	yes
CHOKWANG PAINT LIMITED	004910	Chemicals	yes
CITECH CO.,LTD.	004920	Other Manufacture	no
HANSHIN ENGINEERING & CONSTRUCTION CO.,LTD.	004960	Construction	yes
SUNGSHIN CEMENT CO.,LTD.	004980	Non-metallic Mineral Products	yes
HUSTEEL CO.,LTD.	005010	Iron & Metal Products	yes
PUSAN CAST IRON CO.,LTD.	005030	Transport Equipment	no
COSMO ADVANCED MATERIALS & TECHNOLOGY CO.,LTD	005070	Chemicals	NO
HANCHANG CORPORATION	005110	Distribution	no
DONGSUNG CHEMICAL CO.,LTD.	005190	Chemicals	no
KUKDONG CORPORATION	005320	Distribution	yes
MONAMI CO.,LTD.	005360	Distribution	Yes
COSMO CHEMICAL CO.,LTD.	005420	Chemicals	NO
KOREA AIRPORT SERVICE CO.,LTD.	005430	Transport & Storage	no
SHINHAN ENG & CONST. CO.,LTD.	005450	Construction	no

SAMYOUNG ELECTRONICS CO.,LTD.	005680	Electrical & Electronic Equipment	No
PHARMICELL CO.,LTD.	005690	Medical Supplies	no
DAELIM B & CO CO.,LTD.	005750	Non-metallic Mineral Products	yes
WONLIM CORPORATION	005820	Textile & Wearing Apparel	Yes
HUNEED TECHNOLOGIES CO.,LTD.	005870	Electrical & Electronic Equipment	yes
DONGBU CORPORATION	005960	Construction	yes
SUNGJEE CONSTRUCTION CO LTD	005980	Construction	no
OYANG CORPORATION	006090	Food & Beverages	yes
SAM-A ALUMINIUM CO.,LTD.	006110	Iron & Metal Products	no
DAEWON CABLE CO.,LTD.	006340	Electrical & Electronic Equipment	Yes
INSCOBEE, INC.	006490	Communication	no
DAELIM TRADING CO.,LTD.	006570	Machinery	no
SAMSUNG CLIMATE CONTROL CO.,LTD.	006660	Transport Equipment	yes
TAEKYUNG CHEMICAL CO.,LTD.	006890	Chemicals	no
WOOSUNG FEED CO.,LTD.	006980	Food & Beverages	yes
ILSHIN STONE CO.,LTD.	007110	Distribution	no
MIRAE ING CO.,LTD.	007120	Services	no
KOREA STEEL SHARPES CO.,LTD.	007280	Iron & Metal Products	no
APROGEN KIC CO.,LTD.	007460	Machinery	Yes
DONGBANG AGRO CORPORATION	007590	Chemicals	yes
SEONDO ELECTRIC CO.,LTD.	007610	Electrical & Electronic Equipment	yes
POLUS BIO PHARM CO.,LTD.	007630	Electrical & Electronic Equipment	no
F&F CO.,LTD.	007700	Textile & Wearing Apparel	yes
PAN PACIFIC CO.,LTD.	007980	Textile & Wearing Apparel	yes
SAJODONGAONE CO.,LTD.	008040	Food & Beverages	yes
EAGON INDUSTRIAL CO.,LTD	008250	Paper & Wood	yes
NI STEEL CO.,LTD.	008260	Iron & Metal Products	yes
NAMSUN ALUMINIUM CO.,LTD.	008350	Iron & Metal Products	no
MOONBAE STEEL CO.,LTD.	008420	Iron & Metal Products	yes
ILJEONG INDUSTRIAL CO.,LTD.	008500	Textile & Wearing Apparel	yes
THE WILLBES & CO.,LTD.	008600	Distribution	no
ANAM ELECTRONICS CO.,LTD.	008700	Electrical & Electronic Equipment	no
DONGYANG STEEL PIPE CO.,LTD.	008970	Iron & Metal Products	no
KCTC CO.,LTD.	009070	Transport & Storage	yes
KYUNG IN ELECTRONICS CO.,LTD.	009140	Electrical & Electronic Equipment	yes
SIMPAC CO.,LTD.	009160	Machinery	yes
HANSOL LOGISTICS CO., LTD.	009180	Transport & Storage	no

DAIYANG METAL CO.,LTD.	009190	Iron & Metal Products	yes
MOORIM PAPER CO.,LTD.	009200	Paper & Wood	yes
SHINWON CORPORATION	009270	Textile & Wearing Apparel	yes
CHARM ENGINEERING CO.,LTD.	009310	Machinery	Yes
DAEWOO ELECTRONIC COMPONENTS CO.,LTD	009320	Transport Equipment	yes
HANCHANG PAPER CO.,LTD.	009460	Paper & Wood	yes
SAMWHA ELECTRIC CO.,LTD.	009470	Electrical & Electronic Equipment	yes
SAMJUNG PULP CO.,LTD.	009770	Paper & Wood	Yes
NK MULSAN CO.,LTD.	009810	Distribution	no
KOREA REFRACTORIES CO.,LTD.	010040	Non-metallic Mineral Products	yes
KOREA FLANGE CO.,LTD.	010100	Transport Equipment	yes
HANSOL PNS CO.,LTD.	010420	Distribution	no
JICO CO.,LTD.	010580	Transport Equipment	Yes
WELLBIOTEC CO.,LTD.	010600	Distribution	no
CHINYANG POLYURETHANE CO.,LTD.	010640	Chemicals	yes
HWACHEON MACHINERY CO.,LTD.	010660	Machinery	yes
FIRSTEC CO.,LTD.	010820	Machinery	Yes
SAMHO DEVELOPMENT CO.,LTD.	010960	Construction	yes
GENEONE LIFE SCIENCE INC.	011000	Medical Supplies	no
ENEX CO.,LTD.	011090	Other Manufacture	yes
CJ SEAFOOD CORPORATION	011150	Food & Beverages	no
SAMWHA ELECTRONICS CO.,LTD.	011230	Electrical & Electronic Equipment	yes
TAILIM PKG CO.,LTD.	011280	Paper & Wood	yes
SEONG AN CO.,LTD.	011300	Textile & Wearing Apparel	yes
BUSAN INDUSTRIAL CO.,LTD.	011390	Non-metallic Mineral Products	no
GALAXIA SM INC.	011420	Services	no
HAN-NONG CHEMICALS INC.	011500	Chemicals	yes
DB INC.	012030	Services	yes
YOUNGWIRE CO.,LTD.	012160	Iron & Metal Products	no
KIWI MEDIA GROUP CO.,LTD.	012170	Distribution	no
KEYANG ELECTRIC MACHINERY CO.,LTD.	012200	Machinery	yes
YEONGHWA METAL CO.,LTD.	012280	Transport Equipment	yes
CHUNGHO COMNET CO.,LTD.	012600	Machinery	no
KYUNG-IN SYNTHETIC CORPORATION	012610	Chemicals	yes
MONALISA CO.,LTD.	012690	Paper & Wood	no
DAECHANG CO.,LTD.	012800	Iron & Metal Products	yes
SEWOO GLOBAL CO.,LTD.	013000	Distribution	yes

ILSUNG CONSTRUCTION CO.,LTD.	013360	Construction	no
HWASEUNG R & A CO.,LTD.	013520	Transport Equipment	yes
KYE-RYONG CONSTRUCTION INDUSTRIAL CO.,LTD.	013580	Construction	yes
CAMUS ENGINEERING & CONSTRUCTION INC.	013700	Construction	no
GMB KOREA CORP.	013870	Transport Equipment	No
HAN EXPRESS CO.,LTD.	014130	Transport & Storage	yes
DAEYOUNG PACKAGING CO.,LTD.	014160	Paper & Wood	yes
YOUNGBO CHEMICAL CO.,LTD.	014440	Chemicals	no
KEUKDONG OIL & CHEMICALS CO.,LTD.	014530	Chemicals	yes
TAEKYUNG BK CO.,LTD.	014580	Non-metallic Mineral Products	yes
SAJO SEA FOOD CO.,LTD.	014710	Food & Beverages	yes
SUNGMOON ELECTRONICS CO.,LTD.	014910	Electrical & Electronic Equipment	yes
IN THE F CO.,LTD.	014990	Textile & Wearing Apparel	yes
E-STARCO CO.,LTD.	015020	Services	yes
DAECHANG FORGING CO.,LTD.	015230	Transport Equipment	yes
AUTOMOBILE & PCB INC.	015260	Electrical & Electronic Equipment	yes
YESCO HOLDINGS CO.,LTD.	015360	Electricity & Gas	yes
THELMA THERAPEUTICS	015540	Services	no
CURO CO,.LTD.	015590	Machinery	no
TAEKYUNG INDUSTRIAL CO.,LTD.	015890	Chemicals	yes
DAEHYUN CO.,LTD.	016090	Textile & Wearing Apparel	yes
SHINDAEYANG PAPER CO.,LTD.	016590	Paper & Wood	yes
DAESUNG HOLDINGS CO.,LTD.	016710	Services	yes
KWANG MYUNG ELECTRIC CO.,LTD.	017040	Electrical & Electronic Equipment	no
MYUNGMOON PHARM. CO.,LTD.	017180	Medical Supplies	yes
WOOSHIN SYS. CO.,LTD.	017370	Machinery	yes
SOOSAN HEAVY INDUSTRIES CO.,LTD.	017550	Machinery	yes
AUK CO.,LTD.	017900	Electrical & Electronic Equipment	no
CHOIL ALUMINIUM CO.,LTD.	018470	Iron & Metal Products	yes
THN CORPORATION	019180	Electrical & Electronic Equipment	YES
SEAH SPECIAL STEEL CO.,LTD.	019440	Iron & Metal Products	yes
HITRON SYSTEMS INC.	019490	Electrical & Electronic Equipment	no
KIDARISTUDIO INC.	020120	Services	no
SEOWON CO.,LTD.	021050	Iron & Metal Products	yes
SAMWON STEEL CO.,LTD.	023000	Transport Equipment	yes
MH ETANOL CO.,LTD.	023150	Food & Beverages	yes

KOREA ENGINEERING CONSULTANTS CORP.	023350	Services	no
DONGNAM CHEMICAL CO.,LTD.	023450	Chemicals	no
INZI CONTROLS CO.,LTD.	023800	Transport Equipment	yes
INFAC CORPORATION	023810	Transport Equipment	yes
SC ENGINEERING CO.,LTD.	023960	Construction	no
WISCOM CO.,LTD.	024070	Chemicals	yes
DCM CORP.	024090	Iron & Metal Products	yes
DAEWON CHEMICAL CO.,LTD.	024890	Chemicals	Yes
DUCK YANG INDUSTRY CO.,LTD.	024900	Transport Equipment	yes
MIRAE CORPORATION	025560	Medical & Precision Machines	no
HANSOL HOME DECO CO.,LTD.	025750	Paper & Wood	no
LEEKU INDUSTRIAL CO.,LTD.	025820	Iron & Metal Products	yes
HANKOOK STEEL CO.,LTD.	025890	Machinery	yes
DIGITAL POWER COMMUNICATIONS CO.,LTD.	026890	Electrical & Electronic Equipment	no
BOOKOOK STEEL CO.,LTD.	026940	Iron & Metal Products	yes
MANIKER CO.,LTD.	027740	Food & Beverages	YES
SEHA CORP	027970	Paper & Wood	no
DONGA GEOLOGICAL ENGINEERING COMPANY LTD.	028100	Construction	yes
DONGWON FISHERIES CO.,LTD.	030720	Fishing	yes
COMTEC SYSTEMS CO.,LTD.	031820	Services	yes
HWANGKUM STEEL & TECHNOLOGY CO.,LTD.	032560	Iron & Metal Products	yes
FEELUX CO.,LTD.	033180	Electrical & Electronic Equipment	no
KOREA UNITED PHARM INC.	033270	Medical Supplies	yes
SHINSEGAE ENGINEERING & CONSTRUCTION INC.	034300	Construction	No
INCHON CITY GAS CORPORATION	034590	Electricity & Gas	yes
GIIR INC.	035000	Services	no
BAIKSAN CO., LTD.	035150	Chemicals	yes
SHINSEGEA I & C CO.,LTD.	035510	Services	no
YG PLUS INC.	037270	Services	yes
SANGSIN BRAKE CO.,LTD	041650	Transport Equipment	yes
JOOYON TECH CO.,LTD.	044380	Electrical & Electronic Equipment	yes
KSS LINE LTD.	044450	Transport & Storage	yes
UNION MATERIALS CORP.	047400	Non-metallic Mineral Products	no
WOOJIN PLAIMM CO.,LTD.	049800	Machinery	YES
CHIN YANG CHEMICAL CORP.	051630	Chemicals	yes
HANMI GLOBAL CO., LTD.	053690	Services	no

POSCO COATED & COLOR STEEL CO LTD	058430	Iron & Metal Products	no
DEVELOPMENT ADVANCE SOLUTION CO., LTD.	058730	Machinery	yes
KTCS CORPORATION	058850	Services	NO
KTIS CORPORATION	058860	Services	no
CKD BIO CORP.	063160	Medical Supplies	no
SAVEZONE I&C CORP.	067830	Distribution	no
SAMSUNG PUBLISHING CO.,LTD.	068290	Services	yes
DAEHO AL CO.,LTD.	069460	Iron & Metal Products	no
HANSAEMK CO.,LTD.	069640	Distribution	yes
DSR WIRE CORP.	069730	Iron & Metal Products	yes
HI STEEL CO.,LTD.	071090	Iron & Metal Products	yes
KOAS CO.,LTD.	071950	Other Manufacture	yes
ENPLUS CO.,LTD.	074610	Machinery	no
SAERON AUTOMOTIVE CORP.	075180	Transport Equipment	no
UNIQUEST CORPORATION	077500	Distribution	yes
TELCOWARE CO.,LTD.	078000	Services	yes
SAJOHAEPYO CORPORATION	079660	Food & Beverages	yes
ILJIN DIAMOND CO.,LTD.	081000	Chemicals	no
GREEN CHEMICAL CO.,LTD.	083420	Chemicals	yes
DAEHAN STEEL CO.,LTD.	084010	Iron & Metal Products	yes
DONGYANG EXPRESS CORP.	084670	Transport & Storage	yes
E-WORLD CO.,LTD.	084680	Services	no
JINDO CO.,LTD.	088790	Distribution	yes
PYUNGHWA INDUSTRIAL CO.,LTD.	090080	Transport Equipment	yes
NOROO PAINT & COATINGS CO.,LTD.	090350	Chemicals	yes
METALABS INC.	090370	Textile & Wearing Apparel	no
SEWON CELLONTECH CO.,LTD.	091090	Machinery	no
DAE-IL CORPORATION	092200	Transport Equipment	yes
E INVESTMENT & DEVELOPMENT CO.,LTD.	093230	Distribution	no
HYOUSUNG ITX CO.,LTD.	094280	Services	yes
VISANG EDUCATION INC.	100220	Services	yes
S&T CORPORATION	100840	Machinery	no
BTONE CO., LTD.	101140	Distribution	no
DONGSUNG CORPORATION CO,.LTD.	102260	Services	Yes
SBW INC.	102280	Textile & Wearing Apparel	no
WOONGJIN ENERGY CO LTD	103130	Electrical & Electronic Equipment	no
WOOJIN INC.	105840	Medical & Precision Machines	Yes

CONBUZZ CO.,LTD.	109070	Paper & Wood	no
DAESUNG ENERGY CO.,LTD.	117580	Electricity & Gas	yes
WOORIDUL HUEBRAIN LIMITED	118000	Distribution	no
KC COTTRELL CO.,LTD.	119650	Machinery	no
CHOSUN WELDING POHANG CO.,LTD.	120030	Machinery	yes
HANKOOK COSMETICS CO.,LTD.	123690	Distribution	yes
SJM CO.,LTD.	123700	Transport Equipment	no
DAESUNG INDUSTRIAL CO.,LTD.	128820	Distribution	YES
INTERGIS CO.,LTD.	129260	Transport & Storage	yes
KOREA ELECTRIC POWER INDUSTRIAL DEVELOPMENT CO.,LTD.	130660	Services	no
MIWON CHEMICALS CO.,LTD.	134380	Chemicals	Yes
SIDIZ, INC.	134790	Other Manufacture	no
SUNJIN CO.,LTD.	136490	Food & Beverages	no
KOLON PLASTICS INC.	138490	Chemicals	no
A SELF-ADMINISTERED REAL ESTATE INVESTMENT TRUST INC.	140910	Services	Yes
KOLON MATERIALS INC.	144620	Chemicals	no
K-TOP REITS CO.,LTD.	145270	Services	no
HI GOLD OCEAN NO.3 SHIP INVESTMENT COMPANY	153360	Services	no
BADARO NO.19 SHIP INVESTMENT COMPANY	155900	Services	no
HI GOLD OCEAN KMARIN NO.8 SHIP INVESTMENT COMPANY	159650	Services	no
DRB INDUSTRIAL CO.,LTD.	163560	Chemicals	no

Appendix 2: Sample companies by sector including the manufacturing supersector.

Supersector	Sector	Number of firms	Ratio of firms in sector	Family firms	Non-family firms	Percentage of family firms
Fishing		1	0.30%	1	0	100.00%
Mining		1	0.30%	1	0	100.00%
Manufacturing industry	Food & Beverages	16	4.78%	14	2	87.50%
	Textile & Wearing Apparel	15	4.48%	13	2	86.67%
	Paper & Wood	18	5.37%	13	5	72.22%
	Chemicals	40	11.94%	28	12	70.00%
	Medical Supplies	13	3.88%	5	8	38.46%
	Non-metallic Mineral Products	9	2.69%	7	2	77.78%
	Iron & Metal Products	27	8.06%	20	7	74.07%
	Machinery	24	7.16%	17	7	70.83%
	Electrical & Electronic Equipment	24	7.16%	14	10	58.33%
	Medical & Precision Machines	2	0.60%	1	1	50.00%
	Transport Equipment	26	7.76%	20	6	76.92%
	Other manufacture	5	1.49%	3	2	60.00%
Distribution		24	7.16%	12	12	50.00%
Electricity & Gas		3	0.90%	3	0	100.00%
Construction		16	4.78%	6	10	37.50%
Transport & Storage		11	3.28%	7	4	63.64%
Communication		1	0.30%	0	1	0.00%
Services		31	9.25%	14	17	45.16%
Total		**307**		**199**	**108**	