Why do family firms congregate in certain industries?

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Abstract:

We propose that family firm involvement across industries is not random. Family firms are expected to be more involved in industries where their particular style of control and management provides advantages over their industry counterparts and/or where there is more potential for family owners to consume private benefits of control. We find that family firms tend to congregate in industries that require greater long-term investment, consistent with the long-term view of family owners, and where there is greater uncertainty and less external monitoring, making it potentially easier for family owners to consume private benefits of control. Family firm involvement is also greater when family firms are more willing to invest in fixed assets, undertake long-term investment, can access higher levels of debt, are riskier and are bigger than their industry counterparts. We then examine whether family firms perform better than their industry peers under these industry conditions. We find that family firms perform better than their peers in industries with higher tax rates, smaller companies and more government involvement. We also find some evidence of over-investment with family firms performing better over time when they reduce their fixed assets and debt relative to their industry peers. Overall, we find no evidence that family firm performance is negatively affected by family firm involvement in industries where they can potentially consume more private benefits of control.

Keywords: Family firms, industry, ownership, private benefits.

INTRODUCTION

Why are family firms more prevalent in some industries and not others? In this study we propose that family firm involvement across industries is not random and is related to specific industry conditions. A number of studies have highlighted differences between family firms and other companies. For example, James (1999) shows that family owners generally take a longer-term view of the success of the company. Faccio and Parsley (2009) find that family firms derive more wealth through political connections than other firms. Numerous studies also indicate that consumption of private benefits of control is higher in family firms (Anderson and Reeb, 2003; Anderson et al., 2003; Dahya et al., 2008). Therefore, we expect family firms to be more involved in industries where their particular style of control and management provides advantages over their industry counterparts and/or where there is more potential for family owners to consume private benefits of control.

Specifically, we propose that family firm involvement across industries is related to both industry characteristics and relative firm characteristics. For example, we expect to find more family firms in industries that require greater long-term investment, as the longer-term horizon of family owners is more likely to match with the long-term investment needed in these industries. We also expect to find more family firms in industries where there is more potential to derive wealth through political connections and where there is more potential for family owners to consume private benefits of control. In addition, we expect to find more family firms in industries where they have relative advantages over their industry counterparts. For example, we expect to find greater family involvement in industries where family firms are more willing to undertake long-term investment, can derive greater wealth through political connections and can consume more private benefits of control than their industry peers.

The only other study to examine family ownership across industries is concurrent work by Villalonga and Amit (2009). They examine the involvement of a sample of family firms in US industry sectors in 2000 and find that family involvement is related to firm size, control potential, amenity potential, profit horizon and private benefits of control. We make significant advances to their study by examining the entire population of firms listed on the Taiwan Stock Exchange, rather than a sample of 20 percent of listed companies in the US. We examine family involvement across the period 1997 to 2008 rather than in a specific year. We examine family firms in a non-US market with high family ownership and relatively lower investor protection, which is more representative of other countries around the world. Finally, we examine multiple measures of family firm involvement and introduce a number of new variables that are specifically related to the characteristics of family control and management.

This study relates family firm involvement across industries to four groups of factors. The first two factors measure areas where the family firm style of control and management can potentially create advantages over their industry counterparts – long-term investment horizon (e.g. long-term investment and investment in fixed assets) and wealth creation through political and business connections (e.g. effective tax rate and access to debt financing). The third factor includes variables that measure the potential for consumption of private benefits of control (e.g. firm risk, cash holdings, excess control rights and board independence). The fourth factor examines industry competition (e.g firm size and Herfindahl index). Family firm involvement is measured through the proportion of industry sales from family firms, the proportion of industry assets held by family firms and the proportion of family firms in each industry. Greater family firm involvement represents family firm preference for industries as well as success and survival in these industries over time. In

addition, we relate family firm involvement to differences between family firms and other firms in the same industry. This examines whether it is industry factors per se or relative differences between family firms and other companies in the same industry that are attracting family firms to certain industries.

We find that family firms are more involved in industries that require greater long-term investment, consistent with the long-term view of the family group. Family firms are more involved in industries where there is greater uncertainty (higher risk) and less external monitoring (lower board independence), making it potentially easier for family owners to consume private benefits of control. Family firms are also less involved in industries that have more government involvement, due to the direct involvement of government-owned entities.

In addition, family involvement in industries is higher when family firms have more fixed assets and long-term investment than their industry peers, consistent with the long-term view of the family group; when family firms have more debt than their industry peers, due to their ability to source debt through political and business connections; and when family firms are larger than their industry peers, meaning a better competitive position in the industry. Family involvement in industries is also higher when family firms are riskier than their industry counterparts, potentially helping them to consume of private benefits of control.

Time-series results show that family firm involvement increases over time in industries with desirable characteristics (low tax, when family firms are bigger than their industry peers and when average long-term investment decreases but family firms are prepared to have higher long-term investment) and where there is greater potential to consume private benefits of control (higher risk, cash, control wedge and lower board independence). However, there is also some evidence that family firm involvement is

changing over time to industries with lower debt and when family firms have lower debt than their industry peers. This may represent a change in family firm involvement to newer industries, with the enterprises being predominantly funded by equity.

To determine if the involvement by family firms across industries is in the best interests of all shareholders we relate the industry and relative firm characteristics to relative firm performance. The results indicate that family firms are performing better than their industry peers where there is greater government involvement (more need to rely on political connections), when the family group can exercise greater control over the company (smaller size) and when industry conditions are not desirable (high tax) but the family firm has the potential to overcome these conditions (through tax concessions). Over time, family firms are performing better than their peers in industries where tax rates are increasing (family firms may have tax concessions) and when the family does not borrow so much to invest in fixed assets (suggesting some overinvestment).

HYPOTHESIS DEVELOPMENT

Prior Literature

Previous research on family firms has focused on country- and firm-level factors. Family ownership has been found to be the dominant form of corporate ownership around the world and has been related to country-level factors such as legal origin and investor protection (La Porta et al., 1999; Faccio and Lang, 2002; Claessens et al., 2000). At the firm level, studies have examined family firm performance relative to other firms and investigated the specific characteristics of family firms. In early studies, family firms were found to perform worse than non-family firms (Holderness and Sheehan, 1988; Morck et al., 2000). However, in later

studies, Mishra et al. (2001) and Anderson and Reeb (2003) found that family firms perform better than other firms, especially when there is a founder CEO. Villalonga and Amit (2006) reconcile these conflicting results by showing that different relationships exist between family ownership, family control, family management and company performance. In essence, family ownership, control and management can have both benefits and costs to minority shareholders.

The typical family firm follows the control model of corporate governance, where ownership is concentrated in the hands of the family group and members of the family are active in management and on the board of directors. This broad involvement by the controlling family group provides both benefits and costs to minority shareholders in family firms. Benefits include the long-term view of wealth creation by the family group compared to the relatively short-term view of hired CEOs (James, 1999), the family's superior knowledge and ability to monitor the operations of the company (Demsetz and Lehn, 1985), the presence of the family's reputation capital that can result in a lower cost of debt (Anderson et al., 2003) and the ability of the family group to create more wealth through political connections than other owners (Faccio and Parsley, 2009). Costs include the increased incentive and opportunity of the family group to expropriate wealth from other shareholders. This can occur through excessive compensation, related party transactions, special dividends, risk avoidance and remaining active in management even when they are no longer competent to run the company (Anderson and Reeb, 2003; Anderson et al., 2003; Dahya et al., 2008).

The only other study to examine family ownership across industries is Villalonga and Amit (2009). They examine the involvement of a sample of family firms in US industry sectors in 2000 and find that family involvement is related to firm size, control potential,

amenity potential, profit horizon and private benefits of control. We make significant advances to their study by examining the population of firms listed on the Taiwan Stock Exchange, rather than a sample of 20 percent of listed companies in the US. We examine family involvement across the period 1997 to 2008 rather than in a specific year. We examine family firms in a non-US market with high family ownership and relatively lower investor protection, which is more representative of other countries around the world. Finally, we examine multiple measures of family firm involvement and introduce a number of new variables that are specifically related to the characteristics of family ownership.

Industry Characteristics

We propose that family firm involvement across industries is related to the following four factors:

1. Long-term horizon

James (1999) shows that family owners are more likely to take a long-term view of the success of their firms, compared to the relatively shorter-term view of hired CEOs. We therefore expect that family firms are more willing to invest in fixed assets and undertake long-term investment than other companies as the family group is potentially willing to lower short-term profits in order to maximize profits in the long term. Family firm involvement is expected to be higher in industries that require more investment in fixed assets and more long-term investment. Family involvement is also expected to be higher when family firms are more willing to invest in fixed assets and undertake long-term investment relative to their industry peers.

2. Political and business connections

Family firms tend to conduct more business through relationships than other companies. This includes both political and banking relationships. The benefits of these relationships include preferential government treatment, lower tax rates and greater access to debt financing (Faccio, 2006). Therefore, family firm involvement is expected to be higher in industries that require greater debt financing, lower tax and have more government involvement. Family involvement is also expected to be higher when family firms can access more debt financing and obtain a lower tax rate relative to their industry peers.

3. *Private benefits of control*

A number of studies document an increased incentive and opportunity of family owners to expropriate wealth from other shareholders. This can occur through excessive compensation, related party transactions, special dividends, risk avoidance and remaining active in management even when they are no longer competent to run the company (Anderson and Reeb, 2003; Anderson et al., 2003). Greater opportunity exists for consumption of private benefits of control when there is more uncertainty/information asymmetry (higher firm risk), more cash holdings, excess control rights and when there is less external monitoring (lower board independence). Family firm involvement is expected to be higher in industries where there is greater opportunity to consume private benefits of control. Family involvement is also expected to be higher when family firms have more opportunity to consume private benefits relative to their industry peers.

4. Firm size and competition

Family involvement is expected to be higher in industries where average firm size is smaller and where there is less competition. Smaller firms are easier to control as the same fraction of ownership requires a lower fraction of owner's total wealth (Demsetz and Lehn, 1985). Less competition means that family firms can derive greater profits. Family involvement is also expected to be higher when family firms are bigger than their industry peers. This means the family firms have a better competitive position in the industry.

We do not directly address the amenity potential of Demsetz and Lehn (1985) as there are no sporting or mass media companies in our sample. Control potential is discussed in the following section.

Implications for Performance

Thus far we have examined the preferences of family firms to be involved in industries. However, as these choices are made by the family group, they may not always be in the best interests of minority shareholders. In this section we separate the choices of family firms into those that are expected to be wealth-increasing and wealth-decreasing for minority shareholders.

If the family group is willing to invest in fixed assets and undertake long-term investment then this may decrease current profits with the potential to increase future profits. If these investments create value then they will be in the best interests of long-term shareholders. However, it is also possible that the family could overinvest in fixed assets, with too much capacity lying idle into the future. If the family group can obtain greater access to debt financing and a lower effective tax rate then this should be beneficial to

minority shareholders. Similarly, if the family group can leverage their political relationships to gain concessions then we would expect family firms to perform better than other companies.

However, if the family group consumes private benefits of control then the return to minority shareholder will be lower. When firms are riskier it can be wealth-increasing to have a controlling shareholder to conduct monitoring on behalf of shareholders. This is the control potential argument of Demsetz and Lehn (1985). However, higher risk and information asymmetry can also help the family group conceal their consumption of private benefits of control. Similarly, performance is expected to be lower when the family group takes advantage of greater cash holdings, their excess control rights and lower board independence to consume private benefits. If family firms operate in less competitive industries or are relatively bigger than other companies, then it is expected they will derive greater profits. If these profits are not consumed by the family group then performance is expected to be higher.

In the end, this is an empirical question as the family owners have both the potential to create extra wealth for other shareholders as well as to consume private benefits of control at the expense of other shareholders. Our analysis relates both the industry characteristics and relative firm characteristics to the performance of family firms relative to their industry peers. Therefore, we attempt to identify which characteristics are contributing to positive and negative performance of family firms relative to their industry counterparts.

DATA AND VARIABLES

We use data from all listed companies on the Taiwan Stock Exchange from 1997 to 2008. This ensures we correctly measure the proportion of family involvement in each industry and

also have the advantage of being able to examine changes in involvement over time. Industry classifications are obtained from the Taiwan Stock Exchange, which classifies companies into 27 domestic industry groups. Further division of companies is not possible as segment reporting does not occur in Taiwan. Firm financial, ownership and board of directors data is obtained from the Taiwan Economic Journal database. All variables are defined in Table 1.

A common definition for family firms used in prior literature is where the founder or a member of his or her family by either blood or marriage is an officer, director or blockholder in the company (Anderson and Reeb, 2003; Villalonga and Amit, 2006). However, by using data from Taiwan we are able to use a more restrictive definition of family firms provided by the Taiwan Economic Journal database. This requires at least two family members to be involved in the board of directors or in senior management.

Table 2 shows average family involvement by industry over the sample period. Family firm involvement in industries is measured through the proportion of industry sales from family firms, the proportion of industry assets held by family firms and the proportion of family firms in each industry. We use the proportion of industry sales from family firms as our primary measure as it is the clearest measure of market share and has the potential to vary over time with industry conditions. The table shows that family firms completely dominate the paper and pulp industry, while family firm involvement is lowest in the information service industry. As there is some variation in three definitions of family involvement, the analysis in the following sections is conducted on all three measures.

Table 3 provides average industry characteristics. The table is ranked from highest family firm involvement at the top to lowest at the bottom. A t-test for the difference in means between the top half of the table (greater family firm involvement in industries) and bottom half of the table (lower family firm involvement in industries) is provided at the

bottom. The results of the means tests indicate that family firm involvement is higher in industries with higher long-term investment, more debt and higher risk, but lower excess control rights, lower board independence and less competition. These results are consistent with expectations, except for the negative relationship between family firm involvement and excess control rights. This indicates that family firms have higher control rights relative to cashflow rights in industries where there are fewer family firms. This suggests that it is more likely a choice by family owners to strengthen their control of their firms in these industries, rather than an indication of industries where it may be easier to consume private benefits of control. Compared to US studies, the tax rates and levels of board independence appear low, but this is due to the institutional features of Taiwan.

Table 4 provides average ratios of firm characteristics. Relative firm characteristics are the average of family firms divided by the average of non-family firms in each industry. The paper and pulp industry is not included in the table because it is comprised solely of family firms. Again the table is ranked from highest family firm involvement at the top to lowest at the bottom and a t-test for the difference in means is at the bottom. The results of the means tests show that family firm involvement in industries is higher when family firms have lower board independence and are bigger than their industry peers. These results are consistent with expectations. It seems that family firms prefer to be in industries where they have a dominant position and where they can maintain weaker board monitoring practices than other companies (potentially allowing them to consume private benefits of control).

ANALYSIS AND RESULTS

Our empirical analysis is divided into three sections. First we examine the relationship between family firm involvement and industry characteristics. Second, we relate family firm

involvement to both industry and relative firm characteristics. Third, we relate the relative performance of family firms to both industry and relative firm characteristics.

Family Involvement and Industry Characteristics

In Table 5 we relate family firm involvement to industry characteristics. The results are presented in two models due to the high correlations between fixed assets and debt (0.7), and long-term investment and debt (0.8). All models use OLS with fixed period effects and robust standard errors. Across the first two regressions we find that family firm involvement is higher in industries that have more fixed assets and long-term investment, less government involvement, greater risk, lower board independence and less competition. The results for size, debt, tax, cash and control wedge are insignificant.

These results confirm that family firms are more involved in industries that have characteristics desired by family firms. Family firms are more involved in industries that have more fixed assets and long-term investment, consistent with the long-term view of the family group. Family firms are more involved in industries where there is greater uncertainty (higher risk) and less external monitoring (lower board independence), where it is potentially easier to consume private benefits of control. Family firms are also more involved in less competitive industries, where profits are expected to be higher, and are less involved in industries that have more government involvement, due to the direct involvement of government-owned entities.

As the industry characteristics may be representing the characteristics of family firms in the industries and not the true characteristics of the industry itself, the third and fourth regressions use only the data for non-family firms in each industry. The sample size is

reduced as there is one industry without non-family firms. If the results are consistent with the first two regressions then we can be confident that the characteristics are industry-wide. Differences in the results point to differences between family firms and non-family firms in the same industries. We find that most of the results are consistent except some variables lose their significance. Negative relationships are still found between family firm involvement, board independence and competition. The relationships between family firm involvement and fixed assets, long-term investment, government involvement and risk have the same sign but are not always significant.

We also find negative relationships between family firm involvement and debt, tax and size, and a positive relationship between family involvement and cash holdings that we did not find in the first two regressions. While these results are consistent with our predictions, they may be due to the specific characteristics of non-family firms in these industries rather than the characteristics of the industry itself. To examine this further we introduce relative firm characteristics between family firms and other companies in the same industry in the next section.

Industry and Relative Firm Characteristics

To examine whether it is industry factors per se or relative differences between family firms and other companies in the same industry that are attracting family firms to industries we introduce relative firm characteristics into the models. Relative firm characteristics are the average of family firms divided by the average of non-family firms in each industry.

Table 6 presents these results. The first two regressions show the results for our main measure of family firm involvement – proportion of industry sales from family firms. The

results for the industry characteristics are similar to those from the previous section. We find that family firm involvement is higher in industries that have more long-term investment, less government involvement, greater risk and lower board independence. The results for fixed assets and competition are no longer significant. The results for the relative firm characteristics show that family firm involvement is higher when family firms have more fixed assets and long-term investment, have more debt, are riskier and are bigger than their industry peers.

These results confirm that family firm involvement in industries is related to both industry and relative firm characteristics. Family firm involvement in industries is higher when family firms have more fixed assets and long-term investment than their industry peers, consistent with the long-term view of the family group; when family firms have more debt than their industry peers, due to their ability to source debt through political and business connections; and when family firms are larger than their industry peers, meaning a better competitive position in the industry. Family involvement in industries is also higher when family firms are riskier than their industry peers, potentially helping them to hide consumption of private benefits of control.

To ensure our results are consistent across different measures of family firm involvement, regressions three to six present the results for the proportion of industry assets held by family firms and the proportion of family firms in the industry. The results are generally consistent with those previously discussed. Family firm involvement is higher in industries that have more long-term investment, less government involvement, greater risk and lower board independence. Family firm involvement is higher when family firms have more fixed assets and long-term investment, have more debt, are riskier and are bigger than their industry peers. There is also some evidence that family firms are more involved in

industries with lower tax rates and when family firms have more cash holdings than their industry counterparts. Other results are not consistent across the different models.

As family firm involvement across industries could change over time due to changes in industry characteristics, changes in family firm preferences and changes in opportunities, we examine the time-series aspect of the data by introducing fixed industry effects in regressions seven and eight. These regressions relate changes in family firm involvement (measured by the proportion of industry sales from family firms) in industries to changes in industry and relative firm characteristics during the sample period. We find that family firm involvement in industries is not static and increases when average long-term investment, debt, tax and board independence decreases and when average risk, cash holdings and control wedge increases. Examining the relative differences between family firms and other companies, we find that family firm involvement increases when family firms have more long-term investment, less debt, are riskier and become bigger than their industry peers.

These results suggest that family firm involvement increases over time in industries with desirable characteristics (low tax, when family firms are bigger than their industry peers and when average long-term investment decreases but family firms are prepared to have higher long-term investment) and where there is greater potential to consume private benefits of control (higher risk, cash, control wedge and lower board independence). However, there is also some evidence that family firm involvement is changing over time to industries with lower debt and when family firms have lower debt than their industry peers. This may represent a change in family firm involvement to newer industries, with the enterprises being predominantly funded by equity.

Relative Performance

To identify whether these choices by family firms are in the best interests of all shareholders we relate the industry and relative firm characteristics to relative performance. This allows us to directly test which characteristics are contributing to the performance of family firms relative to their industry counterparts. We use two measures of performance – Tobin's Q and return on assets. The dependent variable is the average performance of family firms divided by the average performance of non-family firms in each industry. All models include fixed period effects and robust standard errors.

Table 7 presents the results. The first two regressions show that family firms perform better than other companies in industries with less debt, higher tax, more government involvement and smaller companies. Family firms also perform better than other firms when they have a higher control wedge. These results suggest that family firms have advantages over other firms in industries where there is greater government involvement (more need to rely on political connections), when the family group can exercise greater control over the company (smaller size and higher control wedge) and when industry conditions are not desirable (high tax and low debt) but the family firm has the potential to overcome these conditions (through tax concessions and access to debt financing).

To examine the time-series aspect of the data, we introduce fixed industry effects with the results presented in regressions three and four. These regressions relate changes in relative performance to changes in the industry and relative firm characteristics. We find that family firm performance increases relative to other firms when average industry tax rates increase and when family firms have less fixed assets, less debt and become smaller relative to their industry peers. These results suggest that family firms have advantages over other

companies when tax rates increase (family firms may have tax concessions) and when the family does not borrow so much to invest in fixed assets (suggesting some overinvestment).

Regressions five to eight present the results for the second measure of performance – return on assets. There are some common results with family firm performance higher in industries with higher tax, more government involvement and smaller companies. In the fixed effects regressions we also find that family firm performance increases relative to other firms when average industry tax rates increase and when family firms have less fixed assets and less debt relative to other companies. There are also some additional results related to the specific use of return on assets as a contemporaneous (rather than forward-looking) performance measure. In regressions five and six we find that family firms perform better than other companies in industries with lower fixed assets and when family firms have less fixed assets and board independence, but greater risk and long-term investment than other companies. In regressions seven and eight we find that family firm performance increases relative to other firms when average industry board independence increases and when family firms have more long-term investment but lower board independence than other companies.

In summary, the results indicate that family firms have advantages over other companies in industries where there is greater government involvement (more need to rely on political connections), when the family group can exercise greater control over the company (smaller size) and when industry conditions are not desirable (high tax) but the family firm has the potential to overcome these conditions (through tax concessions). Over time, family firms are performing better than other firms in industries when tax rates increase (family firms may have tax concessions) and when the family does not borrow so much to invest in fixed assets (suggesting some overinvestment).

CONCLUSION

A number of recent studies show that there are significant differences between family firms and other companies. In particular, family owners generally have a longer investment horizon, create more wealth through political connections and consume more private benefits of control. Therefore, we expect that family firms are more likely to operate in industries where they can benefit from these characteristics. As a result, this study proposes that family firm involvement across industries is not random. We expect family firms to be to be more involved in industries where their particular style of control and management creates advantages over their industry counterparts and/or where there is more potential for family owners to consume private benefits of control.

We find that family firms are more involved in industries that require greater long-term investment, consistent with the long-term view of the family group. Family firms are more involved in industries where there is greater uncertainty (higher risk) and less external monitoring (lower board independence), making it potentially easier for family owners to consume private benefits of control. Family involvement in industries is higher when family firms have more fixed assets and long-term investment than their industry peers, consistent with the long-term view of the family group; when family firms have more debt than their industry peers, due to their ability to source debt through political and business connections; and when family firms are larger than their industry peers, meaning a better competitive position in the industry. Family involvement in industries is also higher when family firms are riskier than their industry counterparts, potentially helping them to hide consumption of private benefits of control.

We also examine the evolution of family involvement in industries over time. The results suggest that family firm involvement increases over time in industries with desirable

characteristics (low tax, when family firms are bigger than their industry peers and when average long-term investment decreases but family firms are prepared to have higher long-term investment) and where there is greater potential to consume private benefits of control (higher risk, cash, control wedge and lower board independence). However, there is also some evidence that family firm involvement is changing over time to industries with lower debt and when family firms have lower debt than their industry counterparts.

To determine if the involvement by family firms across industries is in the best interests of all shareholders we relate the industry and relative firm characteristics to relative firm performance. The results indicate that family firms are performing better than their industry peers where there is greater government involvement (more need to rely on political connections), when the family group can exercise greater control over the company (smaller size) and when industry conditions are not desirable (high tax) but the family firm has the potential to overcome these conditions (through tax concessions). Over time, family firms are performing better than their peers in industries where tax rates are increasing (family firms may have tax concessions) and when the family does not borrow so much to invest in fixed assets (suggesting some overinvestment).

In summary, we find that family firm involvement across industries is not random. The results indicate that family firm success and survival is related to both industry and relative firm characteristics. Overall, we find that family firms' choice of involvement in industries does appear to provide benefits to minority shareholders. Specifically when there is more need to undertake long-term investment and to rely on political and business relationships to create wealth. While we do find some evidence that family firms may be overinvesting in long-term assets, we do not find any evidence that family firm performance

is adversely affected by family owners choosing to operate in industries where they can potentially consume more private benefits of control.

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Table 1 – Variable definitions

Variable	Description
Proportion of family sales	Family firm sales to industry sales
Proportion of family assets	Family firm assets to industry assets
Proportion of family companies	Family firms to industry firms
Fixed assets	Fixed assets to total assets
Long-term investment	Long-term investment reported in TEJ database
Debt	Total debt to total assets
Tax	Tax rate reported in TEJ database
Government	Proportion of government share ownership
Risk	Standard deviation of monthly returns over year
Cash	Cash and equivalent reported in TEJ database
Control wedge	Ratio of control to cash flow rights ownership
Board independence	Independent directors to total directors
Size	Total assets in billions of NT dollars
Competition	Negative of Herfindahl index (sum of squared market shares)
Tobin's Q	Market capitalization and total debt to total assets
Return on assets	EBITDA to total assets

Note: Data is from the Taiwan Economic Journal (TEJ) database.

Table 2 – Family involvement by industry

Industry	No. Firms	Proportion of family sales	Proportion of family assets	Proportion of family firms
Paper & Pulp	7	1.00	1.00	1.00
Glass & Ceramics	5	0.97	0.94	0.81
Rubber	9	0.92	0.83	0.88
Cement	7	0.91	0.94	0.71
Plastics	21	0.89	0.88	0.62
Oil, Gas & Electricity	8	0.86	0.94	0.64
Textiles	46	0.83	0.88	0.61
Automobile	5	0.70	0.75	0.80
Tourism	6	0.67	0.78	0.51
Electrical & Cable	12	0.65	0.58	0.25
Other	36	0.64	0.67	0.41
Electronic Products Distribution	24	0.62	0.60	0.30
Building Material & Construction	37	0.61	0.62	0.56
Electronic Parts	69	0.60	0.60	0.43
Optoelectronic	56	0.56	0.60	0.31
Chemical & Biotechnology	36	0.53	0.53	0.41
Consumer Goods	10	0.53	0.61	0.59
Shipping & Transportation	18	0.51	0.52	0.55
Financial & Insurance	37	0.47	0.47	0.63
Food	20	0.42	0.41	0.64
Semiconductor	57	0.41	0.43	0.40
Electric Machinery	36	0.40	0.38	0.47
Other Electronic	35	0.40	0.46	0.23
Computer & Peripheral	56	0.33	0.32	0.34
Communications & Internet	34	0.30	0.29	0.28
Iron & Steel	22	0.29	0.32	0.41
Information Service	10	0.19	0.28	0.21

Table 3 – Average industry characteristics

Industry	Fixed Assets	L.T. Invest.	Debt	Tax	Gov. Involve.	Risk	Cash	Control Wedge	Board Indep.	Size	Comp.
Paper & Pulp	0.35	2.20	0.47	0.13	0.03	0.81	0.17	1.42	0.00	4.54	-0.26
Glass & Ceramics	0.29	1.77	0.18	0.13	0.01	0.81	0.11	1.05	0.00	2.95	-0.45
Rubber	0.21	2.10	0.34	0.15	0.01	0.79	0.15	1.42	0.02	3.50	-0.19
Cement	0.53	2.83	0.49	0.15	0.01	0.81	0.38	1.45	0.00	7.08	-0.33
Plastics	0.39	1.94	0.30	0.15	0.01	0.80	0.28	1.32	0.03	8.24	-0.21
Oil, Gas & Electricity	0.28	2.83	0.39	0.14	0.08	0.79	0.27	1.51	0.02	8.41	-0.67
Textiles	0.25	1.92	0.25	0.12	0.00	0.80	0.17	1.33	0.02	2.54	-0.09
Automobile	0.34	0.75	0.34	0.26	0.01	0.79	0.21	1.25	0.02	15.48	-0.31
Tourism	0.40	4.57	0.80	0.18	0.00	0.81	0.54	1.30	0.01	0.53	-0.37
Electrical & Cable	0.25	1.80	0.27	0.14	0.01	0.79	0.23	1.11	0.02	3.85	-0.29
Other	0.21	1.41	0.15	0.14	0.00	0.80	0.20	1.31	0.04	3.77	-0.12
Electronic Products Distribution	0.08	0.31	0.04	0.18	0.00	0.76	0.07	1.29	0.13	3.63	-0.14
Building Material & Construction	0.13	0.36	0.05	0.12	0.00	0.80	0.06	1.14	0.02	6.16	-0.07
Electronic Parts	0.13	1.26	0.06	0.18	0.01	0.77	0.17	1.52	0.10	2.33	-0.06
Optoelectronic	0.18	1.69	0.04	0.18	0.00	0.76	0.17	1.58	0.12	5.54	-0.18
Chemical & Biotechnology	0.31	1.80	0.22	0.16	0.03	0.79	0.29	1.28	0.06	1.57	-0.07
Consumer Goods	0.19	1.66	0.31	0.12	0.05	0.80	0.19	1.46	0.00	6.94	-0.27
Shipping & Transportation	0.36	3.38	0.28	0.15	0.05	0.80	0.24	1.30	0.02	8.86	-0.17
Financial & Insurance	0.39	0.39	0.16	0.14	0.07	0.78	0.62	1.42	0.03	69.75	-0.12
Food	0.38	1.62	0.30	0.12	0.01	0.80	0.14	1.26	0.00	3.91	-0.25
Semiconductor	0.33	1.87	0.07	0.17	0.01	0.77	0.31	1.91	0.10	4.28	-0.09
Electric Machinery	0.14	1.10	0.11	0.16	0.00	0.77	0.14	1.35	0.06	1.88	-0.09
Other Electronic	0.20	1.02	0.10	0.18	0.01	0.78	0.16	1.33	0.09	8.60	-0.36
Computer & Peripheral	0.17	0.76	0.06	0.17	0.00	0.79	0.16	1.35	0.09	10.40	-0.08
Communications & Internet	0.21	1.11	0.06	0.18	0.02	0.78	0.20	1.58	0.11	5.28	-0.23
Iron & Steel	0.16	1.56	0.12	0.13	0.02	0.81	0.09	1.30	0.02	6.51	-0.18
Information Service	0.21	0.44	0.07	0.19	0.00	0.77	0.22	1.39	0.09	0.68	-0.18
Average top half – bottom half	*0.05*	*0.50**	*0.17****	*-0.01*	*-0.01*	*0.01****	*0.00*	*-0.13***	*-0.04****	*-4.32*	*-0.10***

Note: See Table 1 for variable definitions. Asterisks denote significance of t-tests as follows: * 10% , ** 5%, *** 1%.

Table 4 – Relative firm characteristics

Industry	Fixed Assets	L.T. Inv	Debt	Tax	Risk	Cash	Control Wedge	Board Indep.	Size
Glass & Ceramics	0.45	2.24	0.80	6.00	0.96	28.31	0.87	0.00	5.43
Rubber	1.49	1.20	2.61	1.05	1.12	9.87	0.93	0.04	0.80
Cement	0.68	0.75	0.74	0.99	1.00	1.35	1.39	0.00	6.50
Plastics	2.07	1.33	1.07	1.17	1.00	1.75	1.37	0.08	5.21
Oil, Gas & Electricity	1.57	1.87	0.93	1.15	1.01	1.50	1.57	0.33	9.60
Textiles	1.03	0.82	0.87	1.00	1.01	0.86	1.17	0.30	4.92
Automobile	9.21	1.59	3.35	1.00	1.36	6.07	1.25	0.00	0.89
Tourism	0.45	0.83	0.91	0.91	0.98	0.69	1.16	0.00	4.43
Electrical & Cable	1.55	1.09	1.19	1.04	1.04	1.04	1.27	0.00	5.63
Other	1.08	0.83	0.91	1.00	1.02	1.59	1.09	0.09	2.92
Electronic Products Distribution	0.95	0.59	0.50	1.38	1.04	0.73	1.05	0.57	3.53
Building Material & Construction	1.35	1.64	1.34	1.00	1.03	1.94	1.03	0.49	1.31
Electronic Parts	1.44	1.32	1.20	0.96	1.02	1.41	1.04	0.37	2.04
Optoelectronic	1.12	1.24	0.96	0.94	1.04	0.67	0.91	0.48	3.84
Chemical & Biotechnology	1.31	0.91	1.07	0.82	1.04	1.10	1.19	0.40	1.68
Consumer Goods	1.28	0.62	0.82	1.03	1.01	2.15	0.89	0.00	1.18
Shipping & Transportation	0.87	0.84	1.00	1.10	1.02	2.60	1.34	0.17	0.92
Financial & Insurance	1.67	2.79	1.67	0.87	1.01	1.21	0.93	1.39	0.54
Food	1.69	1.25	1.02	0.88	1.02	1.12	0.90	0.08	0.43
Semiconductor	0.78	1.21	0.93	0.86	1.01	0.77	1.03	0.33	1.19
Electric Machinery	0.92	1.09	0.92	1.19	0.96	1.35	1.09	1.03	0.71
Other Electronic	1.55	0.73	0.97	0.79	1.05	1.03	1.35	0.13	3.98
Computer & Peripheral	1.09	0.92	0.99	0.79	1.04	1.08	1.06	0.22	0.96
Communications & Internet	1.65	1.99	1.16	1.02	0.94	1.24	1.02	0.62	1.20
Iron & Steel	0.92	0.76	0.84	1.10	1.01	0.89	0.96	0.48	0.70
Information Service	3.12	0.76	1.26	0.81	1.10	7.49	1.44	0.20	1.58
Average top half – bottom half	*0.41*	*0.08*	*0.22*	*0.50*	*0.03*	*2.65*	*0.08*	*-0.25***	*2.64****

Note: See Table 1 for variable definitions. Asterisks denote significance of t-tests as follows: * 10% , ** 5%, *** 1%.

Table 5 – Family firm involvement and industry characteristics

	Proportion of family sales			
	All firm characteristics		Non-family firm characteristics	
	(1)	(2)	(3)	(4)
Intercept	0.0135 (0.95)	-0.1339 (0.56)	0.6932 (0.00)	0.8464 (0.00)
LT Investment	**0.0392** **(0.02)**		0.0207 (0.12)	
Fixed Assets	**0.2248** **(0.10)**		0.1004 (0.17)	
Debt		0.0510 (0.30)		**-0.0767** **(0.03)**
Tax	-0.0050 (0.13)	-0.0051 (0.14)	**-0.0125** **(0.00)**	**-0.0172** **(0.00)**
Government	**-0.0119** **(0.07)**	**-0.0105** **(0.10)**	-0.0095 (0.14)	**-0.0098** **(0.09)**
Risk	**0.6964** **(0.00)**	**0.8763** **(0.00)**	0.1055 (0.60)	0.1853 (0.37)
Cash	-0.1446 (0.22)	0.0093 (0.93)	-0.0012 (0.99)	**0.2417** **(0.01)**
Control Wedge	0.0278 (0.68)	0.0550 (0.42)	-0.0430 (0.53)	-0.0600 (0.33)
Board Independence	**-1.1575** **(0.00)**	**-1.3959** **(0.00)**	**-0.5452** **(0.05)**	**-0.6521** **(0.01)**
Size	0.0001 (0.92)	-0.0001 (0.49)	-0.0001 (0.31)	**-0.0001** **(0.00)**
Competition	**-0.2737** **(0.03)**	**-0.3082** **(0.01)**	**-0.2552** **(0.06)**	**-0.2843** **(0.02)**
Adj-R^2	0.24	0.22	0.20	0.20
n	324	324	312	312

Note: Regressions of family involvement on industry characteristics. See Table 1 for variable definitions.

Table 6 – Family firm involvement, industry and relative firm characteristics

	Proportion of family sales		Proportion of family assets		Proportion of family firms		Fixed Effects	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Intercept	-0.3557 (0.32)	-0.2909 (0.36)	-0.3596 (0.23)	-0.5027 (0.06)	-0.2303 (0.25)	-0.4337 (0.04)	-0.0419 (0.85)	0.0986 (0.66)
Fixed Assets	0.1404 (0.20)		0.1251 (0.25)		**0.4476** **(0.00)**		0.2055 (0.18)	
LT Investment	**0.0332** **(0.06)**		**0.0485** **(0.00)**		**0.0409** **(0.00)**		**-0.0782** **(0.00)**	
Debt		-0.0824 (0.11)		-0.0346 (0.43)		0.0458 (0.22)		**-0.1694** **(0.00)**
Tax	-0.0066 (0.13)	**-0.0134** **(0.00)**	**-0.0069** **(0.09)**	**-0.0077** **(0.05)**	**-0.0055** **(0.10)**	**-0.0070** **(0.05)**	**-0.0080** **(0.02)**	**-0.0084** **(0.01)**
Government	**-0.0132** **(0.04)**	**-0.0130** **(0.05)**	**-0.0111** **(0.02)**	**-0.0099** **(0.05)**	0.0051 (0.11)	0.0051 (0.11)	0.0013 (0.86)	0.0002 (0.98)
Risk	**0.9456** **(0.01)**	**0.9914** **(0.01)**	**0.9256** **(0.00)**	**1.1112** **(0.00)**	**0.8738** **(0.00)**	**1.0430** **(0.00)**	**0.4719** **(0.01)**	**0.4106** **(0.02)**
Cash	-0.0977 (0.36)	**0.2026** **(0.08)**	-0.0679 (0.46)	**0.1740** **(0.08)**	**-0.3320** **(0.00)**	-0.0559 (0.46)	**0.2073** **(0.02)**	**0.2537** **(0.00)**
Control Wedge	0.0159 (0.78)	0.0757 (0.21)	0.0245 (0.64)	0.0686 (0.22)	0.0357 (0.56)	0.0633 (0.23)	**0.2434** **(0.00)**	**0.3485** **(0.00)**
Board Independence	**-0.7437** **(0.00)**	**-0.7661** **(0.00)**	**-0.4531** **(0.05)**	**-0.6578** **(0.00)**	**-1.0149** **(0.00)**	**-1.1958** **(0.00)**	**-0.7126** **(0.00)**	**-0.6248** **(0.00)**
Size	-0.0001 (0.48)	**-0.0001** **(0.06)**	0.0001 (0.86)	-0.0001 (0.18)	0.0001 (0.14)	0.0001 (0.23)	-0.0001 (0.23)	**-0.0001** **(0.06)**

Competition	0.0075 (0.95)	0.1369 (0.26)	0.0438 (0.63)	0.0612 (0.52)	0.0619 (0.22)	-0.0803 (0.16)	0.1738 (0.34)	0.0859 (0.61)
Relative Fixed Assets	**0.0142** **(0.07)**		**0.0207** **(0.00)**		**0.0269** **(0.00)**		0.0011 (0.86)	
Relative LT Investment	**0.0694** **(0.00)**		**0.0398** **(0.03)**		**0.0522** **(0.00)**		**0.0201** **(0.08)**	
Relative Debt		**0.0704** **(0.00)**		**0.0504** **(0.00)**		**0.0985** **(0.00)**		**-0.0312** **(0.01)**
Relative Tax	-0.0072 (0.29)	-0.0024 (0.71)	**-0.0088** **(0.09)**	-0.0072 (0.16)	-0.0066 (0.34)	-0.0015 (0.76)	**-0.0043** **(0.08)**	0.0004 (0.89)
Relative Risk	**0.0690** **(0.09)**	**0.0761** **(0.01)**	**0.0807** **(0.00)**	**0.0918** **(0.00)**	**0.0498** **(0.03)**	**0.0604** **(0.01)**	**0.0401** **(0.02)**	**0.0284** **(0.06)**
Relative Cash	0.0001 (0.25)	**0.0001** **(0.01)**	**0.0001** **(0.03)**	**0.0001** **(0.00)**	0.0001 (0.24)	**0.0001** **(0.02)**	-0.0001 (0.48)	-0.0001 (0.18)
Relative Control Wedge	-0.0084 (0.90)	0.0320 (0.64)	-0.0291 (0.62)	0.0190 (0.76)	**-0.1482** **(0.00)**	**-0.0813** **(0.09)**	0.0397 (0.47)	0.0119 (0.80)
Relative Board Independence	0.0197 (0.25)	0.0151 (0.39)	0.0180 (0.22)	0.0126 (0.38)	**0.0243** **(0.04)**	**0.0200** **(0.08)**	0.0205 (0.14)	0.0151 (0.25)
Relative Size	**0.0367** **(0.00)**	**0.0370** **(0.00)**	**0.0455** **(0.00)**	**0.0462** **(0.00)**	**0.0063** **(0.10)**	0.0059 (0.20)	**0.0134** **(0.01)**	**0.0102** **(0.04)**
Adj-R^2	0.45	0.43	0.56	0.54	0.53	0.46	0.86	0.86
n	312	312	312	312	312	312	312	312

Note: Regressions of family involvement on industry and relative firm characteristics. See Table 1 for variable definitions.

Table 7 – Performance, industry and relative firm characteristics

	Tobin's Q				Return on Assets			
	OLS		Fixed effects		OLS		Fixed effects	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Intercept	2.2855 (0.18)	3.4163 (0.02)	2.3296 (0.18)	2.4805 (0.21)	-34.9635 (0.02)	-15.2147 (0.28)	-41.5672 (0.05)	-39.7516 (0.19)
Fixed Assets	-0.1299 (0.89)		-1.1040 (0.42)		-20.8660 (0.00)		-20.0364 (0.11)	
LT Investment	-0.1367 (0.18)		0.2957 (0.14)		-0.3942 (0.58)		-1.9877 (0.35)	
Debt		**-0.6974** **(0.02)**		0.2585 (0.60)		-2.3793 (0.58)		-3.9455 (0.55)
Tax	**0.1468** **(0.00)**	**0.1094** **(0.00)**	**0.1518** **(0.00)**	**0.1615** **(0.00)**	**1.7446** **(0.00)**	**1.4215** **(0.04)**	**3.2661** **(0.00)**	**2.9935** **(0.01)**
Government	**0.1932** **(0.00)**	**0.1773** **(0.00)**	0.0126 (0.80)	-0.0057 (0.90)	**0.7093** **(0.09)**	**0.8275** **(0.10)**	-0.4076 (0.38)	-0.4442 (0.43)
Risk	-1.0269 (0.52)	-1.3538 (0.36)	-0.9234 (0.52)	-1.1144 (0.43)	15.6201 (0.32)	1.5929 (0.91)	-4.0822 (0.78)	-9.2305 (0.52)
Cash	**-1.1985** **(0.10)**	-0.6356 (0.32)	**1.8379** **(0.03)**	1.3409 (0.12)	-4.7799 (0.37)	-9.1450 (0.31)	0.1116 (0.99)	-6.7413 (0.42)
Control Wedge	-0.3975 (0.29)	-0.2224 (0.56)	0.2949 (0.70)	0.8482 (0.31)	-0.6060 (0.88)	0.1198 (0.98)	0.7916 (0.93)	13.1349 (0.12)
Board Independence	1.2754 (0.48)	1.9863 (0.21)	1.1706 (0.55)	0.9135 (0.64)	-18.4028 (0.11)	-3.6407 (0.76)	**32.0068** **(0.08)**	**29.2603** **(0.09)**

Size	**-0.0001**	**-0.0001**	-0.0001	-0.0001	**-0.0001**	**-0.0001**	-0.0001	-0.0001
	(0.03)	**(0.01)**	(0.38)	(0.22)	**(0.00)**	**(0.00)**	(0.23)	(0.06)
Competition	-0.2322	-0.2180	0.4960	1.0540	1.6899	2.4005	-4.3167	-5.2770
	(0.65)	(0.66)	(0.55)	(0.17)	(0.66)	(0.58)	(0.58)	(0.51)
Relative Fixed Assets	-0.0807		**-0.2325**		**-1.4995**		**-2.6373**	
	(0.23)		**(0.00)**		**(0.03)**		**(0.00)**	
Relative LT Investment	-0.0537		-0.1081		**1.7734**		**4.2243**	
	(0.60)		(0.34)		**(0.07)**		**(0.00)**	
Relative Debt		-0.1286		**-0.6728**		**-2.3739**		**-5.4561**
		(0.33)		**(0.00)**		**(0.09)**		**(0.01)**
Relative Tax	-0.0664	-0.0667	-0.0259	-0.0407	-0.2159	-0.1227	-0.3545	-0.0731
	(0.29)	(0.29)	(0.70)	(0.57)	(0.29)	(0.33)	(0.49)	(0.78)
Relative Risk	0.1438	0.1405	-0.1285	-0.1063	**2.8591**	**2.3830**	1.2461	2.0557
	(0.42)	(0.45)	(0.42)	(0.47)	**(0.01)**	**(0.05)**	(0.36)	(0.24)
Relative Cash	-0.0001	-0.0001	-0.0001	-0.0001	-0.0003	0.0002	0.0004	0.0005
	(0.50)	(0.51)	(0.97)	(0.87)	(0.43)	(0.61)	(0.70)	(0.41)
Relative Control Wedge	**0.7736**	**0.7674**	-0.2249	-0.6768	6.6244	2.5211	0.6966	-3.4340
	(0.04)	**(0.04)**	(0.64)	(0.13)	(0.11)	(0.67)	(0.89)	(0.55)
Relative Board Independence	0.0469	0.0208	-0.0379	-0.0563	**-2.1631**	**-1.7775**	**-2.0722**	**-2.5680**
	(0.62)	(0.83)	(0.69)	(0.55)	**(0.01)**	**(0.06)**	**(0.04)**	**(0.01)**
Relative Size	-0.0257	-0.0235	**-0.0926**	**-0.0825**	-0.0757	-0.0465	**0.5541**	0.2971
	(0.35)	(0.38)	**(0.00)**	**(0.00)**	(0.68)	(0.80)	**(0.05)**	(0.20)
Adj-R^2	0.41	0.42	0.63	0.63	0.47	0.43	0.58	0.54
n	312	312	312	312	312	312	312	312

Note: Regressions of relative performance on industry and relative firm characteristics. See Table 1 for variable definitions