

Family Business Performance in the Japanese Stock Markets

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Abstract

In this article, I discuss the results of my analysis of Japanese family firms. I investigated the relationship between family equity ownership and earnings performance among the member companies of the Tokyo Stock Exchange's Nikkei 225. Japan provides a compelling landscape for this analysis because of the maturity of its financial markets where western corporate models and local business practices have been intertwined since the Meiji Restoration of the 19th century. The results of my statistical analysis demonstrated a positive relationship between family firm ownership and earnings performance and support that family firms outperform in the Japanese market. These findings demonstrate that family businesses do perform differently from non-family firms in both markets and are relevant to shareholder value creation through earnings performance. These findings were contrary to my hypotheses that family firms would underperform non-family firms among Nikkei 225 members because of perceived or actual corruption, nepotistic behaviors, and poor talent development programs that are associated with the supposed less objective and strategic management of family businesses. However, family firm outperformance is supported by several strategic benefits that the family organization confers on businesses. For example, family firms could outperform by creating shareholder value through long-term strategic management and aligning family manager and family owner interests in a way that non-family firms do not.

Keywords: family business, family firm, family ownership, firm performance, stock performance, shareholder value, Japan.

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1. Introduction

It was the goal of this investigation to examine the relationship between family business ownership and firm performance and contribute to the existing body of research on family businesses. Family business firm performance is relevant to how companies create shareholder value. Whether or not family firms are able to perform differently from non-family firms is relevant to company stakeholders and investors, as this information could reshape the way stakeholders evaluate the value propositions of their investments. The study uses data from publicly-traded firms listed on the Japanese stock markets from 2007 to 2013, exploring new market conditions before, during, and after the 2008 Global Financial Crisis (GFC). I use the percentage of equity share ownership by founding family members and their heirs to define family businesses in this investigation. Prior research (Allouche et al., 2008; Saito, 2008; Anderson and Reeb, 2003) also considers family businesses with family managers. In my study design, research question, and hypotheses I focus only on family ownership to explore whether ownership alone is a sufficient condition for firm outperformance or underperformance, regardless of manager status. I found, contrary to negative perceptions of family firms like nepotism and concentrated ownership (Suehiro, 2001; Suehiro and Wailerdsak, 2004; Anderson and Reeb, 2003), family businesses have the po-

tential to outperform non-family businesses. The significance of family firms may be partially explained by the strategic alignment of management and ownership interests within the family as well as the long-term strategic business and succession planning within these aligned interests (Sharma, 2004).

This investigation considers the relevance of family businesses in dynamic economies, where globalization and efficiency are raising the standard of performance for companies worldwide. Family businesses have a storied history in East Asia. If the family is where the modern, diversified corporation came to be (Allouche et al., 2008; Suehiro, 2001; Suehiro and Wailerdsak, 2004), then does the future of the modern conglomerate still have a place for families in business? If so, how do these family businesses perform in the free market? Companies continue to be challenged by the pressure to remain competitive in developing financial markets under constant regulator and corporate governance reform. Better understanding of family businesses in the context of dynamic economies can inform researcher and investor understandings of the role families play in global markets.

This research specifically questions how family businesses perform relative to non-family businesses. Several studies have found that there is a relationship between family businesses and performance in the market; however, there is debate as to whether the legacy and organization of family businesses

leads to a positive or negative difference in earnings performance of these businesses. This investigation contributes to the debate on family firm performance in the specific geographic context of Japan by using earnings data from large, multinational corporations listed on the stock markets. In Japan, the family business narrative is uniquely paired with a cultural and ideological context that was conducive to securing profits and succession through the family business organization, several of which still exist in evolved forms across the publicly traded market in the country.

1.1 Literature Review of Family Business

This investigation was motivated by two primary perceptions of family business. Firstly, I am interested in whether or not family businesses are less efficient than non-family businesses because of their concentrated ownership. Secondly, family firms remain a pervasive and visible type of business around the world; by improving our understanding of family businesses, market participants can make more informed investment decisions.

The concentration of equity ownership sometimes exhibited by family businesses contributes to a perception that family businesses are a less efficient organization than dilute ownership of public companies. It has been argued that family businesses are “unique” in their concentrated control (Saito, 2008) and are perceived as a less efficient economic

organization (Anderson and Reeb, 2003). Concentrated shareholders have the potential to pursue private benefit at the expense of other shareholders and firm performance (Shleifer and Vishny, 1997). Their findings suggest that shareholder concentration can also be understood as a proxy for control over the firm, even if shareholders are not managers. Anderson and Reeb (2003) found that family firms in the S&P 500 perform better than non-family firms when defining family firm through family equity stake or presence of family managers and firm performance through return-on-assets, or the share price return per unit of company asset. In the case of Japan, Allouche et al. (2008) found that family businesses performed better than non-family businesses using measures including return on equity, return on invested capital, and return on assets. They also note that the very public difficulties that well-known family businesses like Daiei experienced during the Asian Financial Crisis (AFC) made an entire subgenre of businesses – all family businesses – appear old-fashioned, rigid and ineffective in their control and strategy due to family presence. Suehiro (2001) found that family firms were not a significant contributor to the Asian Financial Crisis in Thailand, which is contrary to the perception that family businesses are a less efficient organizational structure. A later study by Suehiro and Wailerdsak (2004) demonstrated that certain types of diversified family firms in Thailand survived

the crisis better than other family firms. Based on examples such as this, I explore whether Japanese family firms may still outperform despite the financial crisis and reputational harm they experienced following the AFC.

Family businesses continue to be a visible type of business around the world. Anderson and Reeb (2003) found that families are present in one-third of the S&P 500 companies, and Faccio and Lang (2002) that 44% of Western European firms are controlled by families. According to a 2004 review of current research on family firms, the most commonly cited reason for investigating family business is the “observed dominance of these firms on the economic landscape of most nations” (Sharma, 2004). For example, a 2006 study on the S&P 500 found that announcement of an external CEO led to a subsequent share price increase, while the announcement of another family manager led to a share price decrease (Perez-Gonzalez, 2006). In Thailand, widespread family involvement lowers firm performance (Bertrand et al., 2008). In the case of family businesses where the founding family is the largest shareholder, smaller shareholders could be subject to the implicit control that results from a dominant equity owner. Investigating family businesses across different country contexts is significant because family firms can be expected to operate differently in unique economic contexts. As Bertrand and Schoar (2006) discuss, observing how family firms behave in different markets

allows us to improve our understanding of the characteristics of different economies. The potential differences between the perception of family firms and their empirical performance and how these perceptions and performance can vary in the Japanese context justifies further inquiry into this field.

1.2 The Legacy of Family Businesses in Japan

The historical narrative of economic development in Japan allows observers to understand Japanese family businesses across different generational contexts, where family firms have adapted, evolved, and succeeded across social, political, and economic changes into the modern era. The dynamism of family businesses over time suggests when and where they have been relevant in the economic history of a particular market. Family businesses were fundamental in the early development of close-knit, vertically integrated distribution channels that kept marketplaces such as Tsukiji fish market in Tokyo humming day-to-day, dominated by families controlling a portion of the sourcing or distribution channels for their catch (Bestor, 2004). Before World War II, the big four zaibatsu, or family conglomerates, Sumitomo, Mitsubishi, and Yamada, controlled 76% of the total paid-in industrial capital of Japan (Yamamura, 1967). Vertically integrated keiretsu, which replaced zaibatsu after they were disbanded in the post-war period, capitalize on family relationships as sources of reciprocal information flow and

long-term stability (Bestor, 2004). However, these structures have evolved over time, now including both family and proxy-family structures that achieve similar levels of collaboration, accountability, and vertical integration that the historical zaibatsu achieved.

The Japanese corporation is derived from the confluence of elements of western corporate governance practices and historical Japanese tradition. Bhappu (2000) argues that the Japanese family organization was fundamental to shaping the Japanese corporate structures of apprentice and master, where pseudo-family relationships help establish expectations and behavioral norms. This is consistent with the argument of Colli (2003) that the legal and economic risk associated with asymmetric information between business parties was part of the historical basis of family businesses in Japan. Before the Meiji Restoration in 1868, a turbulent economic environment combined with a legal system unable to secure property owner shippositioned the family organization as an ideal way to safeguard business interests (Colli, 2003). The benefits of economic security that family units conferred upon businesses in conjunction with the Confucian-inspired bushido ethics code of the Tokugawa era (the Tokugawa encompasses the feudal period Pre-Meiji Restoration in 1868) emphasizing central teachings of loyalty and filial piety created an environment conducive to the success of family firms (Yoshino, 1968). During the Meiji era, the

family system also supported the idea that the entire nation was one family unified under the emperor, and collective values and obligatory relationships formed the basis of relationship building (Yoshino, 1968).

In Japan, the development of commerce with legal protections began in the 1600s. By the 20th century, zaibatsu firms dominated the pre-war economy. The zaibatsu system was the development of Japanese corporations during the feudal Tokugawa era into the Meiji era where the government decided to sell enterprises to favored wealthy families, providing these groups with a lasting, dynastic, advantage (Yoshino, 1968). The firms were characterized by close ties to the political elite in the Japanese oligarchy and benefited from preferential policies and privileged status. Early beneficiaries like Mitsui and Mitsubishi were founded in the 17th century (Mitsui Ginko, 1926; Yamamura, 1967), and became diversified conglomerates that benefited from favorable economic policies throughout the Meiji era until World War II (Bisson, 1954). Indeed, Mitsui and Mitsubishi would become the top two zaibatsu until the war (Hirschmeier and Yui, 1975).

1.3 Japanese Corporations in the Post-War Period

The zaibatsu were forcibly dissolved under the Yasuda Plan after 1945 through elimination of zaibatsu-controlled directors and managers in subsidiary firms, divestiture of security holdings, eliminating noncompetitive

contracts, and concentrating monopolysize companies (Bisson, 1954). However, the zaibatsu system was entrenched in the economic institutions of Japan, and despite the forced dissolution of the zaibatsu after World War II, Japanese corporations adopted new structures that could act as proxies for the benefits previously conferred by the zaibatsu system through horizontally and vertically affiliated firms called keiretsu (Yoshino, 1968). These firms can confer benefits to one another, such as risk diversification by acting as subcontractors to larger firms, specialization, and contracts securing future business.

The Doyukai was an organization founded by 70 executives to create a unified managerial ideology in the post-war period. By the 1960s, these guidelines included a new emphasis on independence and self-determination. This new emphasis on self-determination was contrary to the previous orientation of business organizations. The Doyukai stressed the primacy of functionalism and professionalism over the paternalism of the zaibatsu system and affirmed the pursuit of profit; in contrast, Meiji-era businesses had deemphasized profit as the central goal of business (Yoshino, 1968). These pronouncements were readily integrated into by Japanese corporate practice, adopted from the “managerial strand of the American business ideology” (Yoshino, 1968). As a result, family firms became less prominent as influential forces within the Japanese economy in the post-war period.

We can observe their continued evolution of family presence in the Tokyo Stock Exchange listings today, where only 2% of the Nikkei 225 members have founding family owners.

The legacy of the zaibatsu system and native Japanese business culture is still relevant in today’s economy. Yoshikawa et al. (2007) find that there is no clear convergence to or divergence from Anglo-American models of corporate governance. Instead, their findings support that Japanese firms have selectively adopted features from western models and applied them to fit their context, and have been successful in doing so. Marshal (1967) explores the integration of “Anglo-American capitalist creed” with “traditional Japanese values,” citing businessmen who expressly reject profit for personal gain. Instead, the post-war business class claimed that Japanese businessmen were motivated out of selflessness, patriotic devotion, and a willingness to sacrifice for the common good by contributing to the industrialization of Japan.

A key feature of the zaibatsu system corporate governance model was the separation of ownership and control, hiring professional managers to run day-to-day operations and subjecting family owners to the expertise of a board of directors. This resulting separation maintained personal loyalty to the family with “clear-headed managers” (Hirschmeier and Yui, 1975). This unique blend of capitalism into a preexisting cultural context is indicative of the evidence found by Suehiro and

Wailerdsak (2004) that Japanese firms were particularly successful at importing and adapting Anglo-American corporate governance than their counterparts in Thailand, for example. The development of a Japanese model of corporate governance is visible in the continued prevalence of family firms in the local stock market today.

1.4 Economic Globalization

In the post-war period, family businesses in Japan saw their zaibatsu system dissolved, bringing about a period of transition for the formerly politically and economically dominant conglomerates. Instead of thoroughly ingrained vertical business organizations, horizontal webs were integral to success in the post-war period. Keiretsu structures developed in the post-war period through cross-shareholding and interlocking directorates as a way for firms to develop mutually beneficial patterns of allocation and return at the expense of the competitive market (Lincoln et al., 1996). Hideto and Haley (1983) observe that keiretsu groupings joined by anything from cross-shareholding to personal relationships at the executive level dominate Japanese trade, and that goods not produced or handled through keiretsu are nearly excluded from the Japanese distribution market. Lincoln et al. (1996) find that keiretsu system firms exhibit a smoothing effect on their performance – independent firms may recover more quickly from a downturn, but keiretsu system firms appear to tax outperformers and guarantee the survival of troubled affiliates.

According to Sheng (2009), the Japanese role in the Asian Financial Crisis has been understated, with the primary victims of the Crisis being Thailand, South Korea, Indonesia, Malaysia, and greater China. Sheng describes how the Japanese zero interest rate policy in place to combat the deflation of the yen contributed to the trade conditions that led to currency bubbles in other Asian markets. Receiving markets like Thailand, Indonesia, and Malaysia ran trade deficits because of Japanese foreign direct investment in the region during the 1980s and 1990s until the Japanese yen began to depreciate against the dollar in 1995. Japanese banks pulled investment from other Asian markets, accelerating after the devaluation of the Thai baht. In part, the Asian Financial Crisis was directly related to the withdrawal of funds by Japanese banks. Organizational evolution like the transition of zaibatsu into keiretsu complicates the legacy of family firms in Japan as the corporate environment has become increasingly integrated and sophisticated, with controls that improve stakeholder protection as well as institutions like holding companies and trustee banks to protect insider and external shareholders. The Japanese role in the Asian Financial Crisis was likely complicated by keiretsu networks, which can dictate the flow of capital into and out from Japanese banks that are affiliated.

1.5 Hypothesis for the Case of Japan

I hypothesized that family businesses' earnings as measured by EBITDA (earnings

before interest, tax, depreciation, and amortization) will underperform non-family businesses. Family structures today are less relevant to the performance of mature, public corporations where legal protections and succession can be secured by legislation and professional managers. Whereas family ownership and management used to be critical to maintaining control and securing company wealth in the early stages of business growth and development, today these family structures are not necessary. I hypothesize that family is no longer relevant to the relative performance of publicly traded Japanese firms because the protections and benefits once conferred by the family organization are now secured by legislation and financial regulation. The family organization may be how businesses are founded and grow, and this hypothesis does not discount the importance family structures play in the early cultivation of a successful, diversified, multinational conglomerate. The benefits of the complex *keiretsu* system can potentially penalize winners while rewarding losers, smoothing outcomes of family businesses that are involved in the *keiretsu* system.

There is evidence to suggest that as competitive pressures increase and markets become more developed and globalized, alternative business organizational structures, such as a board of directors, an executive management team (Suehiro and Wailerdsak, 2004), and patterns of vertical alignment that

create enduring relationships between producers and distributors (Bestor, 2004), can actually confer the structural benefits that used to be obtained through the proxy of family organization in corporate management and ownership. This hypothesis is contrary to the findings of Anderson and Reeb (2003) on the S&P 500 and Allouche et al. (2008) and Saito (2008) on family firms in Japan. These authors found that certain types of family firms outperformed relative to non-family firms.

2. Data and Methodology

The sample comprises earnings data from the constituent members of the Japanese Nikkei 225 index, reported from 2007 to 2013. Whether or not a company was a family business was determined by examining current equity ownership data from Bloomberg and comparing listed individuals with executive management, executive board members, and founding family. This case-by-case identification procedure was employed by prior research by Allouche et al. (2008); Saito (2008); Suehiro and Wailerdsak (2004) because of a lack of consensus for what defines a family businesses. After accounting for missingness, defined as where values for variables in firm-quarter observations were not available, the final sample size was 3,489 firm-quarter observations from the Nikkei 225. In order to create quarterly lags up to 4 past quarters (1 calendar year), the final samples only included observations from 2008 to 2013.

2.1 Statement of the Research Question

1. Do family-owned businesses outperform non-family-owned businesses using EBITDA as the measure of firm performance?

2.2 Defining Family Businesses

No consensus definition of family business has been adopted for either private or public firms (Sharma, 2004). Family influence encompasses a continuous spectrum of varying degrees of active and passive control, ranging from voting rights to the daily operations of a business. National laws and regulatory bodies can affect what sort of family organizations proliferate in a particular environment, such as capital gains taxes or inheritance laws (Sharma, 2004). Jaffe and Lane (2004) observe that many family firms never make it to the dynasty stage (post-second generation). As a result, I considered the Japanese market environments when determining how family firms would be distinguished from non-family firms in this investigation, including the types of businesses that are supported by each regulatory environment and the maturity of the market. According to Bertrand and Schoar (2006), family firms are characterized by concentrated ownership, family control, and often key management positions maintained by the family. In this investigation, I define family businesses using equity share ownership by founding family members. Several other studies choose to define family businesses using either equity ownership or the presence of key

family managers. I focus on the former because of the relevance of equity shareholders to the market performance of the stock, where share price is my response variable of choice for measuring firm performance.

I utilize family equity share ownership as a proxy for control of the firm. Concentrated ownership of outstanding equity can allow family members to exert influence over manager behavior by mitigating expropriation (Demsetz and Lehn, 1985). The same influence can be observed not only by family ownership, but by other large “blockholders” (Anderson and Reeb, 2003) such as pension funds or asset managers. Further, large family equity shareholders will retain significant voting control and could continue to direct the strategic vision of the firm without active family-member management in place. The converse situation is not true, because managers will not be able to exert a comparable amount of influence over shareholders, who could liquidate their positions and eliminate any financial risk they bear from the firm’s performance. Defining family businesses using equity share ownership could result in a bias for outperformance of firms with high family equity share ownership. As Anderson and Reeb (2003) discuss, a family might be more likely to retain shares if they expect positive share performance because of future profitability or earnings growth. Conversely, a family might be more likely to sell or diminish their equity ownership stake if they expect

future negative share price performance due to losses or negative earnings growth.

In Japan, identifying family-owned firms can be difficult due to the diversified positions of holding companies, trustee banks, asset managers, and investment banks across the Nikkei 225 sample. Many Japanese firms have a large main blockholder, like a holding company or bank, as their largest shareholder. For the case of Japan, I adopted a definition of family firms used by Saito (2008) to identify family businesses where a founding family member is the largest shareholder. In addition, I identify firms with family business legacies by encoding all Big Four Zaibatsu (Sumitomo, Mitsui, Mitsubishi, and Yasuda) subsidiaries. Family businesses in Japan were encoded as a binary variable. Existing research (Saito, 2008; Suehiro, 2001; Suehiro and Wailerdsak, 2004) classify firms by type in order to accommodate for performance differences stemming from the firm organization or succession pattern. I elect not to classify family firms by type. In the data collection process I attempt to control for various firm characteristics like firm size, firm age, and firm valuation (for example, whether or not the firm has traded at a historical premium).

2.3 Sample and Data

The data set utilizes financial data from the 225 member companies included in the Nikkei 225 index in order to represent the most influential and active public companies in the market by utilizing the benchmark index

as a sample and population of firms. Data were collected from Bloomberg, retrieved on 31 January 2014 Bloomberg L.P. (2014). All statistics and results reported are from final data that eliminates firm-quarter observations with missing values. Missingness (where observations are not available) is assumed to occur at random. The sample of the Nikkei 225 members included 5,850 firm quarter observations from 2007 to 2013, which was reduced to 4,346 observations following an analogous log-transformation to EBITDA. 6.2, Appendix: Justification for Excluding Negative EBITDA, contains a summary of Welch's unpooled T-test results that demonstrates the sample and family business groups are not significantly different from one another with negative EBITDA values removed for the purposes of this transformation. With the exception of summary statistics, all data analysis using multiple linear regression is completed with the log-transformed EBITDA variable using non-negative EBITDA observations.

2.3.1 Response Variables

There are many different ways to measure firm performance by assigning value to or measuring the profitability of a company using public, published financial data. I measure firm performance using accounting measures that are found on the company's financial statements, earnings before interest, tax, depreciation, and amortization. When considering accounting performance reported

on the financial statements, stock portfolio managers and analysts will be most concerned with a company's 'bottom-line' earnings, or after-tax earnings. Within an industry or firm type segment, net income could be used instead to capture 'bottom-line' earnings; for many stock portfolio managers, they are often making a buy or sell decision within an industry or type of company, making this comparison appropriate. Because I am conducting an analysis across all industries and firm types, I choose to examine 'top-line,' or pretax earnings. The most common way of measuring this is using earnings before interest, tax, depreciation, and amortization (EBITDA) because it allows for relatively simpler cross-sectional comparison since it eliminates the role of tax rates, financing, and accounting decisions in earnings reporting. For the purposes of this investigation, EBITDA represents any reference to a firm's profits. It is calculated by adding back interest, tax, depreciation, and amortization expenses to a firm's net income using the financial statements. For market performance, I collected share price data between January 3, 2007, and September 27, 2013. I applied four quarters of lags on EBITDA as a response variable in order to control for serial correlation in the samples, resulting in the effective date range of the sample being reduced to 2008 to 2013.

2.3.2 Explanatory Variables

Family equity share ownership is my explanatory variable of interest because of the

potential influence that institutional investors have on stock pricing. If an institutional investor, such as a hedge fund manager, publicizes his firm's position on a particular oil and gas company on Bloomberg, other investors are more likely to emulate or consider the position in their own portfolios. Further, most institutional investors maintain analyst groups that thoroughly research and seek out the maximum return-on-investment positions for their clients' portfolios. However, institutional ownership can also indicate a negative outlook on firm performance when stock sell-offs occur. Explanatory variables were included in data collection with the goal of contributing to the explanation of firm performance in Japan. In reviewing existing research on family businesses, the Japanese stock markets, and measuring firm performance and profitability, I consider the following explanatory variables. I sought to capture equity share ownership, industry, firm size, gearing (debt) ratios, and market valuation through these variables. All variables are continuous unless otherwise indicated.

- Family Business, a binary variable representing where a family member of the company's founder is the largest shareholder identified in the Bloomberg equity holders record.
- Blockholder Ownership, a binary variable representing the a greater than 50% share of equity held by an institutional investor that can be identified via the Bloomberg

equity holders record (e.g. hedge fund, pension fund, or holding company. The 50% benchmark is adopted from the methodology utilized by Saito (2008) in identifying majority or controlling shareholders.

- Trustee Bank, a binary variable representing where a trustee bank is the largest shareholder identified in the Bloomberg equity holders record.
- Keiretsu, a binary variable representing where keiretsu-affiliated firms are the largest shareholder identified in the Bloomberg equity holders record.
- Return-on-Assets (ROA), a performance measure computed by dividing net income for the quarter by total company assets. ROA allows shareholders to evaluate how management is generating shareholder value per each unit of assets the company holds. ROA is consistent throughout the quarter. I also utilize 3-year and 5-year average as a proxy for a lag on the ROA variable to control for serial correlation.
- Equity Shares Out, representing current outstanding shares that can be traded freely in the stock market by foreign and domestic investors.
- Book Value per Share, representing how much the company is worth according to its assets and liabilities per share.
- Total Debt to Total Assets, a ratio representing the company's coverage of its liabilities. It is computed by dividing the total debt by total assets.
- Long-term Debt to Total Assets, a ratio representing the company's coverage of its short-term liabilities. This ratio could be more normalized for one-time expenses that a company temporarily accumulates debt for but subsequently pays off the following quarter or year. It is computed by dividing the long-term debt by total assets.
- P/E Ratio, a ratio representing the company's current valuation that can easily be compared to other companies on the market, allowing investors to evaluate whether a company is trading at a price more expensive (a premium) or cheaper (a discount) to peers based on profitability. It is computed by dividing share price by net income.
- P/B Ratio, a ratio representing the company's current valuation that can easily be compared to other companies on the market. It is computed by dividing share price by the company's book value. Instead of using net income, book value accounts for the firm's asset value rather than profitability.

2.4 Statistical Methods

2.4.1 Modeling Techniques

Multiple linear regression is used to explore the relationship between firm accounting performance using EBITDA and equity share ownership (R Core Team, 2012). Multiple regression is appropriate in this analysis because there are sufficient robustness measures, including panel regression with fixed effects and variable lags for serial correlation that can be employed to control

for potential violations of the assumptions of linear regression, including linearity, normality, independence, and homoskedasticity (constant variance) (Ramsey and Schafer, 1997). The goal of this investigation is to draw associative, not predictive conclusions, regarding the relationship between family business and firm performance. My goal is to ensure that model assumptions are satisfied to ensure the validity of the least squares estimates by satisfying linearity and serial correlation as best as possible. Appendix: Regression Diagnostics illustrates the diagnostic plots for satisfaction of the assumption from the full and final model specifications in the sample.

2.4.2 Final Model Selection

The final model for interpretation was selected using two primary criterion: the Durbin-Watson test for serial correlation (Durbin and Watson, 1950) and the Bayesian Information Criterion (Weakliem, 1999). The former allows serial correlation in a least-squares regression model to be assessed, and the latter allows for model fitting with a criteria that accounts for the trade-off between maximizing the likelihood function of the model while penalizing for the number of variables included in the model.

2.5 Summary Statistics

Summary exploration of the aggregate data reveals patterns that emerge among family firms and non-family firms. In particular, the family firms exhibit different industry affiliations and are different sizes in

Japan. Family firms on average earn more among Nikkei 225 members in Japan. Overall, the Japanese sample contained 2.2% family firms among benchmark index members according to my definition of largest shareholder a founding family member.

Family businesses comprise only 2.2% of Nikkei 225 members. Japanese family firms were encoded as a binary variable because of relatively more diversified equity ownership, greater presence of keiretsu or holding companies as shareholders of corporate entities, and comparatively more opaque disclosure of ultimate beneficiaries of returns on shares held by keiretsu or holding companies. The Nikkei 225 is annually re-balanced by the Nikkei group. Nikkei 225 members are selected for sector balance from the First Section of the Tokyo Stock Exchange to act as a “barometer” (Kurashina, 2003) for the Japanese economy. The family firms in the Nikkei 225 are in the auto parts and equipment, electronics, internet, retail, and telecommunications industries. The summary statistics in the table below support including firm fixed effects to control for the large variance in EBITDAs exhibited by Nikkei 225 members. In addition, binary variables for other types of large blockholders were included and reveal that the largest shareholder of each Nikkei 225 member almost always can be categorized into a family insider, trustee bank, holding company, or keiretsu. Only 60 firms out of 225, in fact, do not have a largest shareholder of one of the

aforementioned classifications. Trustee banks are the most common largest shareholder,

with 105 firms out of 225 characterized by this equity ownership pattern.

Table 2.1
Japan Nikkei 225 Members Summary Statistics 2007-2013

	Mean	Std. Dev.	Min.	Max
Family Firm	5	0.14	0	1
Trustee Bank	105	0.5	0	1
Holding Company	7	0.17	0	1
Keiretsu	48	0.41	0	1
EBITDA (millions of Yen)	47,687.45	88,482.61	-326,925.00	1,003,656.00
Return on Assets (ROA)	46.82	1,674.97	-34.76	64,040.83
3-Year ROA	42.07	911.59	-14.81	21,348.48
5-Year ROA	48.32	1318.54	-27.37	50,027.25
Equity Shares Out (millions)	1,021.56	1,735.57	28.50	50,257.25
Book Value Per Share	1,049.571	1,052.36	-472.70	8080.60
Total Debt to Total Assets	27.34	17.76	0	90.99
Long-term Debt to Total Assets	16.60	12.65	0	63.96
Price-to-earnings Ratio	42.70	228.33	2.28	13,214.90
Price-to-book Ratio	1.35	2.66	0.21	183.38

Data from Bloomberg LP, retrieved 31 January 2014. Values by author using data from 2007-2013.

3. Family Firm Performance Results

In the case of Japan, I find that family businesses outperform non-family businesses. These results are in contradiction to my hypothesis that family firms would underperform in Japan relative to non-family firms. This could be explained in part by existing research on family businesses in Thailand, where only certain types of family businesses outperform non-family businesses (Suehiro and Wailerdsak, 2004), and in Japan by the long-term, strategic orientation of the family firms among Nikkei 225 members. In this chapter, I examine these results in the univariate cases where I used Welch's unpooled t-test for equal means, and then consider the multiple linear regression case using a full model with all variables retained and a final model obtained using backward stepwise regression with Bayesian Information Criterion

(BIC) as the selection method. The BIC is approximated by $BIC = -2 \cdot \ln(L) + k \cdot \ln(n)$ for large sample sizes of approximately $n > 30$ (Weakliem, 1999). Lower BIC values suggest a better relative model fit when comparing models built from the same sample. In my analysis, I compare multiple linear regression models using BIC.

In the univariate case, family businesses earn more in Japan than non-family businesses, suggesting that there is a difference between the firm types before controlling for other background covariates or company-specific effects. Using multiple linear regression, I find that being a family owned business is significant at the 0.01 level, indicating that these firms perform differently than non-family businesses when controlling for company-specific effects, blockholders, returns on assets for previous time periods, firm

market size, book value, debt, and market valuation. In addition to the family business indicator being significant, using backward stepwise regression and Bayesian Information Criterion for model selection, I find that the most significant predictor of log (EBITDA) in each case are a lag for EBITDA to control for time dependence, return on assets, and book value of the company. I use these variables to build a final model of the most

significant predictors while retaining the explanatory variables of interest—the family business indicator. When considering family explanatory variables in my final model, I again observe the outperformance of family businesses relative to non-family businesses among Nikkei 225 members.

3.1 Japan

3.1.1 Welch's Unpooled T-test Results

Table 3.1
Japan Nikkei 225 Welch's Unpooled T-test Results

Mean FB	Mean NFB (millions of yen)
85,269.28	49,429.17
p-value	0.000

Data from Bloomberg LP, retrieved 31 January 2014. Estimates by author using R Core Team (2012).

3.1.2 Welch's Unpooled T-test Interpretation

In the case of Japan, family businesses on average earn more than non-family businesses without controlling for background covariates like firm size, debt, and market valuation. In this case, the power of the statistical test could be improved with a more balanced sample size. The Nikkei 225 sample only contains 5 family businesses out of 225 total firms. While this allows me to determine an exact mean for family business earnings among Nikkei 225 members, the findings here may not be found to be statistically significant in a different sample of comparable Japanese firms listed on the Tokyo Stock Market.

3.1.3 Multiple Linear Regression Results

Again, the model selection process was based on selecting a model that best satisfied the assumptions of linear regression while addressing serial correlation in the response variable, EBITDA, as well as selecting the most significant variables for a final model for interpretation using BIC. Among Nikkei 225 members, it appears that there is greater serial correlation as more of the EBITDA lags are significant, suggesting that the current earnings are dependent on past quarter reporting, requiring both EBITDA lags and quarter fixed effects to control for serial correlation and minimize BIC.

The table below contains the final model selection using BIC and backward stepwise regression, maintaining binary indicator variables FB and keiretsu in the model. These variables would have otherwise been eliminated under backward stepwise regression

in order to minimize BIC. These variables are left in the model in order to interpret the variable of interest, family business, in the context of keiretsu, which was significant at the 0.10 level.

Table 3.2

Regressing Nikkei 225 EBITDAs using firm and time fixed effects with lagged EBITDA, backward stepwise

	Estimate	Std. Error	t value	Pr(> t)
(Intercept)	5.5211	0.3411	16.19	0.0000***
EBITDA_1	0.0000	0.0000	2.42	0.0156**
EBITDA_3	-0.0000	0.0000	-8.66	0.0000***
EBITDA_4	0.0000	0.0000	9.67	0.0000***
FB	2.0551	0.1721	11.94	0.0000***
Keiretsu	0.2095	0.1536	1.36	0.1727
Returns	-0.2034	0.0544	-3.74	0.0002***
EQY_SH_OUT	0.0002	0.0001	3.59	0.0003***
log(BOOK_VAL_PER_SH)	0.6101	0.0581	10.50	0.0000***
log(PE_RATIO)	-0.0768	0.0103	-7.45	0.0000***
log(PX_TO_BOOK_RATIO)	0.4893	0.0397	12.31	0.0000***
Adj. R-squared	0.90			
Number of Obs.	3489			
	** $\alpha = 0.05$		*** $\alpha = 0.01$	

Data from Bloomberg LP, retrieved 31 January 2014. Estimates by author using R Core Team (2012). Fixed effect coefficients are omitted from table.

3.1.4 Multiple Linear Regression Interpretation

Due to the response variable EBITDA is log-transformed, the significant family business binary variable can be interpreted as having a multiplicative effect on the EBITDA in the amount of e^{β} . Among Nikkei 225 members, the 5 family businesses outperform non-family businesses at the 0.01 significance level when examining final model coefficients in Table 19. Holding all else equal, a one-unit increase in the percentage of family ownership will result in an $e^{2.0551}$ -fold increase in

EBITDA. These results are noteworthy because the family firms in the sample clearly outperform non-family firms; these results would be strengthened if they could be replicated if a new sample of firms from the Tokyo Stock Exchange or entire population of Japanese firms listed on stock markets were included in the investigation. Keiretsu, interestingly, is not a significant explanatory variable in the final model selection. This is surprising given the literature covering the extensive, far-reaching implications of horizontally inter-networked and integrated firms across industries that dominate the economic landscape.

3.1.5 Multiple Linear Regression Selection Criteria

Table 3.3
Nikkei 225 BIC Summary

Model Specification	BIC
Panel for Firms and Quarters	7200.360
Panel for Firms with 4Q lagged RV	5220.406
Panel for Firms, Quarters, with 4Q lagged RV	5137.1
<u>Panel for Firms, Qtrs., 4Q lagged, backward stepwise with FB and Keiretsu</u>	<u>5092.22</u>

Estimates by author using R Core Team (2012).

Table 3.4
Nikkei 225 Durbin-Watson Summary

Model Specification	DW	p-value
Panel for Firms with 4Q lagged RV	1.9746	0.779
Panel for Firms, Quarters, with 4Q lagged RV	1.9997	0.7778
<u>Panel for Firms, Qtrs., 4Q lagged, backward stepwise with FB and Keiretsu</u>	<u>1.9975</u>	<u>0.7879</u>

Estimates by author using R Core Team (2012).

3.2 Conclusion: Results

The results of this investigation suggest that family is positively associated with firm performance as measured by EBITDA in Japan. The results for the keiretsu indicator variable are also noteworthy for having no significant relationship with explaining firm earnings, which appears contrary to extensive literature on the importance of horizontally networked firms.

These results are in contradiction to my hypothesis that family firms would underperform in Japan. The findings imply that the explanation for firm outperformance may continue to be relevant to firm profitability in Japan. Family firms in the Nikkei 225 may have the long-term strategic guidance necessary to succeed financially, while the explanations for underperformance like nepotism and seeking private benefits through family

control could be less related to the bottom-line profitability of these companies.

4. Limitations and Discussion

In this section, I examine the limitations of the study design and robustness of the model results. Considering study design, I discuss the sample size as a limiting factor in generalizing the results of the model and the subjective nature of defining family business; considering model robustness, I examine the extent to which the assumptions of linear regression were satisfied and the potential role of missing data in the sample. Although there are limitations on how generalizable the results of this investigation are, I believe that my findings are defensible, rigorous, and corroborate the existing body of research on listed family business performance in stock markets.

4.1 Limitations

This investigation has four primary areas of improvement that could strengthen the results of future research, including improving the sample size through a longitudinal study of the entire population of Japanese firms listed on the stock market, employing a consistent definition of family business in repeated studies, ensuring model assumptions are satisfied, and prudently addressing missing data.

4.1.1 Limitations from the Sample Size

The use of the benchmark indices' members for Japan constitutes a subset of the entire market deemed qualitatively by investors to be an appropriate measure of overall financial market and macroeconomic performance in the geography of interest (Kurashina, 2003). Even though each stock market creates benchmark indices to represent the macroeconomic climate, the criteria for a public company to be included in a benchmark vary from market to market. For example, the Nikkei Corporation selects Nikkei 225 members using a balance of industries and a size requirement.

The definition of the sample using the benchmark indices limits my findings to being generalizable to the index members of my sample. My results in Japanese Nikkei 225 samples could be strengthened by conducting an analogous analysis across the entire stock market of Japan, allowing me to generalize to the entire population of public companies.

Related to the sample size of the benchmark indices is the small proportion of family businesses present in the Nikkei 225 at only 2% of the entire sample. With a total sample size of 225 companies, the power of statistical tests is compromised due to unbalanced group sizes for family and non-family businesses. The family business coefficients from the Japan case multiple linear regression results are limited by the group size imbalance. Statistical power is the probability of a test, like Welch's unpooled t-test, correctly rejecting the null hypothesis of the test when the null hypothesis is false (Cohen, 1992). The null hypothesis of Welch's unpooled t-test is that the difference in the two means is equal to zero, or that the means of the two samples are the same, and compromised power due to imbalanced group sizes could lead to a test that reports that the difference in means is significant when in the population the difference is equal to zero. While in this investigation the sample (Nikkei 225) is also the full population of companies (Nikkei 225) of benchmark index members, relatively fewer family businesses in the Japanese market in general could lead to incorrect conclusions about family business performance if a sample of companies is taken for a statistical test.

4.1.2 Limitations from Defining Family Businesses

Research in family business is under constant development and improvement because of the iterative approach of researchers

in study design and variable definition. Research in different domiciles, geographies, industries, and firm types requires an appropriate definition of a family firm to be constructed for the study design and question of interest. This investigation was concerned with the performance of family firms relative to non-family firms, and as a result I drew inspiration from prior studies on firm performance in financial markets (Suehiro, 2001; Suehiro and Wailerdsak, 2004; Anderson and Reeb, 2003; Allouche et al., 2008; Saito, 2008) in creating my definition for a family business. I define family business in Japan as a firm where the largest shareholder is a founding family member or descendant. A key limitation in all of the aforementioned studies is the transparency, or sometimes lack thereof, of published ownership data. Many listed firms in Japan choose to utilize banks, keiretsu banks, or other financial institutions and holding companies as large equity shareholders, and it can obscure the researcher's ability to determine who is receiving the capital gains from these outstanding shares. This will continue to be an area of improvement in family business research and will change as regulators alter their stances on transparency of share ownership data. Prior research, including Allouche et al. (2008), Anderson and Reeb (2003), and Saito (2008), accounts for the generation of the shareholders as well as family member managers, and I chose not to control for these factors. This decision

was based on the question of whether family ownership is a sufficient condition for control that could impact performance, regardless of whether or not a family firm also has family managers. For example, Saito (2008) found that firms family-owned and managed underperformed relative to non-family firms, while firms that were family-owned or managed by family members outperformed relative to non-family firms. This result motivated my decision to examine only the ownership component of the family firm. The outperformance of family firms among the Nikkei 225 members demonstrates that it is possible that ownership is a sufficient condition to lead to this divergence in family firm performance. Nonetheless, the lack of a consensus definition for listed family firms makes it difficult to rigorously reproduce results and prove family firm outcomes as fact. Instead, each observational study on family business performance can contribute to the general rationale of the uniqueness of family business performance relative to non-family businesses.

4.1.3 Robustness to Model Assumptions

The purpose of this investigation was to draw an association between explanatory variables and the response variable EBITDA, and to examine family business as explanatory variables of interest. The most critical violation of the assumptions of linear regression was the serial correlation exhibited by the response variable EBITDA, a result of multi-year

firm-quarter observations for the same companies. Using the Durbin-Watson test for serial correlation in R (R Core Team, 2012), I observed that there is significant serial correlation at the $\alpha = 0.05$ level.⁶ This was corroborated by autocorrelation function (ACF) plots generated in R, which indicated that using a lagged response variable might be appropriate based on the periodicity of the serial correlation. To control for this potential serial correlation, my final model featured additions of company fixed effects and fixed effect for time-quarter for Japanese firms. Following the addition of these variables, the Durbin-Watson test indicated that there was no further serial correlation. The Durbin-Watson test for serial correlation is not without limitations, and a follow-up ACF plot indicates that certain past time-quarters are still significantly serially correlated at the $\alpha = 0.05$ level. The Durbin-Watson test can be misleading when incorporating more than 5 regressors into the model, as is the case in this investigation (Savin and White, 1977). Nonetheless, the Durbin-Watson test is appropriate in cases where least-squares estimates are sought, and while inferences may be compromised, the Durbin-Watson test allows for the specification of a model for interpretation in this thesis.

Besides the violation of independence of the errors, multiple linear regression is robust to violations of normality except in cases of extreme skewness or binary responses.

Linearity appears to be met in several variables plotted against log (EBITDA), and there is no indication of polynomial relationships between log (EBITDA) and the continuous explanatory variables. It appears that homoskedasticity is violated in some of the response variables like return on assets or the valuation ratios, leading to incorrect standard error estimates. Nonetheless, because this investigation is concerned with association, not prediction, I do not consider these violations critical to the interpretation of the final model result and the explanatory variable of interest, family business.

4.1.4 Limitations from Missingness

Any missing data was assumed to be at random. As a result, complete-case analysis (Little and Rubin, 1989) was pursued, discarding all cases where data was missing. The creation of four quarters of historical EBITDA lags resulted in the removal of data from the year 2007, making the effective sampling period from 2008 to 2013. Limitations of complete-case analysis include the obvious loss of information resulting from discarding observations. For the purposes of this investigation, missingness precluded the possibility of including 2007 as a normalizing year in the context of firm performance before, during, and after a financial crisis. Instead, the remaining data captures the performance of firms during and immediately after a financial crisis. Results from complete-case analysis can be biased unless the missingness is perfectly

at random (Little and Rubin, 1989). Excluding the discard of year 2007 to create lags, possible violations of random missingness include discarding negative EBITDA values. These comprised less than 5% of the total observations, but may not have occurred at random.

4.2 Discussion: Implications for Listed Family Businesses in Japan

In this thesis, I explored the relationship between family firms and performance. The results of this investigation support the continued relevance of family firms in the market and suggest that the family organization continues to play a significant role in financial outcomes. This information can inform investor decision-making when gauging how a potential investment might generate returns. Family businesses generate returns differently from non-family businesses, and this can be identified in part by utilizing publicly available equity share ownership data.

Certain kinds of family businesses in the Japanese stock markets have been shown to outperform non-family businesses using different response variables by Allouche et al. (2008) and Saito (2008), and these results have been further corroborated using EBITDA for performance and the Nikkei 225 as the firm sample. For the population of Nikkei 225 members, being a family firm is a significant indicator of performance, and these firms do outperform non-family businesses in the

sample. However, this inference cannot be generalized across the population of all listed Japanese firms because the Nikkei 225 does not represent a random sample of all listed firms (and cannot be balanced on background covariates). While this study adds weight to the general validity of the argument that Japanese family firms outperform non-family firms, it cannot rigorously prove or disprove this claim (Smith, 1983).

For the population of all listed Japanese firms, I argue that my results support the existing evidence that family firms are significant and outperform relative to non-family firms and that they have external validity beyond the scope of this study based on the results from Allouche et al. (2008) and Saito (2008), who also found outperformance of family firms in the Nikkei 225. While there are limitations to the power of the t-test and multiple linear regression because of the small number of family firms relative to non-family firms in the Nikkei 225, the results observed here are compelling and corroborate prior findings of other research (Allouche et al., 2008; Saito, 2008). Directions for future research may include expanding the sample size to include the entire Tokyo Stock Market and subsetting the definition of family business by controlling for different variations in ownership or management structures (e.g. founding family manager or descendant manager, descendant ownership).

4.3 Conclusion

The results of my investigation show that family firms outperform non-family firms among Nikkei 225 members. My results highlight the unique performance outcomes of family businesses and demonstrate that family businesses do indeed perform differently from and better than non-family businesses. The results indicate that there is a relevant economic context for the success of firms based on their family structure and are inconsistent with my hypothesis that family firms would underperform in Japan. The greater profitability of family firms in Japan's Nikkei 225 could be explained by the strategic focus of firms where family members are the largest shareholder and can control the firm's business decisions to optimize for long-term profitability, for example.

This research was inspired by the influential, storied, and ongoing narrative of family firms in the Japanese economy, and based on the observed difference between listed family firms in the Japanese stock market and their performance relative to firms with large blockholders or other types of shareholders, it appears that family firms could be at a beneficial stage in the cycle of corporate business development and the foundation of a successful corporation. The proportion of family firms in the Tokyo Stock Exchange's benchmark index could be suggestive of the prominence of family in the economy at large, and is also indicative

of how family may become less relevant as the economic policy and financial institutions mature to provide less need for the structural and control advantages of maintaining the family unit.

Family, in reputation, organization, and control, is a key component of creating shareholder value, and should be considered by investors and researchers when evaluating company performance. As shown in my research, family ownership can lead to firm outperformance or underperformance, and family ownership should be investigated to determine its relevance in the context of interest. My results demonstrate that family ownership is not necessarily better or worse for companies, but has the potential to be beneficial in the right economic and organizational conditions.

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