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博 士 論 文

令和 7 年 6 月

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博士論文

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(資本市場参加者と日本企業の業績：パネルデータ分析)

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Abstract

The efficient allocation of capital from savers to investors is a foundational concept in finance and economic development. However, isolating the efficiency effects of one capital market model relative to another remains challenging, thereby necessitating a more in-depth examination of the role of key capital market participants in contributing to optimal outcomes. In this PhD thesis, we focus on the role of three key elements of Japan's capital markets - institutional investors, Main Banks and corporate governance quality. We examine their contribution to our chosen respondent variable of interest, firm performance, and assess it against the expectations of both a shareholder-centric and bank centric-model of capital markets. This has important implications for the past and future development of Japan's capital markets.

We begin with an investigation of institutional ownership, which is now the dominant form of share ownership in Japan, representing close to 50% of the total. We employ a fixed-effects regression model to examine the relationship between institutional ownership and firm performance during a time of rapid change in governance and institutional investor practices. To address potential endogeneity—a common concern in corporate finance research—we further implement a two-stage least squares estimation strategy with instrumental variables. The empirical results suggest a causal association between institutional ownership and firm performance in Japan when performance is measured using accounting-based indicators, whereas no significant relationship is observed with market-based measures. Additionally, the analysis reveals that institutional ownership enhances firm value in the presence of stronger information environments, as proxied by analyst coverage. In contrast, the proportion of independent directors does not exhibit a comparable effect. These findings support the value-creation role of institutional investors in Japan but also underscore the importance of the information environment quality for institutional investors to positively influence firm value.

A second key component of this thesis is an examination of the extent to which maintaining a Main Bank relationship influenced firm performance in Japan following the Global Financial Crisis (GFC). Our analysis employs propensity score matching to estimate the causal impact of Main Bank affiliations on three distinct performance metrics. Contrary to theoretical expectations, the empirical findings consistently demonstrate a negative and statistically significant association. The results suggest that, rather than aligning with shareholder interests, Main Banks primarily safeguard creditor claims; potentially undermining shareholder influence and disincentivising managerial risk-taking.

Finally, the thesis explores the impact of corporate governance rating and firm performance in the context of Japanese firms in a period of elevated investor demand for governance quality. The analysis employs fixed-effects regression models alongside the Generalised Method of Moments (GMM) estimator, utilising internal instruments to address both the dynamic nature of the relationships and endogeneity concerns commonly highlighted in the corporate governance literature. The results indicate a robust and statistically significant positive association between governance quality and firm performance when measured using accounting-based indicators. However, this relationship is not consistently observed with respect to market-based performance measures.

In summary, this thesis finds evidence that is consistent with the expectations for participants in a shareholder-centric model of capital markets, but is less compatible with a bank-based model, when assessing company performance in Japan. This adds weight to the view that Japanese companies are benefiting from a capital markets model that is more closely aligned to a shareholder-centric model of governance.

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Chapter 1 - Introduction

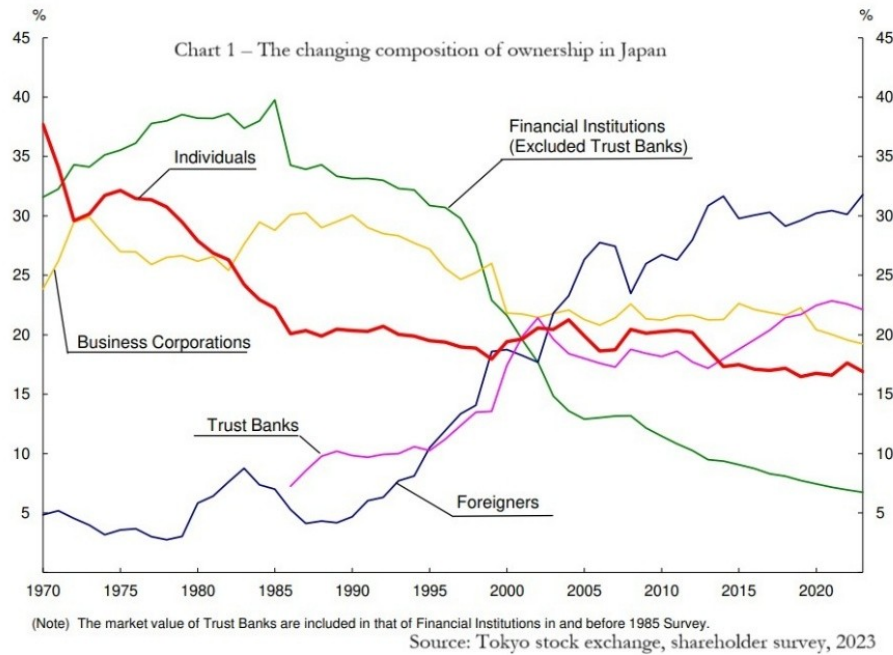
The post-war Japanese model was defined by centralised government financing, a direct tax system and bank-based financing (Noguchi, 1995). Within this system particular emphasis was placed on a corporate governance model that balanced stakeholder needs, including management, employees and shareholders, Aoki (2001); Ahmadjian and Robbins (2005); Jackson and Miyajima (2007). The collapse of the asset price bubble in the 1990s and subsequent banking crisis triggered a period of lower profitability, growth and risk taking (Weinstein and Yafeh, 1998). It also placed stress upon mechanisms to efficiently allocate capital and optimally distribute the rewards of company efforts to stakeholders.

The corporate finance literature honed in on the role of Main Banks in monitoring and disciplining corporate management and motivating the efficient allocation of capital, Aoki (1994); Patrick (1994). Bank monitoring was deemed to play an important role in reducing the cost of financial distress, Hoshi et al. (1990). However, Main Banks also attracted criticism for undermining shareholder interests and rent extraction, Morck and Nakamura (1999); Miwa and Ramseyer (2002); Miyajima and Arikawa (2007). An alternative explanation for the underwhelming performance of Japanese corporates emerged in the academic literature argued that Japan has suffered acute agency problem under the Main Bank model, with corporate balance sheets used for company survival and employee stability at the expense of shareholder interests. This analysis came with a prognosis to revamp corporate governance practices and rejuvenate shareholder's role in directing capital allocation and maximising long term value creation.

The process of reforming Japan's corporate governance began with the Ministry of Justice's enactment of the 2005 Companies Act, which came into effect in May 2006, offering companies greater flexibility in their governance model including decisions about board structures and corporate auditors. These changes were followed by the introduction of the Financial Instruments and Exchange Act (FIEA) in 2007 which mandated more detailed and timelier financial and risk disclosures by corporates. In addition, the TSE revised the listing rules in 2010 to require the adoption of independent directors. Finally, the FSA shifted to the soft law approach prevalent in the UK – adopting the Corporate Governance Code in 2015.

As well as witnessing a re-engineering of the nation's corporate governance architecture, the period above also coincided with an important shift in ownership. The ratio of shares held by insider owners fell to less than 30% by 2020, from 50% in the early 2000s. This was offset by the rise of institutional investors, which became the dominant owners of the Japanese stock market (see Figure 1.1).

Figure 1.1 – The changing composition of share ownership in Japan



These arms-length institutional investors added a new voice of expertise to monitor management, with the role of foreign investors particularly important in disciplining Japanese firms, Ahmadjian, and Robbins (2005); Miyajima and Hoda (2015). To mirror the soft law code for corporates, the FSA also set about revamping governance of shareholders, with the FIEA Act introducing new transparency requirements and the 2014 Stewardship Code designed to mitigate free-rider problems and strengthen investor incentives for value creation.

The concerted effort to reform Japan’s governance structures for corporates and investors was not simply an attempt to establish a new capital market model, with shareholders at the top of the pecking order and employees and customers at the bottom. Instead, it was about improving incentives for and monitoring of management risk-taking and empowering shareholders to do their job as allocators of capital, both in line with the aim of ensuring: “sustainable corporate growth and increased corporate value over the mid- to long- term,” FSA, p3 (2024).

In this thesis, we examine the relationship between corporate value and three important elements of the Japanese capital market model: institutional investors, Main Banks and corporate governance quality. The study employs a variety of panel data techniques to tackle the direction and magnitude of effect of our chosen explanatory variables on our primary variable of interest, firm performance. As is common in the corporate finance literature, we have faced a number of challenges towards determining causality, including accounting for endogeneity, confounding factors and dynamic structure problems. This thesis tackles these issues in turn.

In Chapter 2, we explore whether institutional investor ownership enhances firm value in Japan’s hybrid corporate governance and capital market system. Using data from Topix 500 firms, the study employs two-stage least squares regression with instrumental variables to address endogeneity concerns typical in corporate finance research. The findings indicate a strong causal relationship between institutional ownership and firm performance when measured by accounting

metrics, but not by market-based indicators. We also find some evidence that institutional ownership positively impacts firm value, when the firm operates within an efficient information environment. Among the information environment proxies examined, analyst coverage supports institutional investors in enhancing return on assets, whereas the proportion of independent directors does not show a similar effect. These results indicate that institutional investors are acting in-line with the expectations of a shareholder-centric model by seeking to maximise firm value.

Chapter 3 investigates whether firms have benefited from maintaining a Main Bank relationship following the Global Financial Crisis (GFC). Using propensity score matching, the study evaluates the effect of Main Bank ties on three firm performance measures. Results show a consistently negative and statistically significant relationship, contradicting theories that such relationships reduce agency costs or enhance monitoring through dual ownership. Instead, Main Banks have a negative impact on firm performance across all model specifications, suggesting these banks are undermining the interests of shareholders rather than acting in their best interests.

In Chapter 4, we examine the causal relationship between corporate governance quality and firm performance in Japan, focusing on TOPIX 500 firms. Using fixed-effect regression models and the Generalised Method of Moments (GMM) techniques that use internal instruments – lagged values of endogenous variables – to tackle both dynamic nature of relationships and endogeneity problems. The findings reveal a significant positive relationship between corporate governance quality and accounting-based measures of firm performance, even after controlling for potential biases. However, the results are less clear for market-based performance measures, as the relationship is statistically insignificant and the instruments used fail validity tests.

The inconsistency between corporate governance quality and accounting and market-based measures of performance mirrors our findings related to institutional ownership and firm value. The conflict may reflect differences in short-term financial performance versus long-term market valuation. It may also be attributed to structural inefficiencies in Japan's capital markets, such as cross-shareholding practices and reliance on bank-centric financing. Alternatively, Japanese companies may be more vulnerable to scale efficiency and cost discipline effects that distort Tobin's Q calculations, leading to a disconnect with accounting proxies.

We address this issue and others in the final Chapter, which provides a concise review of the earlier analysis, summarising the findings and assessing the implications. It also offers avenues for future research and highlights shortcomings to be addressed. Overall, the study supports the ongoing reform of corporate and shareholder governance architecture in Japan and finds evidence that the shareholder-centric model is a relevant framework when considering firm performance, while highlighting limitations in market-based assessments within the Japanese context.

Chapter 2 - Institutional ownership and corporate value in Japan

2.1 Introduction

Agency theory has been the dominant approach to corporate finance problems under a shareholder-centric system. However, its origins are far humbler. Jensen and Meckling's 1976 paper, *Theory of the Firm*, was designed to address the causes of the prolonged economic downturn in the US. It suggested that America's economic malaise could be traced to a problem in the way firms were managed.

Japan has witnessed a similarly frustrating period of economic underperformance. Having exhausted an array of alternative remedies, rectifying firm mismanagement has become a potential panacea for the country's misfiring economy. Policymakers have sought to revamp Japan's corporate governance architecture through a series of hard and soft law reforms in the hope of unlocking a shareholder value revolution.

In this thesis, we seek to advance understanding of the relevance of the agency theory framework in an unfamiliar territory. In particular, we seek to test whether the conventional agency theory view that institutional investors can improve firm performance – due to their high incentives to engage with and discipline management – is replicated in Japan.

We chose Japan because it represents a hybrid corporate governance system. Shareholder structures resemble the dispersed ownership model of countries like the US or the UK, La Porta et al (1998). Likewise, shareholders enjoy relatively strong legal protections compared to their international counterparts. However, aspects of the country's governance structures continue to support a relational model, which incentivizes internal monitoring systems and tight inter-firm relationships in a system resembling continental European countries.

To enable this examination, we construct a panel data of financial information and institutional ownership of Topix 500 firms from fiscal years 2006 to 2014. We estimate panel regressions to quantify the impact of institutional ownership on firm performance, Sakawa and Watanabel (2020).

Our findings indicate a positive relationship between institutional ownership and corporate performance in Japan. However, we find less compelling evidence that the relationship is causal once endogeneity problems identified in the literature are accounted for. Specifically, there is a divergence in accounting-based measures of performance, which indicate positive causality, and market-based measure, which indicate a negative causality.

This raises questions about the impact of institutional investor alone to induce management to act in the best of interest of shareholders. It also raises questions about discrepancies between accounting and market-based measures of firm performance, that require closer attention.

We also find some supportive evidence that institutional investors improve firm performance as measured by ROA and ROE, conditional on the information environment surrounding the firm being conducive. We find institutional investors effects on firm performance is more significant

when sell-side analyst coverage is high but find no such relationship in the presence of independent directors.

This research contributes to our understanding of the relevance of an agency theory-based model in a hybrid capital market system. We find that institutional investor ownership is positively related to firm performance, but the results are variegated when endogeneity problems are accounted for. Specifically, the positive causal effects evident with accounting-based proxies of performance are not evident for market-based measures. We test whether the relationship between institutional ownership and firm performance is more consistent in the event that institutional investors are accompanied by other monitors willing to share information with shareholders. We find institutional investor add value if accompanied by other monitors, although not all monitors are complementary. We also find consistent evidence regarding a divergence in effects for accounting and market-based measures.

If Japan is seeking to replicate the US boardroom revolution triggered by the agency theory model, further research is required on how to strengthen incentives and behaviours to ensure institutional investor engagement itself is sufficient to discipline and monitor management. We also propose further research into the inconsistency between accounting and market-based metrics of firm value. We address this topic in more detail later in this thesis. Finally, we propose a closer examination of non-shareholder monitoring of firm management, including Main Banks, and their incentives to share relevant information with shareholders.

The rest of the chapter is organised as follows. First, we review the literature on agency theory and the role of shareholder engagement activity in cost mitigation. We introduce the role of institutional investors and consider how their role has evolved in the Japanese capital system. Next, we develop an empirical approach which seeks to test whether institutional ownership itself is sufficient to raise firm value or whether it is dependent on the efficiency of the informational ecosystem. We set out our methodology, data and sample before documenting our results. Finally, we outline our conclusions, limitations, and scope for further study.

2.2 Literature review

2.2.1 Agency theory

The separation of corporate risk-bearing functions from decision-making functions can positively impact firm performance, Coase (1937); Williamson (1979). This partly reflects the principle of specialisation familiar in other fields of economics. It also reflects the success of corporate governance structures in mitigating costs associated with the delegation of decision-making authority to agents, known as agency costs, Jensen and Meckling (1976).

The fundamental idea of the ‘agency costs’ framework is that the interests of decision-makers and risk-bearers are not only at odds, but that information asymmetry provides the opportunity for stakeholders to pursue selfish interests at the expense of other claimants. We identify two important sources of informational problems.

The first problem relates to changes in information quality over time. Insufficient monitoring can increase the capacity for managers to mislead or deceive shareholders, Mahrt-Smith (2003). For example, management may underreport profits to prevent the dispersion of funds to shareholders

through dividends. In the absence of monitoring, information asymmetry will serve to raise capital costs for all firms, making dishonesty the rationale strategy, Bebchuk (2003). However, this incentive ceases to exist if monitoring activity results in a penalty and restores honesty as the most lucrative course of action. Monitoring activity includes engagement with management and boards on business portfolio, capital efficiency, payout and cash ratios, Hidaka et al. (2021).

A second is caused by a lack of alignment between economic interests of managers and shareholders, Coffee (1991); Jensen and Murphy (2004); Benner and Ranganathan (2012). The solutions are primarily concerned with goal congruence through effective design and architecture. Practical efforts to ensure bonding to ownership objectives typically focus on the adoption of mechanisms such as stock option incentives, board composition or representation, poison pills or cross-shareholdings.

To uphold information quality - monitoring - and reduce management entrenchment - bonding - investors can conduct engagement activities. However, these engagement techniques require dedicated resources and can incur substantial costs, while the benefits of improved corporate management are shared among all shareholders. This is not a problem when ownership is highly concentrated as both the costs and benefits of monitoring are incurred by the same entity. However, in a model of dispersed ownership, where not all shareholders have sufficient capital at stake to expend their own resources on information gathering, it can create a free-rider problem.

How to mitigate this free-rider problem and restore incentives for shareholders, particularly minority shareholders, to conduct engagement activities has become a central question in the agency literature.

One solution to the free-rider problem is strengthening incentives and capabilities to monitor and influence firm management, Hidaka et al. (2021). Chen et al. (2007) identifies three key determinants of engagement incentives: 1) size of ownership stake, 2) the length of time the shareholder has invested in the firm 3) the independence of the shareholder.

A cost-benefit framework helps frame the efficacy of this incentive mechanism. Firstly, economies-of-scale means that the fixed costs associated with gathering and analysing information are proportionally smaller the larger a firm's stake, while the financial benefits are potentially greater, Chen et al. (2007).

Secondly, ongoing engagement creates an existing knowledge base and reduces the cost of processing relevant new information, while the opportunity to reap financial benefits from improved information quality is higher the longer the duration of the investment. Finally, an important constraint on engagement incentives is conflicts-of-interest given other competing business interests between firm and shareholder.

Institutional investors can potentially mitigate the agency problem between shareholders and managers and improve firm value, Gillan and Starks (2003). This reflects their longer-term horizon and lower susceptibility to conflicts-of-interest given legal protections and fiduciary duties, Brickley et al. (1988).

Our primary interest is whether there is evidence for institutional investors' track record for improving firm value is replicated in Japan. In the next section, we examine the literature related to institutional ownership and consider the relevance of Japan's experience to the wider debate.

2.2.2 The rise of institutional ownership

Interest in the role of institutional investors has intensified as they have become larger players in the financial markets, Gillan and Starks (2007); Aggarwal (2009). Numerous studies find that large institutional investors have a track record for improving firm value through institutional investor oversight and mitigation of managerial entrenchment, Shleifer and Vishny (1986); Kang and Stulz (1997); Gillan and Starks (2003); Dittmar (2007); Hamao and Kutsuna (2010).

Lower cost of equity capital derived from access to institutional investors and international equity markets offer firms in a shareholder-oriented model a competitive advantage over those without access. If not impeded, the resulting efficiency gains will result in a convergence in governance practices towards the shareholder value maximization model, Hansmann and Kraakman (2000).

However, are the capabilities of institutional investors being oversold? Puchniak (2021) argues that the positive relation between institutional investors and firm performance is itself an anomaly. Rather than a governance frontier, the positive influence of institutional investors engagement and stewardship activities is due to unique legal and structural characteristics in a few market-orientated jurisdictions such as the UK and the US.

Consequently, it is not relevant to most financial systems where the collective might of the institutional investors is considerably less; and structures that protect shareholders rights and support engagement activities are absent, La Porta et al. (1997).

2.2.3 The evolution of governance in Japan

This chapter advances our understanding of this topic by examining the sensitivity of institutional investor ownership and firm value in Japan. Like elsewhere, Japan institutional investors have become increasingly important shareholder segment with institutional ownership accounting for more than half of listed Japanese firms, compared to one-fifth at the beginning of the century.

Japan also shares strong legal protections for investors. In terms of shareholder rights, Japan legal protections for owners including minority shareholders are at least equal to those of their US counterparts, Siems (2008). It also has ownership structural traits consistent with the Anglo-Saxon model of dispersed ownership, with few individual controlling shareholders. However, it violates a critical condition Puchniak uses to distinguish the Anglo-Saxon model i.e., institutional investors collectively have the legal rights to control nearly all listed companies. In Japan, domestic institutional investors account for close to 20% of market ownership during our study period, while foreign institutional investors share of ownership is closer to 30%. That is considerably lower than 68% institutional ownership in the UK and 80% in the US, Puchniak (2021).

Importantly, Japan has much greater restrictions on collective ownership than is evident in Anglo-Saxon economies, which makes effective control of a company by one or a group of institutional investors highly uncommon.

It also has distinct characteristics in terms of governance structures. The development of governance structures in Japan, most notably in the fast-growth era of the 1950s and 1960s, placed greater weight on institutional arrangements and stakeholder interests, Kato (2017). These led to an implicit, rather than explicit, concentration of effective ownership among dominant relationship banks known as Main Banks.

This bank-centric model incentivised Main Bank monitoring both through formal channels as joint shareholders and creditors and informal, such as the appointment of ex-bank officials on boards.

However, Main Banks did not enjoy sufficient control of voting in the same way entrepreneurs, and their families, are capable of in concentrated-owner jurisdictions, Aoki (1994); Hoshi et al (1991); La Porta et al. (1999).

Furthermore, dissatisfaction with the Main Bank system's role in the financial bubble triggered a reassessment of Japan's governance model. Rather than a steward of capital allocation, relationship banks were a source of capital bottlenecks. Hoshi et al. (1993) found that when regulatory change enabled Japanese firms to borrow in public capital markets and not just from the banks, firms jumped at the opportunity. More damningly still was the finding of Weinstein and Yafeh (1994) that firms with Main Banks paid on average higher interest rates on their debt capital than those without.

The failings from the main bank system triggered a period of financial deregulation after the turn of the century. As banks retreated, new monitors emerged in the form of institutional owners, with both domestic and foreign institutions taking a growing share of stock ownership.

However, Japan did not abandon the corporate relational model or interconnectivity of *keiretsu*-style business groups. Institutional investors were invited to join employees, creditors and communities to play a role in enhancing firm performance. One important element of the traditional Japanese model not dropped was the distribution of firm value-add to all stakeholders rather than directly exclusively to shareholders. Another important attribute of the evolved relational model was the retention of business groups with financial, human, and transactional ties and cross-shareholdings, Sakawa and Watanabel (2020).

We believe this unique governance structure of the Japanese market offers an opportunity to test the relationship between institutional investor and firm value in a jurisdiction that has some of the characteristics of shareholder-centric model but lacks a widespread consensus that corporate managers should act exclusively in the economic interests of shareholders. Furthermore, aspects of the bank-centric governance model remain in place.

We believe that examining institutional investors in the context of a hybrid governance system can have important implications for our understanding of their capability to sufficiently manage and discipline firm management using standard bonding and monitoring tools.

In a further contribution to the literature, we extend our analysis to consider whether institutional investors' ability to mitigate information asymmetry problems in Japan is dependent on other sources of information provision to shareholders. Jung & Dobbin (2016) identify two groups of experts, securities analysts and corporate boards, which collect, digest and distribute information through firm monitoring.

A large strand of literature shows analysts coverage as a good measure of information efficiency, Ho et al. (1997); D'Mello and Ferris (2000); Xue (2003). Analysts may act as good monitors, both as processors and producers of information, to decrease agency costs, Doukas et al. (2000). Hong et al. (2000) use larger analyst coverage as an indicator of less information asymmetry.

The selection of outside directors as an auxiliary monitor is also consistent with previous literature, Acharya et al. (2011); Adams and Ferreira (2007), and the agency theory prescription that outside directors monitoring can improve corporate governance, increase accounting performance, and enhance firm value, Fama (1980); Fama and Jensen (1983).

By testing institutional ownership as well as auxiliary monitoring activity of their agents we seek to identify whether institutional ownership is sufficient itself to impact firm performance or is

conditional on an information environment conducive to shareholder primacy. In the next section, we outline our empirical approach and develop our hypothesis.

2.3 Analytical approach and hypothesis formation

2.3.1 Firm performance in an agency context

In this chapter, we test whether institutional ownership in itself is sufficient to positively impact firm performance. Although firm performance has been proposed as a multidimensional construct that consists of many different objectives, Richard et al. (2009), we focus on the economic goals of the firm since they best impel it to implement strategies that enhance outcomes for all stakeholders, Venkatraman and Ramanujam (1986); Sundaram and Inkpen (2004a, 2022).

We adopt both a market based and accounting-based proxy of financial firm performance. In terms of an accounting-based profitability measure of firm value we deploy a return on assets (ROA) ratio and return on equity (ROE) ratio. The ROA ratio divides profit after tax or net income – from the income statement – and compares to total assets – from balance sheet. It highlights the amount of profit each unit of asset generated and shows the efficiency with which the firm operates, Petersen and Schoeman (2008). This measure has been widely used by many others, Cornett et al. (2007); Tsouknidis (2019). A high value of the ROA ratio reflects favourable operational efficiency to generate profits.

Equation (2.1)

$$ROA = \frac{\text{Net Income after taxes}}{\text{Total Assets}}$$

The ROE ratio divides profit after tax or net income - from the income statement – and compares to shareholder equity – from balance sheet. It highlights the amount of profit each unit of shareholder equity generated and shows the efficiency with which the firm operates. This measure has also been adopted in the previous literature, Gompers, Ishii, and Metrick (2003) and Bhagat and Bolton (2008).

Equation (2.2)

$$ROE = \frac{\text{Net Income after taxes}}{\text{Shareholder Equity}}$$

Finally, Tobin's Q compares the market value of debt and equity versus its replacement cost. In the longer term, we would expect equivalence, i.e., Tobin's Q should equal 1. A Tobin's Q substantially below 1 indicates a low valuation, while substantially more than 1 is a high valuation.

Equation (2.3)

$$\text{Tobin } Q = \frac{\text{Equity Market Value} + \text{Liabilities' Market Value}}{\text{Equity Book Value} + \text{Liabilities' Market Value}}$$

Our explanatory variable of interest is institutional investors. Efficient transactions, good risk evaluation, and good corporate governance systems have been all attributed, at least partly, to the existence of institutional ownership, De La Hoz (2016).

Our area of interest is the relationship between institutional ownership and firm performance. Larger institutional shareholder ratios are associated with higher performance and value in shareholder-centric models such as the US, Woidtke (2002); Del Guercio & Hawkins (1999); Navissi and Naiker (2006).

By relating firm performance to institutional ownership, we follow the literature in assuming that the incentive mechanism for engagement activities is functioning for institutional investors. Zeckhauser and Pound (1990) found evidence that monitoring can raise future earnings and the sum of expected profits.

2.3.2 Hypothesis one – Institutional ownership improves firm performance in Japan.

The agency theory predicts a higher cost of capital for firms as information conflicts between owners and management increase. As stated previously, we understand institutional investor ownership may reduce information asymmetry itself due to institutional investors improved incentives to monitor and to discipline firm management and their expertise aligning firm management objectives.

The primary incentive of efficient-monitoring by institutional investor is the improved long run cost-benefits. This is the standard interpretation of the incentive mechanism in earlier literature, Gillan and Starks (2003), Ferreira and Matos (2008), Chen et al. (2007), Aghion et al. (2013), Schmidt and Fahlenbrach (2017).

We seek to test whether the presence of institutional ownership is sufficient in itself to increase corporate value in a hybrid corporate governance system such as Japan.

2.3.3 Hypothesis two – Institutional ownership impact on firm performance is dependent on the wider information environment.

Institutional owners have strong incentives to maximise the value of a firm through engagement given their position as the firm's residual claimant. However, there exist a number of other specialist groups who monitor the activity of management.

This additional monitoring capacity results in improved information dispersion to shareholders and improves the efficiency of the information environment.

We seek to introduce a proxy for the information environment to understand how firm performance is impacted by an improvement in information dispersion to shareholders. We identify two proxies for information efficiency.

The first is the coverage ratio of securities analysts. Analysts' coverage is a useful proxy of firm level financial transparency, with higher coverage likely to increase information flow to owners. The second proxy is outside director ratio. Outside directors lack the knowledge of firm insiders and as a result are highly dependent on the information regime operated by a firm. The higher the ratio of outside directors the greater the need for the externalisation of information on management decision-making.

The board's role is to promote creation of, and to protect against risks to, firm value, or to maximise the long-run value of the equity in the firm. This is consistent with the Japan Stewardship Code's view that the functions of the board and that of institutional investors as being complementary to each other.

2.4 Methodology

We use panel data techniques to test whether institutional ownership improves firm performance in Japan. We seek to understand the effect size and make comparisons with similar studies in other jurisdictions.

We use ROA, ROE and Tobin's Q as the dependent variable and as the proxy variables of firm value. Tobin's Q represents the market value of a firm's assets while ROA and ROE is an accounting-based guide to firm performance. We expect both the market based and accounting-based proxy of financial firm performance to be correlated, with a Pearson correlation co-efficient of 0.68.

In terms of independent variables, we adopted institutional ownership variables based on the Nikkei NEEDS Corporate Governance Evaluation Systems (CGES) database. Institutional ownership is the ratio of the number of shares held by institutional investors to the number of outstanding shares. Data for institutional ownership is defined as ownership held by corporations, foreign investors (excluding foreign corporations), trust accounts, and special accounts of domestic insurance companies.

In line with previous studies, we control for firm characteristics such as firm size, financial leverage, free cash flow and the number of analysts, Sakawa and Watanabel (2020). The size of the firm was measured as the logarithm of firm assets. We use financial leverage to control for firm capital structure. The pecking order theory suggests that higher leverage has a negative relationship with firm performance. Furthermore, high leverage positively affects ROA but negatively influences ROE.

We begin by considering hypothesis 1: firm value measures, such as Tobin's Q, ROA and ROE, are sensitive to ownership by institutional investors. Hypothesis 1 predicts a positive coefficient for the dependent variables, which implies that institutional ownership is positively related to firm value. The regression model to test this hypothesis is as follows:

Equation (2.4)

$$\delta_{i,t} = \alpha + \beta_1.INST + \beta_2.FCFASS + \beta_3.FRGN + \beta_4.DASS + \beta_5.EBRD_NUM + \beta_6.IDRT + \beta_7.LASS + \varepsilon_{it}^*$$

where, δ represents Tobin Q or ROA as two dependent variables in these equations. For ownership variables, we employ a measure of the percentage of institutional holdings (INST) and foreign (FRGN). For other financial variables, free cashflow is measured as a ratio of assets (FCFASS), size and leverage are represented by the log of firm assets and debt to asset ratio respectively. For governance measures we include the board size (EBRD_NUM) and independent director ratio (IDRT). ε represents the error terms.

Like elsewhere in the corporate finance literature, the role of 'identifying restrictions to solve the endogeneity problem', is not fulfilled by theoretical models Leary and Michaely (2011), making it challenging to confirm the causal link between ownership and corporate performance. Earlier studies like Demsetz (1983), Hermalin and Weisbach (1988), Cho (1998), Demsetz and Villalonga (2001), Chi (2005) consider the possible endogeneity concern between ownership structure and firm performance. We conduct robustness checks to address the endogeneity issue of institutional ownership with firm value.

We apply an instrumental variable (IV) estimations to reduce potential correlations between the error term and independent variables using two-stage least squares analysis. To conduct IV estimations, we require variables that are:

- 1) uncorrelated with the error term,
- 2) but partially and sufficiently strongly correlated with institutional ownership once the other independent variables are controlled for.

Following Sakawa and Watanabel (2020) we use an American Depository Receipts (ADR) dummy as our instrumental variable for institutional ownership. The selection of ADRs is unlikely to affect performance i.e., be correlated with residuals in the second-stage regression. However, it an important consideration of institutional shareholders selection.

Next, we examine whether institutional investor's impact on firm value is dependent on a broader information environment. We utilise two proxies for the information environment, analyst coverage and outside directors.

The regression model for analysing this question is shown in Equation (2.5) and (2.6). The primary coefficients of interest in Equation (2.5) is the interactive term of institutional ownership and analyst coverage. As for Equation (2.6), the interactive term of independent director ratio and institutional ownership. To account for endogeneity concerns we run the models with an instrumental variable consistent with Equation (2.4).

Equation (2.5)

$$\delta_{i,t} = \alpha + \beta_1.INST * ANA + \beta_2.FCFASS + \beta_3.FRGN + \beta_4.DASS + \beta_5.EBRD_NUM + \beta_6.IDRT + \beta_7.LASS + \varepsilon_{it}^*$$

where, δ represents or firm value variable (either Tobin Q or ROA) as the dependent variables in these equations. We include an interactive term of analyst coverage and institutional ownership ($INST*ANA$) as the primary coefficient of interest. For other financial variables, free cashflow is measured as a ratio of assets (FCFASS), size and leverage are represented by the log of firm assets and debt to asset ratio respectively. For governance measures we include the board size (EBRD_NUM) and independent director ratio (IDRT). ε represents the error term.

Our variable of interest is the interaction variable of analyst coverage and institutional ownership. Hypothesis 2 predicts a positive coefficient for $\beta_1.INST * ANA$ and $\beta_1.INST * IDRT$, which implies that monitoring by institutional investors positively affects firm value in those cases where information efficiency is high. We use robust standard errors.

Equation (2.6)

$$\delta_{i,t} = \alpha + \beta_1.INST * IDRT + \beta_2.FCFASS + \beta_3.FRGN + \beta_4.DASS + \beta_5.EBRD_NUM + \beta_6.ANA + \beta_7.LASS + \varepsilon_{it}^*$$

where, δ represents or firm value variable (either Tobin Q or ROA) as the dependent variables in these equations. We include an interactive term of independent director ratio and institutional ownership ($INST*ANA$) as the primary coefficient of interest. For other financial variables, free cashflow is measured as a ratio of assets (FCFASS), size and leverage are represented by the log of firm assets and debt to asset ratio respectively. For governance measures we include the board size (EBRD_NUM) and independent director ratio (IDRT). ε represents the error term.

2.5 Data and Sample

Firm performance data for this study were obtained from Bloomberg Markets (BM) and Nikkei NEEDS Financial Quest. The sample consisted of publicly listed firms of the TOPIX 500, excluding financial firms. The time period from 2006-2014 covers an important period in the development of Japan's capital markets. It began with the Ministry of Justice's enactment of the 2005 Companies Act, which came into effect in May 2006, offering companies greater flexibility in their governance including decisions about board structures and corporate auditors. This was followed by the introduction of the Financial Instruments and Exchange Act (FIEA) which mandated more detailed and timelier financial and risk disclosures by corporates and the introduction of licensing and supervision for investors to reduce information asymmetry and improve market integrity. Our time period ends before the implementation of the Stewardship Code in 2014, and Corporate Governance Code in 2015. The soft law codes represent a new phase of Japan's capital market development, which we reserve to future study and dependent on data availability.

ROA is relatively straightforward to calculate by dividing net income by total assets, while ROE is net income divided by shareholder equity. Tobin's Q is calculated by dividing the market value of equity, preferred shares as well as publicly traded debt and book value of remaining liabilities by the book value of assets and liabilities, where book value is the same as the balance sheet figure.

Data related to ownership structure were obtained from the Nikkei NEEDS CGES. INST represents the ratio of the number of shares held by institutional investors to the number of outstanding shares. It consists of trust accounts, special accounts of domestic insurance companies and foreign investors (excluding foreign corporate investors).

As for other financial data, it was obtained from Bloomberg Markets and Nikkei NEEDS Financial Quest and CGES databases as indicated in Table 2.1. Table 2.2 shows the summary statistics of firm performance, ownership and governance characteristics for the period 2006-2014. The data includes the median, mean, standard error, confidence interval for the arithmetic mean, variance, standard deviation, and coefficient of variation.

Table 2.1 – Definitions of variables

This table specifies the variable, our preferred definition, source of the data and the reference code corresponding to the empirical analysis.

Variable	Code	Defintion	Source
Ownership variables			
Institutional Ownership	INST	Percentage of institutional shareholdings: consists of foreign investors (excluding foreign corporate investors), trust accounts, and special accounts of domestic insurance companies	Nikkei NEEDS
Foreign Ownership	FRGN	Foreign investor shareholding ratio (based on the Annual Securities Report)	Nikkei NEEDS
Dependent variables			
Tobin Q	AVEQ	Tobin's Q: market value of equity and book value of liabilities divided by book value of assets	BM
Return on assets	ROA	Return on assets: current income divided by book value of assets	BM
Return on equity	ROE	Return on assets: current income divided by shareholder equity	BM
Independent Variables			
Size	LASS	The logarithm of firm assets	BM
Leverage	DASS	Debt/Total assets	BM
Cashflow	FCFASS	Free Cashflow/Total Assets	Nikkei NEEDS
Risk	RISK	Stock price volatility over three years	BM
Independent Director	IDRT	Independent director/board size (%)	Nikkei NEEDS
Analyst Coverage	ANAT	Equals 1 if analyst coverage is above the 75th percentile; otherwise 0	BM
Board size	EBRD_NUM	Number of Board of Directors members (scale adjustment) = total assets standardized by board members / natural logarithm	Nikkei NEEDS

Table 2.2 -Summary statistics

This table shows the summary statistics of firm performance, ownership and governance characteristics for the period 2006-2014. Refer to Table 1 for variable definition.

Statistic	ROA	ROE	AVEQ	INST	FCFASS	FRGN	DASS	EBRD_NUM	IDRT	LASS	RISK	ANAT
median	3.211	1.175	35.79	2.34	23.39	18.46	0.7876	11.11	26.859	9	0.049	0
mean	3.875	1.45	34.76	2.34	24.25	21.38	0.8476	14.57	26.925	9.648	0.086	0.227
SE.mean	0.071	0.018	0.24	0.13	0.19	0.27	0.0047	0.24	0.021	0.088	0.012	0.0044
CI.mean.0	0.14	0.036	0.47	0.25	0.38	0.52	0.0092	0.46	0.041	0.173	0.062	±0.0087
var	22.61	1.462	269.62	69.81	158.15	320.96	0.0942	237.96	2.014	33.871	0.307	1.846
std.dev	4.755	1.209	16.42	8.35	12.58	17.92	0.3069	15.43	1.419	5.82	0.554	0.419
coef.var	1.227	0.834	0.47	3.57	0.52	0.84	0.3621	1.06	0.053	0.603	6.442	1.846

2.6 Results

In this section, we investigate the empirical validity of the relationship between institutional ownership and firm performance. In the first stage of our analysis, we assess whether the effects of institutional ownership and other control variables on our selected dependent variables are consistent across firms or whether the data exhibit unobserved heterogeneity at the firm level. We also compare these results with those from a pooled OLS estimation, which ignores firm-specific effects (see Table 2.3).

Table 2.3 – Institutional ownership and firm performance

This table shows estimates of regressions of proportion of institutional ownership on firm performance. The dependent variable is firm performance using our preferred measures of ROA, ROE and Tobin's Q. The main independent variable is institutional ownership.

	ROA			AVEQ			ROE		
	OLS	RE	FE	OLS	RE	FE	OLS	RE	FE
FCFASS	0.18*** (-0.011)	0.084*** (-0.008)	0.058*** (-0.008)	0.02*** (-0.002)	0.003** (-0.001)	0.001 (-0.001)	0.21* (-0.021)	0.13*** (-0.019)	0.031* (-0.019)
INST	-0.055*** (-0.009)	0.014 (-0.012)	0.07*** (-0.014)	-0.011*** (-0.002)	0.002 (-0.002)	0.01*** (-0.002)	-0.028* (-0.017)	0.005 (-0.023)	0.12*** (-0.035)
FRGN	0.2*** (-0.011)	0.14*** (-0.015)	0.078*** (-0.017)	0.025*** (-0.002)	0.013*** (-0.002)	0.01*** (-0.003)	0.21*** (-0.021)	0.19*** (-0.028)	0.080* (-0.041)
DASS	-0.068*** (-0.006)	-0.14*** (-0.009)	-0.2*** (-0.012)	0 (-0.001)	-0.005*** (-0.002)	-0.01*** (-0.002)	-0.017 (-0.012)	-0.14*** (-0.017)	-0.52*** (-0.029)
EBRD_NUM	-0.23 (-0.32)	0.38 (-0.37)	0.46 (-0.4)	0.028 (-0.053)	0.13** (-0.06)	0.12* (-0.065)	0.39 (-0.6)	1.4* (-0.77)	1.8* (-0.98)
IDRT	-0.011* (-0.006)	-0.03*** (-0.007)	-0.051*** (-0.008)	0.003*** (-0.001)	0.001 (-0.001)	0.002 (-0.001)	-0.042*** (-0.012)	-0.051*** (-0.015)	-0.099*** (-0.02)
LASS	-1.7*** (-0.082)	-0.87*** (-0.15)	1.8*** (-0.32)	-0.25*** (-0.014)	-0.29*** (-0.025)	-0.54*** (-0.052)	-1.1*** (-0.15)	-0.11 (-0.24)	7.3*** (-0.78)
Constant	51*** (-2)	30*** (-3.8)		7.7*** (-0.35)	8.8*** (-0.65)		33*** (-3.9)	8.5 (-6)	
N	3,843	3,843	3,843	3,808	3,808	3,808	3,843	3,843	3,843
R ²	0.37	0.21	0.19	0.18	0.066	0.057	0.098	0.079	0.16

*p<0.1; **p<0.05; ***p<0.01

Using a Hausman Test we conclude that the fixed-effect estimate is the most appropriate given endogeneity issues in the model. Our null hypothesis is that the random effect model is the preferred model, i.e., there is not a correlation between the errors and the regressors in the model. The P-value is close to 0, so there is no correlation, so we prefer the fixed effect model, see Table 2.4 for results.

Table 2.4 – Hausman specification test results

Test	Chi-Sq. Statistic	Parameter	P-value
ROA	223	7	<0.001
ROE	65	7	<0.001
Tobin Q	442	7	<0.001

Based on the fixed effect model, the coefficients for institutional investors, INST, were positive and significant, which supports Hypothesis 1 both for ROA, ROE and Tobin Q.

Next, we test for endogeneity using a two-stage least squares (2SLS) estimation model, employing an ADR dummy as an instrument for institutional ownership (INST). The results are presented in Table 2.5.

Table 2.5 – Institutional ownership and firm performance - Two-Stage Least Squares

The table shows the results of a two-stage least square models estimation models using ADR as an instrumental variable. The 2SLS approach cuts correlations between the error term and independent variables to represent the causal relationship between institutional ownership and firm performance.

	ROA	AVEQ	ROE
<i>Predictors</i>	<i>Estimates</i>	<i>Estimates</i>	<i>Estimates</i>
FCFASS	0.02 ** (0.01)	0.01 *** (0.00)	-0.05 * (0.02)
fitted	3.46 *** (0.33)	-0.73 *** (0.05)	9.26 *** (0.80)
DASS	0.02 (0.02)	-0.05 *** (0.00)	0.07 (0.05)
FRGN	-2.12 *** (0.21)	0.48 *** (0.03)	-5.84 *** (0.52)
EBRD NUM	-5.10 *** (0.67)	1.15 *** (0.10)	-12.66 *** (1.63)
Observations	3459	3424	3459
R ² / R ² adjusted	0.169 / 0.061	0.070 / -0.052	0.137 / 0.025

* $p < 0.05$ ** $p < 0.01$ *** $p < 0.001$

The fitted variable represents institutional ownership unless otherwise specified. It is positive and significant in Model 1 for ROA and Model 2 for ROE, implying there is a positive relationship between institutional investors (INST) and accounting-based measures of firm performance. Furthermore, the effect size is relatively large with a 1-unit increase in institutional ownership associated with a 3.46-unit increase in ROA and a 9.26 increase in ROE, while the standard errors are relatively small. On the other hand, the coefficient is negative for Model 3 for Tobin Q, implying that there is a negative relationship between INST and firm performance based on market-based measures. These results mean we find strong evidence that institutional ownership itself has a positive impact on firm performance for accounting-based measures. However, the evidence is not unanimous, with conflicting findings regarding market-based variables. Although the effect size is smaller, it is statistically significant auguring for caution when interpreting our results.

The evidence is certainly different from earlier studies, with Sakawa and Watanabel (2020) finding positive and significant relationship between institutional ownership and firm performance across accounting and market-based proxies. One possible explanation is a poor instrumental variable, which can cause inconsistency and imprecision in the IV/2SLS estimators. Staiger and Stock

(1997) suggest that the F-statistics of instrumental variables should be larger than 10 to ensure that the maximum bias in IV estimators to be less than 10 %.

We re-ran our estimates using Topix 100 as an instrumental variable. However, the results were not a material improvement. Based on these results it is not possible to conclude that institutional investors positively affect firm value.

Another possible explanation relates to the applicability of Tobin's Q in the Japanese market. Although the financial proxies of firm performance we employ have a high Pearson correlation coefficient it is possible that structural issues in the Japanese market, e.g. cross shareholdings and bank-centric financing, reduce the efficiency of Tobin's Q as an indicator of firm performance.

Given the importance of information quality in the formation and exacerbation of agency costs, we consider the interaction of proxies for the information environment and institutional investor's presence on the ability to influence firm value, assuming that the information environment is not solely dependent on the existence of institutional investors. We select analyst coverage as a proxy for the information environment given their important role as monitors capable of improving the diffusion of information. Our results are presented in Table 2.6.

Table 2.6 - Institutional ownership conditional on analyst coverage

This table shows estimates of regressions of institutional ownership on firm performance conditional on high analyst coverage. The dependent variable is firm performance using our preferred measures of ROA and Tobin's Q. The main independent variable of interest is the interaction term of analyst coverage and institutional ownership.

	ROA			AVEQ			ROE		
	OLS	RE	FE	OLS	RE	FE	OLS	RE	FE
	-1	-2	-3	-4	-5	-6			
FCFASS	0.287*** (-0.012)	0.162*** (-0.002)	0.131*** (-0.009)	0.037*** (-0.002)	0.016*** (-0.002)	0.013*** (-0.002)	0.333*** (-0.023)	0.238*** (-0.002)	0.150*** (-0.022)
INST	-0.047*** (-0.009)	0.014*** (-0.003)	0.055*** (-0.013)	-0.015*** (-0.002)	-0.007*** (-0.003)	-0.002 (-0.002)	-0.031** (-0.013)	-0.036*** (-0.001)	-0.044*** (-0.012)
ANAT	5.059*** (-0.680)	0.503*** (-0.181)	-0.824 (-0.673)	0.491*** (-0.129)	-0.431*** (-0.181)	-0.665*** (-0.128)	1.070** (-0.454)	-0.444*** (-0.058)	-0.083 (-0.597)
DASS	-0.050*** (-0.006)	-0.106*** (-0.002)	-0.145*** (-0.011)	0.003*** (-0.001)	0.0004 (-0.002)	0.001 (-0.002)	-0.01 (-0.012)	-0.134*** (-0.002)	-0.437*** (-0.03)
FRGN	0.178*** (-0.01)	0.107*** (-0.004)	0.045*** (-0.016)	0.023*** (-0.002)	0.012*** (-0.004)	0.005* (-0.003)	0.161*** (-0.016)	0.184*** (-0.002)	0.115*** (-0.036)
EBRD_N UM	0.038 (-0.288)	0.134 (-0.089)	0.045 (-0.352)	0.023 (-0.055)	-0.002 (-0.089)	0.012 (-0.067)	1.266** (-0.587)	2.239*** (-0.084)	0.943 (-0.988)
LASS	-2.095*** (-0.085)	-1.246*** (-0.039)	1.711*** (-0.33)	-0.326*** (-0.016)	-0.369*** (-0.04)	-0.897*** (-0.064)	-1.245*** (-0.171)	-0.018 (-0.028)	9.768*** (-0.871)
INST:AN AT	-0.056*** (-0.015)	0.010*** (-0.004)	0.030*** (-0.015)	-0.0002 (-0.003)	0.013*** (-0.004)	0.017*** (-0.003)	-0.016 (-0.024)	0.018*** (-0.003)	0.058*** (-0.023)
Constant	61.350*** (-2.146)	39.592*** (-1.012)		9.873*** (-0.408)	11.189*** (-1.022)		35.808** * (-4.356)	4.596*** (-0.717)	
Obser R2	4,062 0.423	4,062 0.374	4,062 0.166	4,055 0.227	4,055 0.17	4,055 0.078	3,668 0.13	3,668 0.10	3,668 0.14

The coverage of analysts represents both additional monitoring expertise and high willingness to disclose information to shareholders, or high information availability.

The results of including the interaction terms were positive and significant, which supports Hypothesis 2 both for ROA, Tobin Q and ROE. Once again, we seek to test for robustness by utilising an IV. We utilise IV for both ROA, ROE and Tobin's Q (see Table 2.7).

Table 2.7 - Institutional ownership conditional on analyst coverage - Two-Stage Least Squares

The table shows the results of a two-stage least square models estimation models using ADR as an instrumental variable. The 2SLS approach cuts correlations between the error term and independent variables to represent the causal relationship between institutional shareholders and performance conditional on analyst coverage.

	ROA	AVEQ	ROE
<i>Predictors</i>	<i>Estimates</i>	<i>Estimates</i>	<i>Estimates</i>
FCFASS	0.10 *** (0.01)	0.03 *** (0.00)	0.16 (0.09)
fitted c	1.35 *** (0.32)	-0.90 *** (0.06)	3.77 (2.41)
ANA c	0.16 *** (0.03)	0.02 *** (0.01)	0.13 (0.21)
interaction	0.02 *** (0.00)	-0.00 (0.00)	0.02 (0.02)
DASS	-0.10 *** (0.01)	-0.02 *** (0.00)	-0.30 ** (0.10)
FRGN	-0.84 *** (0.22)	0.62 *** (0.04)	-2.67 (1.67)
EBRD NUM	-1.67 ** (0.55)	1.16 *** (0.11)	-0.98 (4.23)
IDRT	0.03 ** (0.01)	-0.02 *** (0.00)	-0.01 (0.10)
Observations	4062	4055	4062
R ² / R ² adjusted	0.173 / 0.083	0.073 / -0.029	0.016 / -0.092

* $p < 0.05$ ** $p < 0.01$ *** $p < 0.001$

The coefficients for the interactive terms are positive across both ROA and ROE. However, the coefficient is only significant for ROA, indicating the effect of institutional ownership on firm value is conditional on high analyst coverage only for ROA. If you look at the coefficient for institutional investors alone, the effect diverges noticeably between ROA and Tobin's Q. The fitted term has a positive effect in ROA suggesting that institutional ownership has an unconditional positive effect on ROA.

Finally, we test outside director ratio as an alternative proxy to information environment. The initial results are as in Table 2.8.

Table 2.8 - Institutional ownership and independent director ratio

This table shows estimates of regressions of institutional ownership on firm performance conditional on independent director influence. The dependent variable is firm performance using our preferred measures of ROA, ROE and Tobin's Q. The main independent variable of interest is the interaction term of institutional ownership and independent director ratio.

	ROA			AVEQ			ROE		
	OLS	RE	FE	OLS	RE	FE	OLS	RE	FE
FCFASS	0.180*** (-0.011)	0.091*** (-0.002)	0.067*** (-0.008)	0.020*** (-0.002)	0.004** (-0.002)	0.004*** (-0.001)	0.210*** (-0.021)	0.130*** (-0.002)	0.040** (-0.018)
INST	-0.051*** (-0.012)	0.030*** (-0.004)	0.083*** (-0.016)	-0.011*** (-0.002)	0.002 (-0.004)	0.007*** (-0.003)	-0.03 (-0.022)	0.022*** (-0.003)	0.150*** (-0.04)
IDRT	-0.003 (-0.016)	0.001 (-0.005)	-0.006 (-0.018)	0.002 (-0.003)	0.001 (-0.005)	-0.001 (-0.003)	-0.046 (-0.031)	-0.028*** (-0.004)	-0.011 (-0.044)
DASS	-0.068*** (-0.006)	-0.130*** (-0.003)	-0.170*** (-0.012)	0.0002 (-0.001)	-0.003 (-0.003)	-0.003 (-0.002)	-0.017 (-0.012)	-0.130*** (-0.002)	-0.460*** (-0.029)
FRGN	0.200*** (-0.011)	0.120*** (-0.004)	0.062*** (-0.017)	0.025*** (-0.002)	0.011*** (-0.004)	0.003 (-0.003)	0.210*** (-0.021)	0.170*** (-0.003)	0.04 (-0.042)
EBRD_NUM	-0.23 (-0.32)	-0.003 (-0.1)	-0.22 (-0.4)	0.028 (-0.053)	0.065 (-0.1)	0.039 (-0.062)	0.39 (-0.6)	1.100*** (-0.084)	0.4 (-0.98)
LASS	-1.700*** (-0.082)	-0.890*** (-0.041)	2.700*** (-0.35)	-0.250*** (-0.014)	-0.310*** (-0.045)	-0.640*** (-0.054)	-1.100*** (-0.15)	-0.110*** (-0.026)	9.200*** (-0.85)
INST:IDRT	-0.0002 (-0.0004)	-0.001*** (-0.0001)	-0.0003 (-0.0004)	0.00002 (-0.0001)	0.00004 (-0.0001)	0.00005 (-0.0001)	0.0001 (-0.001)	-0.001*** (-0.0001)	-0.0005 (-0.001)
Constant	51.000*** (-2.1)	30.000*** (-1.1)		7.700*** (-0.35)	9.300*** (-1.2)		33.000*** (-3.9)	8.500*** (-0.67)	
Observations	3,843	3,843	3,843	3,808	3,808	3,808	3,843	3,843	3,843
R-squared	0.37	0.32	0.17	0.18	0.14	0.049	0.098	0.075	0.14

The signs of the coefficients for the interactive term are inconsistent with our expectation of a positive effect. Once again, we use an instrumental variable to better test the causal relationship. Neither Model 1 or 2 (ROA, ROE) nor Model 2 (Tobin Q) indicates significance, which implies that independent directors are not helping institutional investors to improve corporate performance (see Table 2.9).

Table 2.9 - Institutional ownership and independent director ratio - Two-Stage Least Squares

The table shows the results of a two-stage least square models estimation models using ADR as an instrumental variable. The 2SLS approach cuts correlations between the error term and independent variables to represent the causal relationship between institutional shareholders and performance conditional on independent director ratio.

	ROA	AVEQ	ROE
<i>Predictors</i>	<i>Estimates</i>	<i>Estimates</i>	<i>Estimates</i>
FCFASS	0.02 (0.01)	0.01 ** (0.00)	-0.14 *** (0.03)
fitted	3.64 *** (0.46)	-1.02 *** (0.08)	12.30 *** (1.12)
IDRT	0.60 (0.53)	-0.09 (0.09)	2.14 (1.30)
DASS	0.02 (0.03)	-0.06 *** (0.00)	0.18 ** (0.06)
FRGN	-2.28 *** (0.30)	0.68 *** (0.06)	-7.94 *** (0.74)
EBRD NUM	-5.42 *** (0.81)	1.54 *** (0.15)	-17.44 *** (1.98)
fitted * IDRT	-0.00 (0.01)	0.00 (0.00)	0.00 (0.03)
Observations	3843	3836	3843

Based on our analysis, we find strong evidence for our initial hypothesis that institutional investor ownership alone is capable of improving firm value. These findings are robust when endogeneity concerns are accounted for when using accounting-based measures. This is consistent with expectations of a shareholder-centric capital model, and suggests institutional investors play an important role monitoring and disciplining management.

However, the evidence is not consistent across all our models. For market-based models, the evidence runs counter to our expectations when endogeneity issues are accounted for. That the effect is not consistent across different types of performance indicators raises a number of questions. First, it is possible that the effect of institutional investors may be weaker than in other markets with diversified ownership. We find two potential explanatory factors for why the free-rider problem may be more severe for Japanese institutional investors.

First, the economic incentives are weaker than in other corporate governance systems. Second, stakeholder governance structures reduce the efficiency gains that result from a broad acceptance that shareholders alone are the parties to whom corporate managers should be accountable.

We return to our incentive framework to consider the plausibility of the rationale outlined above. As stated earlier, a primary incentive for engagement is the size of stake. Japanese institutional investors are much less likely to have a controlling stake than other Asian economies. In addition, institutional investors are much less likely to exert collective control given the lower share of total market ownership by institutional shareholders - close to 50% compared to 68% institutional ownership in the UK and 80% in the US - and also have lower incentives for cooperation compared to their Anglo-Saxon counterparts.

Another concern is the relatively high portion of passive investment among institutional investors. For example, passive accounted for 77% of public pension funds allocation to Japanese equities. Schmidt and Fahlenbrach (2017) found that passive investors could monitor low-cost actions such as voting against poorly performing directors, but not monitor complicated corporate actions, such as mergers and acquisitions and elections of directors. We propose a closer examination of the impact of effective stake-size, taking into account the factors above, on institutional investors' influence.

A second determinant of engagement incentives is the level of independence. Here too, it is possible that incentives are lower than assumed as institutional investors are less independent than in other jurisdictions. We see two possible channels that may serve to negate the independence of institutional investors.

First, according to the conflict-of-interest hypothesis institutional investors are susceptible to collusion with management given other business relationship with firms. Due the complex corporate structures in the financial sector, with many Japanese mutual funds subsidiaries of banks and insurance companies, institutional investors may be coerced into voting their shares with management.

Second, the strategic-alignment hypothesis states institutional investors find it mutually advantageous to cooperate with managers at the expense of other shareholders, Navissi and Naiker (2006); Zeckhauser and Pound (1990). Collusion with management has been identified as common in Japan, with opposition of director appointments considerably lower than elsewhere for much of the sample period. For example, the mean voting ratio in favour of directors proposed by the management was approximately 94% in 2015, Hidaka et al (2021). We propose further examination of the independence of institutional shareholder through voting patterns. This may help explain why the positive effect of institutional ownership on firm performance does not extend across all our results.

A final consideration for determining institutional ownership appetite for engagement activity is the length of investment timeframes. Institutional investors with a longer investment horizon have

a higher incentive to allocate resources to engagement because the benefits from improved quality of governance are borne out in the longer term, Elyasiani and Jia (2010); Attig, et al. (2012).

According to Aguilera and Jackson (2003) shareholders in a stakeholder-oriented system such as Japan have longer term horizons than those in shareholder-oriented system. The length of institutional shareholder time horizons offers the most compelling logic to support our results, although these effects may be offset by relatively weak incentives for institutional investors to collectively wield their power and by weaker incentives to act independently. For this argument to be even more compelling, we propose a more detailed examination of the role of heterogeneity in investment time horizons among institutional shareholders in Japan and its impact on engagement incentive mechanism.

Another possible mechanism to support incentives for engagement by institutional ownership is recent attention paid to a soft-law codes designed to strengthen fiduciary incentives, compelling signatories to act in the interest of beneficiaries even if it conflicts with their own self-interest. Although the Japan Stewardship Code was not introduced until 2014, an implementation in institutional investor practices unlikely to have occurred before 2015, it is possible that there were some anticipatory shifts in institutional investor activity during our time period. Hidaka et al. (2021) finds evidence institutional investors began to engage with investee firms aggressively in the aftermath of the Stewardship Code and the introduction of the stewardship principles by the GPIF in 2017, due to increased cost of free riding for asset managers.

The role that Japan's Stewardship Code has played in strengthening obligations for proper monitoring of the investee companies and constructive engagement activity and broadening objectives to economy-wide outcomes is certainly worthy of greater attention. Tsukioka (2020) finds that after adopting the revised code, several types of institutional investors became more sensitive for operating performance: they vote more frequently against the proposal by management teams if the firm's operating efficiency is low. In order to confirm whether these mechanisms have increased the effectiveness of institutional ownership itself we propose an extension of our analysis to include a post-Stewardship Code period.

Of course, it may be possible that the divergent results we observe for institutional ownership impact on firm performance are not a product of the weakness of the effect but rather relate to an underappreciated divergence in market and accounting-based measures of firm performance. Although our proxies of firm performance have a relatively high Pearson correlation, they differ in crucial ways which may help explain our results.

ROA and ROE are concerned with previous accounting data, and Tobin's Q is related to the future prospects of the firm viewed by the stock market. In the next section, we consider what this may mean for our results. There are two potential causes that may impact accounting-based measures more than market-based measures:

- 1) Intangible assets.
- 2) Cash problem - link between cash holdings and firm valuation

Firm value is increasingly driven by intangible assets, accounting for 90% of the S&P 500 value on some estimates. For accounting-based measures, growth options and human capital are less easily captured, whereas the contribution and risk of tangible assets are more easily captured by Tobin's Q. ROA and ROE are also vulnerable to denominator distortions. This is particularly problematic in Japan which has relatively high levels of unintended cash holdings, Sher (2014). Importantly,

the agency motive has only limited explanatory power of the total variation of cash holdings, compared to the precautionary and transaction-costs motives, Inaba (2020).

If it is also possible that Tobin's Q may not reflect firm performance as readily as hoped. Dyvbjik (2015) finds empirical evidence of an ambiguous relationship between Tobin's Q and firm performance since underinvestment increases rather than decreases Tobin's Q, with the relative importance of scale decisions versus cost discipline an important differentiator. Furthermore, market-based measures may be influenced by structural differences in Japanese markets, such as cross-shareholdings and a bank-centred financial system. In order to understand these distortions further, we propose further investigation of the distortions provided by Japan's relatively distinct characteristics regarding the contribution of intangible assets and high cash ratios when compared to other shareholder-centric models.

Turning to our second hypothesis, we find some evidence to support the claim that the impact of institutional ownership on firm performance is positive conditional on the existence of monitors that increase information dispersion to shareholders. Our initial results using a fixed effect model imply that institutional investors benefit from high analyst coverage across all firm performance proxies.

However, the inclusion of an instrumental variable to address potential endogeneity indicates that only a subset of these results maintain their robustness once endogeneity is accounted for. For our market-based measures, the effect disappears, while the interactive term is only statistically significant for ROA, and not ROE. A positive a significant coefficient for the interactive term for ROA, and not ROE, may indicate that management did not seek to appease institutional investors with financial engineering strategies such as buybacks, leverage, and accounting choices during our study period. However, since the effects here are small, we are hesitant to make definitive statements based solely on these findings.

As for independent directors, it is difficult to draw strong conclusions from the model estimates, which are inconsistent with our expectations for institutional investors to be more effective in the event that informational dispersion is higher. This is at odds with the expectations of the Japan Stewardship Code which refers to the function of the board and that of institutional investors as being complementary to each other, Klettner (2017).

One possible explanation for the results is that the board of directors in Japan prioritise their responsibility for advising management above their responsibility for monitoring management. The corporate governance model in the U.S. has evolved to a monitoring model where that function is strong but the role of providing advice to management is relatively weak. In Japan and many other countries with stakeholder systems, the board tends to focus more on management issues at the expense of the monitoring function, Aronson (2015).

Our results reflect the somewhat contradictory nature of board responsibilities in terms of both advising and monitoring boards and may explain why our results using independent board positions as a proxy for information efficiency are ambiguous. However, they do indicate that outside directors do not pursue monitoring activity that is consistent with shareholder primacy model. This raises questions about whether the role envisaged for outside directors by the Stewardship Code is borne out in reality. An important area of future study in a hybrid system in Japan is how the sensitivity to governance structures that emphasis stakeholder outcomes impact the effectiveness of outside directors in fulfilling the role of improving information dispersion to shareholders prescribed by agency theory.

Our results across our information proxies leads us to conclude that the hybrid model of corporate governance in Japan does not exclude the possibility of institutional investors positively impacting firm value. We find some evidence that institutional investors' impact on firm performance is positive, dependent on analyst coverage; indicating that analysts monitoring of company strategy and prospects is an enabler of institutional value creation. We suspect this may relate to the higher capacity for institutional investors to incentivise sell-side analysts. However, we do not find consistent evidence that information generated by non-shareholder monitors of management is shared with shareholders, which outside directors not playing the role envisaged by agency theory.

These findings are consistent with a view that agency theory contains a normative component or ideology that requires broad acceptance to function effectively. If other monitors are willing to disperse information on investee firms to shareholders, then these can complement institutional investors own engagement efforts, reducing agency costs and boosting firm value.

2.7 Conclusion

This chapter examines whether institutional ownership improves firm performance in Japan. We seek to understand whether the agency theory claim that institutional investors high engagement incentives mitigate agency costs and increase firm value holds in a hybrid system that affords strong legal protection to shareholders but enjoys different ownership and governance structures than an Anglo-Saxon model.

We regress financial variables of a firm on a variable of institutional ownership for a sample of Topix 500 firms between 2006-2014. To tackle endogeneity concerns common in the corporate finance literature, we deploy two-stage least squares regressions using an instrumental variable technique.

We find evidence that institutional ownership is sensitive to firm performance, with the effect strong for accounting-based metrics. However, we have difficulty establishing causality across all model specifications when endogeneity is accounted for. In particular, we note a strong divergence between market and accounting based measures of firm performance in Japan.

We find some evidence of a positive relationship between institutional investors and firm performance for those firms with higher information dispersion. We observe strikingly different results for our chosen information proxies. While analyst coverage appears to be a facilitator of institutional investor value creation based on our ROA proxy, independent director ratio does not affect institutional investors capability to discipline and engage with firm management, contrary to the prescription of agency theory.

There are several limitations to our study. First, our sample period from 2006-2014 means we unable to comment on whether corporate governance reforms such as the introduction of Japan's Stewardship Code and Japan's Corporate Governance Code, which were designed to increase engagement incentives and improve the information environment, has influenced the relationship between firm performance and institutional ownership.

We are also unable to comment on the magnitude of engagement incentives or capable of isolating one incentive above another. This partly reflects the private nature of engagement activity by institutional investors and ambiguity regarding how the primary incentive mechanisms operate

under Japanese government structures. Hidaka et al. (2021) were able to selectively collect this private data and reported that institutional investors aggressively accelerated their engagement activities in response to recent demand from regulators and asset owners. These shortcomings are obvious areas for further investigation.

In conclusion, although we find evidence to support the role of institutional investors in driving corporate value in Japan, our results are not unanimous. We find conflicting information for accounting and market-based metrics, while non-shareholder monitors do not always complement shareholder monitoring in the ways expected in a shareholder-centric model.

If Japan is seeking to replicate the US boardroom revolution, triggered by the agency theory model, further efforts must be made to strengthen incentives and behaviours to ensure institutional investor engagement itself is sufficient to discipline and monitor management. In addition, it may be necessary to increase the incentives for other expert monitors to share relevant information with shareholders by a more widespread acceptance that shareholders alone are the parties to whom corporate managers should be accountable.

Chapter 3 - Has a Main Bank relationship proven beneficial for Japanese firms in the post-GFC period?

3.1 Introduction

In this chapter, we seek to shed light on the enduring role of the Main Bank relationship. We ask whether their special role in the Japanese capital market model, especially in relation to corporate governance, has continued to have an impact on firm performance in the post-GFC period.

This chapter begins by setting out the framework by which contractual claimants on a firm's assets and cashflow come into conflict. We draw on corporate finance literature which states the optimal capital structure for a value maximising firm is one that minimises agency costs, Jensen and Meckling (1976). Of particular interest for our analysis is the role of agency costs between shareholders and creditors, Myers (1977), Smith & Warner (1979).

We then review the literature of Main Banks as a potential solution for agency problems, due to their role as dual shareholders and information producers on behalf of other stakeholders. We also consider the literature for a less favourable interpretation of Main Banks, where bank shareholdings have an adverse effect on firm performance. Having established our motivations for testing the impact of a Main Bank relationship on firm value we set out our hypothesis and empirical approach.

Our analysis replicates a randomised experiment by dividing our dataset into those firms with a Main Bank relationship – the treatment group – and those without – the control group – through a propensity score matching process. Using the matched dataset, we proceeded to conduct regression analysis using standard OLS techniques.

Our main findings indicate that Main Bank's has a negative and statistically significant impact on firm performance across all specifications. We consider the channels by which Main Bank ownership may have an adverse effect on firm performance. We assert that rather than mitigating agency costs through an internalisation of the conflict of shareholders and creditors or a mitigation of information asymmetry problems, the unique characteristics of Main Banks serve to undermine shareholder interests. This is possible through the absentee ownership associated with shareholdings by main bank and a subsequent undermining of risk-taking behaviour from managers and other large shareholders.

This research contributes to our understanding of the corporate governance system in Japan. Our findings raise questions about the role attributed to Main Banks as a dual owner and as a delegated monitor, capable of information production for other stakeholders. The absence of evidence to support the subsistence of the Main Bank relationship augurs for more rapid reform to remove cross-shareholdings and improve standard monitoring by shareholders.

3.2 Literature review

The separation of corporate decision-making functions from risk-bearing functions can positively impact firm performance, Coase (1937); Williamson (1979). While decision-making power is enshrined with management, there are numerous financial stakeholders that bear the risk, and reap the rewards, of corporate performance. A typical corporate capital hierarchy consists of bank loans, senior debt, subordinated debt, preferred equity and common equity, all of which will be held by financial backers with varying degrees of exposure to firm decision-making and risk-protection, Modigliani & Miller (1958, 1963); Myers (1984); Harris & Raviv (1990).

As the only financial stakeholder concerned with the residual value of the company, shareholders are deemed the ideal stewards of company and are afforded powerful control rights, Friedman (1992); Grantham (1998); Easterbrook and Fischel (1983). This includes the ability to appoint the board of directors, who in turn appoints the managing directors and, if agency costs are mitigated, can successfully control the fortunes of the company.

In some circumstances, shareholders self-interests may conflict with the interests of other risk-bearing stakeholders, most noticeably creditors. If creditors believe that management will pursue a strategy that favours shareholders at their expense, they may limit credit provision, increasing the firm's cost of capital. This will result in a sub-optimal capital structure and undermine management efforts to maximise firm value. These conflicts are a special form of agency costs known as agency costs of debt, Jensen and Meckling (1976); Myers (1977), Kim et al, (2019).

3.2.1 Shareholder creditor conflicts

In the next section we consider two important sources of shareholder-creditor conflicts, the risk-shifting problem and the debt overhang problem.

The risk-shifting problem

In principle, shareholders' claims on equity offer potentially unlimited rewards. On the other hand, shareholders' liability relates only to the share capital of the company rather than extending to its debt. Limited liability means the costs of a bad outcome are not fully borne by the risk-taking shareholder, but may instead fall, partially or fully, on other financial stakeholders. This results in a moral hazard problem known as the risk-shifting problem, Jensen and Meckling (1976); Green (1984); Bebchuk and Fried (2004).

We can observe this problem when considering the risk/return dynamic of a shareholder investment. Under the assumption of limited liability, the return on shareholder investment as a function of the profitability is flat when the company is close to bankruptcy or insolvent but slopes upwards when the company is doing well. The structure is similar to a call option and rewards shareholders if the company pursues a riskier strategy, Eisdorfer, (2010); Goodhart (2020). Consequently, shareholders seek to shift risk by allocating capital raised from creditors into risky projects, which offer unlimited upside but also raise the risk of the equity and the probability of bankruptcy, Masulis (1976); Jensen and Meckling (1976); Eisdorfer (2008).

The debt overhang problem

Another source of shareholder and creditor misalignment relates to the use of proceeds for newly raised finance. If a company is highly indebted or a firm faces high default risk, shareholders may refrain from pursuing new investment opportunities, even if they have a positive net present value, if the rewards are to be directed to servicing existing debt or the gains will accrue proportionally more highly to debtholders, Myers (1977, 1984); Lang et al. (1996).

While debt serves a vital disciplinary function by constraining managerial opportunism and reducing risk-shifting behaviour, Jensen & Meckling (1976); Hart and Moore (1995), the debt overhang problem can nevertheless be mitigated through coordinated renegotiation between creditors and shareholders to restructure balance sheets. However, such renegotiations inherently involve significant transaction costs – a necessary trade-off to preserve debt's governance benefits. The very costliness of these restructuring processes helps maintain debt's ex-ante credibility as a monitoring mechanism. Both the risk-shifting and debt overhang problem may contribute to an increase in agency cost of debt.

3.2.2 Resolving these conflict

Since the acknowledgement of the misalignment of shareholders' and creditors' incentives, many studies have attempted to identify ways to mitigate this problem. The most common approach is the adoption of covenants in debt contracts as monitoring devices which may include restrictions on key financial ratios or other critical management decisions such as dividend payments or M&A, Bradley (2015). Other studies have looked at convertible debt (Green, 1984), maturity of debt (Barnea et al., 1980) and managerial compensation (Brander and Poitevin, 1992; John and John, 1993).

In practice, the ability of creditors to enforce contractual provisions on debt contracts is not complete. Creditors may resort to litigation through lawsuits to represents the participation of creditors in corporate governance. As pointed out above, existing contractual obligations may serve to undermine future investment decisions if they are overly onerous, Hart and Moore (1995); Chava & Roberts (2008). Consequently, creditors have a preference for financial prudence and the ability to timely repay credit obligations, but also to maintain a stable and predictable credit risk profile, Diamond (1989); Smith & Warner (1979).

3.2.3 Role of Corporate Governance

As well as documenting the inherent conflicts among financial stakeholders, theorists such as Jensen and Meckling also offered a potential solution in the form of corporate governance.

Although corporate governance architecture is not primarily designed to resolve conflicts between shareholders and creditors, it does reduce information asymmetry that provides the opportunity for stakeholders to pursue selfish interests at the expense of other claimants, Tirole (2001). Corporate governance mechanisms include information production tools such as effective and independent board of directors or alignment devices such as management compensation. It may also include external governance such as the market for corporate control.

While some of these tools are designed specifically to limit agency costs between owners and managers, i.e. stock options are designed to align decisions to shareholders interests. Others such as effective corporate boards can have wider benefits including serving to reduce the agency cost of debt. For example, if effective boards improve firm performance in the way that both shareholders and debtholders jointly gain their benefits.

Researchers have examined the impact of these corporate governance mechanisms on the agency cost of debt, with encouraging results. An improvement in the effectiveness of corporate boards can lead to a reduction in required rate of return of debtholders, and thereby lowering the cost of corporate debt, Anderson et al, (2004); Klock et al (2005).

3.2.4 Corporate Governance in Japan

Japan's 'lost decades' coincided with a period of relatively poor shareholder returns. The most common explanation is that Japan suffered from acute agency costs; that company solvency and employee stability were prioritised at the expense of shareholders. Why were shareholder interests not prioritised in Japan? Numerous studies have examined how corporate governance failed to mitigate agency costs between management and owners, entrenching management teams and undermining shareholder value, Weinstein & Yafeh (1998); Gedajlovic & Shapiro (2002); Miwa & Ramseyer (2005); Jackson & Miyajima (2007).

However, fewer researchers have looked at the agency costs between shareholders and creditors. This despite, or possibly because of, the unique role relationship banks, or Main Banks, play in the firm's corporate governance, Aoki & Patrick (1994); Morck & Nakamura (1999); Ogawa (2012).

3.2.5 The Main Bank model

We begin with a general definition of a Main Bank within the broader context of Asia. According to Nam (2004), a Main Bank is typically the firm's largest lender and offers standard services of relationship banking including the provision of credit and liquidity through the cycle, risk-sharing and assistance during periods of corporate distress.

The Main Bank relationship in Japan has several supplementary linkages that serve to deepen the firm-bank relationship, Sheard (1989); Aoki (1990); Aoki et al. (1994); Ueda (1994); Kawai and Nakatani (1996); Hoshi and Kashyap (2001). For example, a Main Bank is frequently a shareholder in the borrowing firm. It may also monitor and participate in firm management through board representation, and rescues and restructures firms when firms fall into a financial distress, Kang et al., (2000). We consider the supplementary features as a key component of a Japanese-style Main Bank.

3.2.6 Main Bank as dual owner and information producer

Before we proceed to our analysis, we consider the motivation of the Main Bank relationship as characterised above in more detail. The price of agency cost between shareholders and creditors is higher costs of capital and credit rationing, Mayer (2013). One novel way to protect creditor interests is to internalise the conflict of interest between shareholders and creditors by simultaneously holding equity and debt, Dewatripont and Tirole (1994); John et al. (1994); Chu et al. (2019).

Shareholders who are also creditors have an incentive to monitor and prevent managers and/or other large shareholders from taking actions that expropriate creditors because they internalise, at least partially, the cost to creditors arising from the opportunistic behaviour of shareholders.

Numerous studies find that dual owners are effective in internalising conflict and aligning incentives between shareholders and bondholders, Jiang et al. (2010); Chu (2018). While Main Banks have reduced their shareholdings of client firms considerably since their peak, most Main Bank relationships are still characterised by dual creditor-shareholder ownership. The retention of

shareholdings in client-firms remains an important signalling mechanism of the nature of the relationship between lender and company in Japan, Arikawa and Miyajima (2021).

Based on the intuition of dual owners as a mechanism for conflict resolution and an internalisation of agency costs, we assume that, if shareholder-creditor conflicts are significant enough to affect the value of the firm, firm performance will improve when Main Banks are present.

This is not the only mechanism by which the presence on Main Banks may prove beneficial to firm performance. In an earlier chapter, we were able to identify proxies for the quality of the information environment surrounding a company as a potential source of value creation. The same logic may apply to the agency cost of debt.

If a Main Bank's closeness to a borrowing firm is a source of unrecorded information capable of overcoming asymmetric information problems that non-relationship lenders cannot secure, Watanabe (2005), its presence may improve information generation capabilities for financial stakeholders and may prove another way to reduce agency cost of debt.

Furthermore, Aoki (2001) points to an important role for Main Banks to act as a delegated monitor of management, with monitoring obligations carried out on behalf of other financial stakeholders. According to Fukumitsu (2001), Main Banks act in concert with other shareholders to exercise corporate governance, and they reduce agency costs generated by the asymmetric information. If Main Banks were indeed capable of altruistic monitoring, then we would expect such action to lower agency costs between financial stakeholders.

3.2.7 An ambiguous influence

Before concluding our literature review, it is important to note that the evidence in favour of a supportive or benign influence regarding the role the Main Bank system on agency costs of debt is far from unanimous. Hiraki et al. (2003) find evidence to suggest that shareholdings of main banks and client firms have a negative effect on firm valuation.

This is corroborated by Miyajima (2005), which points out that Main Bank shareholdings were consistent with a loss of management discipline and poor firm performance. Furthermore, Miyajima finds that banks with dual ownership used their ownership stake to encourage firms to invest in projects with low profitability instead of preventing asset substitution. Main Bank shareholdings were also deemed problematic as they reduce the portion of shares traded in public markets, serving to limit the market for control and facilitating managers to seek private benefits, Arikawa and Kato (2004).

Based on these findings, we also consider the possibility that the existence of Main Banks relationships may increase agency costs of debt by undermining the effectiveness of financial claimants through absenteeism or a neglect of ownership rights. That would be consistent with the view that Main Banks have continued to have a negative impact on capital allocation at a corporate level, Caballero et al. (2008); Arikawa & Miyajima (2021)

The conflicting literature offers an opportunity to set up a natural experiment to assess the relative merits of the competing theoretical explanation of the Main Bank's role in modern Japan. In the next section, we develop our path of empirical enquiry in more detail.

3.3 Hypothesis development

Before we turn to our main analytical question, it is worth reminding ourselves that the influence of Main Banks in Japan have waned considerably in recent decades. Initially, this was a consequence of a period of deregulation that began at the end of the 1970s, allowing firms to access greater capital market funding at the expense of bank loans. More recently, it has reflected more stringent standard for bank capital requirements in light of the bad debt problem through the 1990s and a need to reduce cross-shareholdings because of changing accounting requirements.

The declining in relationship banking in firms financing patterns in Japan has not been homogenous, with some types of firms still wedded to past Main Bank relations while elsewhere they have disappeared entirely, Hori and Osano (2002). This presents an opportunity to compare the impact of Main Bank ownership on firm performance both directly and in the event that we are able to control for other variables that may impact firm performance.

Our null hypothesis states that Main Bank relationships have no impact on firm performance. We would expect there to be a positive and statistically significant if Main Banks serve to alleviate agency costs of debt through internalisation of conflicts.

The mechanism for the positive inference relates to the interest alignment problem. Shareholders who are also creditors have an incentive to monitor management and prevent large shareholders from expropriating wealth from bondholders through excessive risk taking or opportunistic behaviour. An internalisation of incentive alignment should lower the chance of risk-shifting, and the company should benefit from a reduction in cost of debt. Importantly, for an internalisation of conflicts by Main Bank to be effective the relationship should not exacerbate conflicts by overly stating the credit constraint and preventing profitable risk-taking.

We also consider the possibility that Main Bank relationships have a negative and statistically significant impact on firm performance. In this instance, the Main Bank is not considered a fiduciary of firm value. Instead, the holding of shares is simply a mechanism to limit the influence of shareholders and add proportional weight to the standard claims of a creditor. This in turn serves to undermine risk-taking behaviour from managers and other large shareholders.

3.4 Data

The sample of this study consisted of publicly listed firms of the TOPIX 500, excluding financial firms, from 2008-2021. Firm performance data for this study were obtained from Bloomberg Markets (BM).

We introduce three alternative variables of firm performance. ROA is relatively straightforward to calculate by dividing net income by total assets. ROE is net income divided by the number of shares of common stock issued. Tobin Q is calculated by dividing the market value of equity, preferred shares as well as publicly traded debt and book value of remaining liabilities by the book value of assets and liabilities, where book value is the same as the balance sheet figure.

Data related to ownership structure were obtained from the Nikkei NEEDS CGES. To investigate the effect of corporate governance structure, we divide the sample into companies with Main Bank

relationship and those without. We define the existing of a Main Bank relationship based on the shareholding ratio of the Main Bank. Although the Main Bank relationship may be defined in alternative ways, e.g. based on a lending ratio of total debt, we believe the equity-based definition best suits our framework for investigating the dual ownership role typical with Main Bank relationships.

As for other financial data, it was obtained from Bloomberg Markets and Nikkei NEEDS CGES databases, see Table 3.1. Table 3.2 shows the summary statistics of firm performance, ownership and governance characteristics for the period 2008-2021. The data includes the median, mean, standard error, confidence interval for the arithmetic mean, variance, standard deviation, and coefficient of variation.

Table 3.1 - Definitions of variables

This table specifies the variable, our preferred definition, source of the data and the reference code corresponding to the empirical analysis.

Variable	Code	Definition	Source
Ownership variables			
Main Bank Ownership	MBO	Main Bank shareholding	Nikkei NEEDS
Dependent variables			
Tobin Q	AVEQ	Tobin's Q: market value of equity and book value of liabilities divided by book value of assets	BM
Return on assets	ROA	Return on assets: current income divided by book value of assets	BM
Return on equity	ROE	Return on assets: current income divided by shareholder equity	BM
Independent Variables			
Size	LTOTASS	The logarithm of firm assets	BM
Leverage	DETASS	Debt/Total assets	BM
Cashflow	FCFASS	Free Cashflow/Total Assets	Nikkei NEEDS
Independent Director	IDRAT	Independent director/board size (%)	Nikkei NEEDS
Analyst Coverage	ANAT	Equals 1 if analyst coverage is above the 75th percentile; otherwise 0	BM

Table 3.2 – Summary statistics

	ROA	ROE	AVEQ	FCFASS	DETASS	IDRAT	LTOTAA	ANAT
median	3.92	8.14	1.72	0.04028	14.21	0.1429	3.11E+11	0
mean	4.38	9.31	1.74	0.04668	14.14	0.1472	2.47E+11	0.227
SE.mean	0.73	1.46	0.22	0.00685	2.31	0.0328	4.91E+10	0.0044
CI.mean.0	1.69	3.36	0.5	0.01581	5.32	0.0756	1.13E+11	±0.0087
var	4.86	19.1	0.42	0.00042	47.87	0.0097	2.17E+22	1.846
std.dev	2.2	4.37	0.65	0.02056	6.92	0.0983	1.47E+11	0.419
coef.var	0.5	0.47	0.37	0.44057	0.49	0.6676	0.6	1.846

3.5 Methodology

Our main research question is whether a Main Bank relationship has a positive or negative impact on firm performance. To assess the magnitude of a Main Bank relationship effects we use propensity score matching techniques to replicate a randomised experiment, which can provide a reliable basis for inferring causation. Propensity score matching allows us to apply some quasi-randomness as to whether the Main Bank relationship exists or not. In this way, treatment selection bias is eliminated.

Specifically, we divide the dataset into those firms with a Main Bank relationship (the treatment group) and those without (the control group). In principle, the process of dividing the sample between the treatment and control group should be random. The status of a Main Bank relationship has to be independent of the underlying characteristics of the firms.

Our analytical process follows several clear steps. First, we pre-process our panel of observational data through propensity score matching. The matching process reduces imbalance in the empirical distribution of both observed and unobserved confounding factors, Stuart (2010). We used the R package *MatchIt* to generate the balanced treatment and control groups, Ho, et al. (2011).

The second step of our analysis was to determine the propensity score matching method. The process of grouping observations with similar values can vary based on a range of settings. These include the ratio of treated observations matched to untreated observations, the identifying algorithm for matches, whether replacements are used for matches and whether matches are based solely on propensity scores or also uses covariate values.

We conducted analysis using numerous methods including exact, nearest matching and coarsened exact matching (CEM) approaches. The results of our analysis are published in the results section.

Matching to the nearest neighbour simply consists of finding the untreated observation with the closet propensity score to the propensity score of each treated observation. Matching is done using a logistic regression model to estimate the propensity score, defined as the probability of being a treated firm, conditional on the covariates.

The third step was to check the balance of covariates between treatment and control groups. To evaluate covariate balance we compare the mean of the treatment group to the sample group across all covariates. We show the results of our matching process in Table 3.1 of the results section.

Finally, using the matched dataset, we proceeded to conducted regression analysis using standard OLS techniques. We measure the fit of our results through a standard error framework. We specify our model without additional control variables in the first instance, as highlighted in Equation 3.1 below.

Equation 3.1

$$\delta_{i,t} = \alpha + \beta_1 MBO_{i,t} + \varepsilon_{i,t}, \quad (3.1)$$

where firm performance, denoted by $\delta_{i,t}$, is the dependent variable represented by three competing proxy variables ROA, ROE and Tobin's Q (AVEQ). ROA and ROE are accounting-based representations of firm performance, while Tobin's Q represents the market value of a firm's assets. Main Bank relationship, $MBO_{i,t}$, is our independent variables, which is derived from the Nikkei NEEDS Corporate Governance Evaluation Systems (CGES) database. $\varepsilon_{i,t}$ is an error term.

We then repeat the exercise with additional control variables. In line with previous studies, we control for firm characteristics such as firm size, financial leverage, free cash flow. We measured firm size as the logarithm of firm assets. Financial leverage was used to control for the capital structure of the firm.

Equation 3.2

$$\delta_{i,t} = \alpha + \beta_1 MBO + \beta_2 FCFASS + \beta_3 D_ANA + \beta_4 DETASS + \beta_5 ID_RAT + \beta_6 LTOTASS + \varepsilon_{i,t}, \quad (3.2)$$

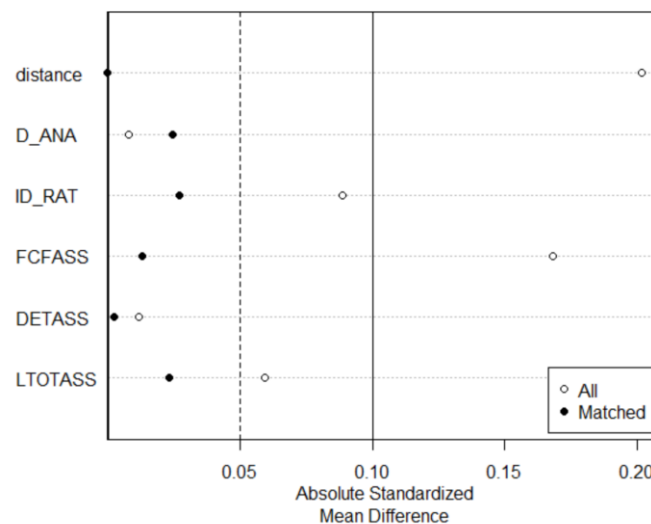
where we also control for some corporate governance variables such as the free cash flow to asset ratio (*FCFASS*), the number of analysts (*D_ANA*), the debt to asset ratio (*DETASS*), the independent director ratio (*ID_RAT*), and the log of total asset (*LTOTASS*) and (Sakawa and Watanabel, 2020). For more details see Table 1.

3.6 Results

Our analysis considers whether firms continue to benefit from the Main Bank relationship in 2008-2021. If so, what effect does Main Banks relationship have on firm performance in this period?

We pre-processed the data using a propensity score matching technique. Propensity score matching is used for inferring causal impact. It attempts to balance treatment groups on confounding factors to make them comparable to control group and reduces treatment selection bias. The balance statistics for the matching process are plotted in Figure 3.1.

Figure 3.1. Balance statistics of the matched data



Values greater than 0 indicate deviations between the two groups across empirical distributions. Before matching, some covariates may have had large imbalances. After Matching, all covariates had a mean difference below 0.10, indicating a successful balance and ensuring our threshold for analysis was met.

Using our new matched dataset, we proceeded to test the impact of a main bank relationship on three separate measures of firm performance and improve inference using robust standard errors.

We find evidence that our null hypothesis of no causality is false, with a statistically significant coefficient for Main Banks across all three measures of firm performance. We also find consistent evidence across all models of a negative coefficient for the presence of a Main Bank relationship (see Table 3.3).

Table 3.3 – Main Bank and firm performance

This table shows estimates of regressions of Main Bank status on firm performance. The dependent variable is firm performance using our preferred measures of ROA, ROE and Tobin's Q. The main independent variable is the Main Bank relationship.

Model	Variable	Estimate	Std. Error	t value	p-value	Significance
ROA	Intercept	4.04478	0.19614	20.6219	<2.2e-16	***
	MBO	-0.62045	0.19614	-3.1633	0.001571	**
ROE	Intercept	8.67447	0.31519	27.521	<2.2e-16	***
	MBO	-1.96014	0.31519	-6.2188	5.49E-10	***
AVEQ	Intercept	1.704389	0.060269	28.2797	<2.2e-16	***
	MBO	-0.30638	0.060269	-5.0836	3.86E-07	***

*p<0.1; **p<0.05; ***p<0.01

The findings are inconsistent with the hypothesis that the presence of a Main Bank may serve to reduce agency costs through advanced monitoring techniques or for monitoring efforts on behalf of other stakeholders. It is also possible that Main Banks discourage risk-taking and limit growth due to a preference for financial restraint. To test the robustness of our findings, we repeat the exercise for the same proxies of firm performance with control variables consistent with the corporate governance literature. The result for each proxy is displayed in Tables 3.4, 3.5 and 3.6.

Table 3.4 – Main Bank Ownership and Return on Assets

This table shows estimates of regressions of Main Bank ownership on firm performance. The dependent variable is firm performance using ROA. The main independent variable is Main Bank ownership. DETASS = Debt-to-Assets Ratio; FCFASS = LTOTASS = leverage, D_ANA = Analyst coverage, ID_RAT = Independent director ratio.

Variable	Estimate	Std. Error	t value	Pr(> t)	Significanc
(Intercept)	10.63459	1.27991	8.309	<2e-16	***
MBO	-0.65611	0.09948	-6.595	4.76E-11	***
D_ANA	0.42409	0.11698	3.625	0.000292	***
ID_RAT	0.28152	0.29714	0.947	0.343484	
FCFASS	36.35828	1.20324	30.217	<2e-16	***
DETASS	-0.05196	0.00323	-16.089	<2e-16	***
LTOTASS	-0.24719	0.04856	-5.09	3.74E-07	***
Residual SE: 3.101 on 4223 DF					
R-squared: 0.3567					
Adj R-squared: 0.3558					
F-statistic: 390.3 (p < 2.2e-16)					

*p<0.1; **p<0.05; ***p<0.01

Table 3.5 – Main Bank Ownership and Return on Equity

This table shows estimates of regressions of Main Bank ownership on firm performance. The dependent variable is firm performance using ROE. The main independent variable is Main Bank ownership. DETASS = Debt-to-Assets Ratio; FCFASS = LTOTASS = leverage, D_ANA = Analyst coverage, ID_RAT = Independent director ratio.

Variable	Estimate	Std. Error	t value	Pr(> t)	Significanc
(Intercept)	0.21476	3.95107	0.054	0.9567	
MBO	-1.99156	0.30709	-6.485	9.88E-11	***
D_ANA	-0.04463	0.36112	-0.124	0.9016	
ID_RAT	-1.75766	0.91728	-1.916	0.0554	.
FCFASS	80.6322	3.71438	21.708	<2e-16	***
DETASS	-0.02395	0.00997	-2.402	0.0163	*
LTOTASS	0.25469	0.14992	1.699	0.0894	.
Residual SE: 9.574 on 4223 DF					
R-squared: 0.1343					
Adj R-squared: 0.1331					
F-statistic: 109.2 (p < 2.2e-16)					

*p<0.1; **p<0.05; ***p<0.01

Table 3.6 – Main Bank Ownership and Tobin's Q

This table shows estimates of regressions of Main Bank ownership on firm performance. The dependent variable is firm performance using Tobin Q. The main independent variable is Main Bank ownership. DETASS = Debt-to-Assets Ratio; FCFASS = LTOTASS = leverage, D_ANA = Analyst coverage, ID_RAT = Independent director ratio.

Variable	Estimate	Std. Error	t value	Pr(> t)	Significanc
(Intercept)	9.558419	0.432723	22.089	<2e-16	***
MBO	-0.32814	0.033633	-9.757	<2e-16	***
D_ANA	0.463339	0.03955	11.715	<2e-16	***
ID_RAT	0.966238	0.100461	9.618	<2e-16	***
FCFASS	6.875674	0.406801	16.902	<2e-16	***
DETASS	0.005286	0.001092	4.841	1.34E-06	***
LTOTASS	-0.31301	0.016419	-19.064	<2e-16	***
Residual SE: 1.049 on 4223 DF					
R-squared: 0.2089					
Adj R-squared: 0.2078					
F-statistic: 185.9 (p < 2.2e-16)					

*p<0.1; **p<0.05; ***p<0.01

The results are consistent with our earlier findings, with the coefficient for Main Bank relationship negative across all models.

3.7 Interpretation

Our results have meaningful implications for our understanding of the influence of Main Banks on firm performance in Japan. The results are not consistent with the hypothesis that Main Banks have a positive impact on firm performance through their role as a dual owner. They also are inconsistent with the theoretical claim that as an advanced information producer, both for themselves and on behalf of other stakeholders, Main Banks play a role to reduce agency conflicts caused by informational asymmetry.

One possible explanation for why we find no evidence that relationship banks' position as dual owners have a positive effect on firm performance is that the intensity of shareholder-creditor conflicts depends on the financial health of the company. For companies with relatively healthy balance sheets, and who enjoy investment-grade ratings, both creditors and shareholders want management to maintain sustainable financial performance to generate cash flows for debt service, as well as earnings growth, dividend payments, capital retention and capital appreciation.

On the other hand, when a company is in, or approaching bankruptcy the interests of creditors and shareholders may have little alignment; in extremis they can be at odds with one another, Keswani et al, (2020); Ayotte et al. (2013). Numerous studies have pointed to a weakening of market discipline in Japan during the lost decades period, which propped up inefficient zombie firms through ever-green lending, Peek and Rosengren (2005); Caballero et al. (2008). There is certainly observational evidence that bankruptcy rates fell consistently during our period of analysis.

The softening of the budget constraint may partly explain why the incentives to internalise conflicts between shareholder and creditors may be weaker in Japan than elsewhere, Hosono and Masaya (2003).

Another possible explanation for the ineffectiveness of Main Banks in reducing agency costs is the diminished importance of a Main Bank close relationship with management. In Aoki's benevolent view of the Main Bank system, Main Bank's act as the 'delegated monitor' of management acting on behalf of other stakeholders. Other financial stakeholders deferred to the Main Bank because they are "well equipped to assess the organisation and managerial ability of firms", Aoki, p80 (2001). Proponents of main banks still point out "the Main Bank has a leadership function, serving as a 'compass' for the other banks serving the client", Goto (2022).

The question of whether Main Banks responsibilities extend in some way beyond their financial obligations is critical to interpreting our results. Within the Main Bank framework described above the Main Bank has some duty to act on behalf of those stakeholders who have delegated the role of monitoring to them.

Our results are inconsistent with the idea that Main Bank relationships are a powerful tool for reducing information asymmetry. They are also consistent with the conjecture that information production of Main Banks has no benefits for outside shareholders, Sakawa (2014). This may not necessarily just reflect inadequacy on the part of Main Banks but an improvement in information provision by firms as a result of new reporting obligations. It is also possible that improving information efficiency and an alignment of interests among institutional investors served to diminish the role of Main Banks in reducing information asymmetry. Nozawa, p1 (2019) argues, "large institutional creditors can play an important role; by mitigating the problem of information production, they can facilitate capital reallocation."

While we can speculate on why Main Banks are less effective at reducing agency cost of debt in Japan, the fact that there was no positive relationship between Main Banks and firm performance was not the most striking result from our analysis. A more telling result was the statistically significant and negative relationship between Main Banks and firm performance across multiple models.

This result suggests that Main Banks have a corrosive effect on firm performance, when we control for other firm specific and governance variables. We interpret our findings as an indication that Main Banks are primarily driven by their financial obligations. Rather than internalising conflicts between their position as shareholder and creditor they simply weigh up the stakes of firm action on their competing incentives.

This may have two consequences. Firstly, since in most cases the financial liabilities are higher for their debt holdings than for their equity holdings, the Main Bank sides with management action that protects creditor interests. Secondly, in incidences where Main Banks become absentee shareholders, choosing not to fully pursue their interests as a shareholder, it may result in a loss of management discipline and poor firm performance. For those firms where the Main Bank relationship is absent, the shareholders pursue better capital allocation and firm performance without the hinderance of absenteeism.

3.8 Conclusion

Our analysis sheds light on the impact of Main Banks relationship on the competing claims from financial stakeholders on a firm's assets and cashflow. We find that the supplementary characteristics that distinguish Main Banks from other lenders, such as shareholder ownership and close relationships with management, are not effective in reducing agency costs in the post-GFC period. Instead, we find evidence that the firm's with a Main Bank relationship have inferior performance. We point to shareholder absenteeism as a cause of value hinderance either through a proportional shift in creditor influence or through a loss of management discipline and the pursuit of private benefits.

Our results augurs for further reforms to prise Main Banks away from the privileged position they enjoy in influencing a firm's capital policy. This includes a further unwinding of cross shareholders as well as continued improvements in monitoring from competing financial stakeholders, including shareholders and creditors. In terms of future work, we would like to extend the research to include earnings quality, where there is evidence that the Main Banks relationship has had a positive impact in the post-GFC period, Kojima (2017). In addition, it may be useful to consider the impact of Main Banks value creation during periods of elevated solvency risk, such as the Covid 19 crises or the GFC, which are partially but not fully covered in our analysis period.

Chapter 4 - Corporate Governance and firm performance in Japan - Tackling endogeneity in a dynamic setting

4.1 Introduction

Of the many coping strategies deployed following the burst of the Japanese asset bubble in the 1990s, few have attracted as much interest as rise of net corporate savings. This phenomenon was initially attributed to a lack of investible projects and resolutely high corporate profits. However, the enduring nature of high net savings, combined with an accompanying surge in corporate cash balances, triggered a rethink of what was driving corporate Japan's cash hoarding.

A more compelling explanation was provided by Aoyagi (2014), who argued weak corporate governance offered managers more leeway to pursue individual benefits rather than maximize shareholders, thus choosing to hold more cash. Sensing the time was ripe for a new interpretation of the costs of corporate cash hoarding, the authors went on the claim: "improving corporate governance would help unlock Japan's corporate savings, exit deflation, and revive growth", Aoyagi, p1 (2014). Unsurprisingly, the role of corporate governance has attracted considerable attention since.

In this chapter, we seek to better understand the influence of corporate governance in Japan. We home in on the primary role of corporate governance, which is defined by the Japanese corporate governance code as ensuring, "sustainable corporate growth and increased corporate value over the mid- to long- term", FSA, p3 (2024). Specifically, we seek to test our hypothesis that governance quality in Japan has a positive relationship with firm performance. We utilise both accounting-based measures of firm performance and market-based measures.

We also wrestle with the empirical challenges documented in the corporate governance literature. Specifically, we seek to address endogeneity concerns and control for dynamic structure problems that have proved a source of criticism of earlier research in the field. By isolating the impact of corporate governance quality on firm performance, we aim to provide a more reliable answer to what role governance has on corporate Japan during a period of rapid change both in systems, procedures, and internal governance structures and external disclosure requirements.

The study contributes to the literature in three key ways. First, it advances our understanding of the causal relationship between corporate governance and firm performance in Japan. This includes standard fixed-effect regression modelling as well as alternative empirical techniques designed to account for endogeneity and dynamic structure issues raised as a concern in the literature elsewhere.

Second, by including both accounting and market-based measures of performance we are able to better understand how corporate governance quality may translate to value creation. Although we began by assuming a high degree of synchronicity between our dependent variables the divergence in results across metrics allow us to consider the transmission effects and address whether the mechanisms assumed elsewhere work effectively in Japan.

Finally, the research sheds further light on the topic of optimal corporate governance. If the causal effects documented elsewhere are invalid or inconsistent one must ask why shareholders, and the market mechanisms have failed to provide managers with the right incentives to maximise firm value in Japan? Not only would the efficiency benefits documented in the literature be suspect, but the findings would undermine claims that all firms will eventually converge to an optimum corporate governance structure, Demsetz and Lehn (1985), Himmelberg et al (1999).

4.2 Literature review

The relationship between corporate governance and firm performance has been extensively studied due to the important role companies play coordinating production and allocating resources in the economy, Coase (1937). The success and longevity of the corporate unit in our economies goes far beyond production efficiency. It is also about corporate control, decision-making, and governance.

A key tenet in the corporate governance literature is that specialisation can lead to benefits. Specifically, the separation of firm ownership, in the form of value maximising shareholders, and control, by professional managers can attract more investment and boost efficiency and scale, Berle and Means (1932).

Unsurprisingly, the separation of ownership and control also leads to costs. In their seminal paper, Jensen and Meckling (1976), introduced the agency theory framework to help quantify these costs. According to the paper, the interests of decision-makers and risk-bearers are at odds due to different objectives and risk preferences. More importantly still, professional managers, as agents, have the incentive and the opportunity to act against the best interests of owners, as principals, leading to high agency costs if unchecked, La Porta et al. (2000).

4.2.1 Theoretical framework

In this chapter, we begin by introducing the theoretical framework and examining the key transmission mechanisms from the literature. The first important concept is agency cost theory, which argues that the separation of ownership and control results in conflicting incentives. Principals are risk-neutral and seek to maximise shareholder value, with limited liability and exposure to unlimited upside. Agents, who manage the firm, are more risk adverse, due to limited financial upside and short term incentives, and are rent seekers, concerned with maximising private benefits, including pecuniary and non-pecuniary benefits, Mayer (1997), Eisenhardt (1989).

To understand the materiality of these conflicts and their settlement, we must draw upon a second key concept in the literature, known as the property rights approach. This approach states that ownership is key. The party that owns an asset has residual control rights, meaning they can decide how the asset is used when contracts are incomplete. As a result, corporate governance law protects the interests of vulnerable principals against opportunistic agents, Demsetz (1967), Grossman & Hart (1986), Demsetz (1998), Buchanan and Yoon (2000).

The legal precedence afforded to owners cannot fully mitigate against the conflicts of interests inherent within the operating model of the firm. Instead, owners must seek to introduce incentives and mechanisms to bond agent actions to their own interests and ensure adequate information flows to prevent agents from acting against them.

Herein lies the second important intuition from the literature. A lack of alignment or bonding between interests of managers and shareholders and insufficient information sharing creates the opportunity for agents to pursue selfish interests at the expense of owners, Bebchuk (2003) Coffee (1991), Jensen and Murphy (2004), Benner and Ranganathan (2012). Importantly, the subsequent agency costs will raise the cost of capital for the firm.

4.2.2 Corporate governance as a solution

The corporate finance literature finds that corporate governance plays a critical role in mitigating agency costs and realising the net benefits of the separation of ownership and control, Jensen & Meckling (1976), Fama & Jensen (1983), Shleifer & Vishny (1997). There are two important mechanisms: goal congruence through effective design and effective monitoring and engagement.

In terms of goal alignment, corporate governance theory proposes an incentive based contractual relationship between owner and principal that ensures agents act in the favour of principal. Practical efforts to ensure bonding to ownership objectives typically focus on board composition or representation, management remuneration, or cross-shareholding, Bebchuk & Weisbach (2010), Shleifer & Vishny (1997).

In terms of the information environment, corporate governance theory augers for sufficient information flow from agents to principals to ensure discipline and reduce moral hazard problems (Bebchuk, 2003). Practical efforts to ensure information flow typically focus on stewardship, majority board independence and lead independent director. Monitoring activity includes engagement with management and boards on business portfolio, capital efficiency, payout and cash ratios, Hidaka et al. (2021)

4.2.3 A conflicted literature

The theoretical importance attributed to corporate governance has been supported by a wealth of empirical research that points to a positive relationship between corporate governance and firm performance, Morck (1989), Hermalin and Weisbach (1991); Shleifer & Vishny (1997), La Porta et al. (1998, 2000), Gugler and Yortoglu (2003), Aggarwal (2007), Gompers, Ishii and Metrick (2003) and Bebchuk, Cohen and Ferrell (2004).

The merits of corporate governance has been supported both at an aggregate level Gompers, Ishii, and Metrick (2003), Brown and Caylor (2004), and at a component level with evidence of favourable effects from board of directors, management remuneration, corporate governance policies, and social media, Bebchuk & Weisbach (2010), Paniagua et al. (2017), Paniagua & Sapena, (2014a, 2014b), Shleifer & Vishny, (1997).

Despite the volume of research substantiating corporate governance theory, the literature remains a contested one. The criticism focuses less on corporate governance theory and more on the appropriateness of empirical techniques and the reliability of estimated effects. There are two main sources of discontent. First, a number of papers question whether the causality between corporate governance and firm performance is robust when endogeneity is correctly accounted for effect, Demsetz and Lehn (1985); Himmelberg et al. (1999), Demsetz and Villalonga, (2001), Coles et al., (2012).

Second, as Wintoki et al. (2012) points out, a common mistake in the corporate finance literature is the insufficient recognition of the impact of dynamic relationships, where the dependent variable is influenced by its past values. To address issues related to dynamic structure, researchers often include a lagged dependent variable. However, estimating models with both a lagged dependent

variable and unobserved fixed effects may introduce serious econometric bias, Flannery and Hankins (2012). Specifically, when transforming the data for panel data models such as fixed effect analysis, the lagged dependent variable can become correlated with the error term, introducing dynamic endogeneity. This violates the exogeneity assumption required for consistent estimation in the fixed effect model, resulting in bias estimates.

This empirical controversy has motivated a comprehensive review of the findings of the earlier literature using more advanced empirical techniques to address to concerns raised. In keeping with these efforts, this study compares the evidence for the role of corporate governance on firm performance in Japan using standard empirical models and then check the robustness using these more advanced techniques.

4.2.4 The role of corporate governance in Japan

In recent years, the importance of the relationship between corporate governance and firm performance has been given greater weight in Japan by a sustained effort to reform corporate governance structures. This was initially triggered by the Abenomics economic policy framework set out in 2012, which set about making Japan more investor friendly and improving market valuations. This included the novel approach of including comprehensive corporate governance reform in the Japan Revitalization Strategy, the government's flagship growth strategy, published in June 2013.

Corporate governance reforms have subsequently been embraced by other government ministries including a launch of soft law codes by the Financial Services Agency of Japan, the Stewardship Code and Corporate Governance Code in 2014 and 2015 respectively. In addition, the Ministry of Justice amended the Companies Act in December 2019, including an obligation to explain board composition. Finally, the Tokyo Stock Exchange announced amendments of listing standards in 2022 and a subsequent focus on clearer capital management policy disclosure in 2023.

In addition to these top-down reforms, market participants have also sought to benefit from changing governance practices, with firms who have responded positively to reforms seeing improved share price performance, D'Ercole (2025), Yasu (2022). While domestic and overseas capital has been increasingly attracted to changing capital management in Japan.

Unfortunately, the empirical evidence to support these policy initiatives and market enthusiasm is less compelling. Attempts to evaluate corporate governance effects in Japan and through cross-country comparative analysis has led to mixed results. The firm-level governance index developed by Aggarwal et al. (2009), which evaluates factors such as board composition, audit standards, shareholder rights, ownership structure, and executive compensation, indicates that Japan underperforms relative to other advanced economies in terms of corporate governance.

However, alternative empirical findings present a more favourable view. For instance, the 10-variable shareholder protection index formulated by Armour et al. (2009) ranked Japan fourth out of 20 countries in 2005, attributing this strong position, at least in part, to comprehensive corporate law reforms implemented in the early 2000s. This divergence in assessments underscores the complexity of Japan's corporate governance landscape.

Like elsewhere, the traditional challenge for scholars of corporate governance in Japan is to tackle endogeneity problems generated from omitted variables. This chapter advances our understanding of this topic by examining the causal relationship between corporate governance and firm

performance. I also investigate whether or not the causal relationship implied by earlier studies is robust when accounting for endogeneity and dynamic structure issues.

4.3 Data

The main objective of this study is to examine the relationship between corporate governance quality and firm performance. Our main explanatory variable is ‘corporate governance (CG) rating’ from the Nikkei’s NEEDS CGES database. The CG rating is derived from 150 indicators calculated from publicly released company documents across eight categories including capital efficiency, equity market assessment, external discipline, board of directors, executive remuneration, information disclosure, capital policies and practices (which includes scandals). Companies are scored across each category on a scale of 1 to 10 before being aggregated to create a CG score.

Firm performance data for this study were obtained from Bloomberg Markets and Nikkei NEEDS Financial Quest. The sample consisted of publicly listed firms of the TOPIX 500, excluding financial firms, from 2017-2023. Our study period can be characterised as one of heightened interest in corporate governance given the changes to regulations and requirements related to corporate governance and an increased awareness of corporate governance policies from investors.

In terms of our dependent variable, we use two accounting terms, return on assets (ROA) and return on equity (ROE). Since ROE is sensitive to leverage effects, we observe greater variance in ROE than ROA. ROA and ROE are relatively straightforward to calculate by dividing net income by total assets and total equity respectively. For a market measure, we use Tobin Q which is calculated by dividing the market value of equity, preferred shares as well as publicly traded debt and book value of remaining liabilities by the book value of assets and liabilities, where book value is the same as the balance sheet figure. As for other financial data, it was obtained from Bloomberg Markets and Nikkei NEEDS Financial Quest and CGES databases as indicated in Table 4.1.

Table 4.1 shows the summary statistics of firm performance, ownership and governance characteristics for the period 2017-2023. The data includes the mean, median, standard error, confidence interval for the arithmetic mean, variance, standard deviation, and coefficient of variation.

Table 4.1 - Descriptive Statistics of Key Financial Variables

Note. ROE = Return on Equity; ROA = Return on Assets; AVEQ = Tobin Q; CG = Nikkei Needs Corporate Governance Evaluation System overall rating, DETASS = Debt-to-Assets Ratio; TOTASS = Total Assets; FCF = Free Cash Flow. SD = Standard Deviation.

Variable	N	Mean (M)	Median	Std. Error	95% CI for Mean	Variance (σ^2)	Std. Dev. (σ)	Coef. Variation (%)
ROE	9,264	5.74	5.13	0.11	[5.52, 5.96]	114.8	10.71	186.6
ROA	9,250	3.92	3.25	0.05	[3.82, 4.02]	23.24	4.82	123
AVEQ	9,170	1.49	1.15	0.02	[1.45, 1.53]	3.01	1.73	116.3
CG	25,494	4.87	4.8	0.01	[4.85, 4.89]	1.73	1.31	26.9
DETASS	9,359	19.48	15.53	0.2	[19.09, 19.87]	361.15	19	97.6
TOTASS	9,363	2.40×10^{12}	4.78×10^{11}	1.40×10^{11}	$[2.12 \times 10^{12}, 2.68 \times 10^{12}]$	1.83×10^{26}	1.35×10^{13}	562.5
FCF	9,333	2.73×10^{10}	1.03×10^{10}	2.87×10^9	$[2.17 \times 10^{10}, 3.29 \times 10^{10}]$	7.60×10^{22}	2.76×10^{11}	1011

4.4 Methodology

I begin my investigation by considering the appropriate method for estimating causal inference from panel data in a corporate finance setting. As with other researchers in the field, we are confronted with a number of problems that may lead to bias estimates including endogeneity, unobserved heterogeneity and omitted variable bias, Black (2014).

To address these problems my analysis pursues two approaches. First, I employ fixed effect techniques that rely more heavily on modelling assumptions, primarily seeking to control for unobserved heterogeneity. Second, I employ dynamic Generalised Method of Moments (GMM) estimation techniques that use internal instruments – lagged values of endogenous variables – to tackle both dynamic nature of relationships and endogeneity problems.

4.4.1 Fixed effect estimation

According to Gormley (2014), a fundamental concern when conducting panel data analysis is whether unobserved heterogeneity is correctly accounted for. Unobserved heterogeneity occurs when differences among individual firms are correlated with the variables of interest but are not accounted for in the model. Without proper treatment, estimated parameters may be bias.

Panel data techniques, such as fixed-effect and random-effect estimators, are valuable for controlling for whether unobserved heterogeneity while not imposing much structure on the underlying data. They allow us to control for unobserved variables that do not vary within groups of observations and variables that change over time but not across entities.

In the initial analysis, we address unobservable heterogeneity that effects the dependent variable by removing unobservable firm-specific effects that do not vary over time. Following Angrist and Pischke (2009), Imbens and Wooldridge (2009), and Roberts and Whited (2013), I deploy a fixed effect regression approach.

Fixed effects remove any unobserved time-invariant firm-specific effects so we can assess the net effect of the predictors on the outcome variable. Additionally, I control for omitted variable bias by including DETASS, the ratio of debt to total assets; TOTASSET, representing firm size as measured by total assets; FCF, as free-cash flow representing the ability of the firm to generate cash for owners.

I conduct the analysis using the xtreg command in Stata. The xtreg command demeans the variables and applies a correction to standard errors for finite sample sizes. Our analytical approach is captured in equation (4.1).

Equation 4.1

$$y_{it} = \alpha + \beta_1 \text{Overalrating}_{it} + \beta_2 \text{DETASS}_{it} + \beta_3 \text{TOTASS}_{it} + \beta_4 \text{FCF}_{it} + u_i + \varepsilon_{it} \quad (4.1)$$

where y_{it} is our dependent variable of firm performance, *Overalrating* is the explanatory variable of interest, DETASS_{it} is the ratio of debt to total assets, TOTASS_{it} is firm size, as measured by total assets, FCF_{it} is free-cash flow, u_i is a fixed effects, ε_{it} is an idiosyncratic error term.

Despite its flexibility, there are limitations to the application of the fixed effect model. First, while fixed effect estimators can mitigate some omitted variables problems (non-time varying omitted variables), they do so at the expense of requiring a strong exogeneity assumption, Wintoki et al. (2012). The assumption implies that the explanatory variables must be uncorrelated with the error term at all time periods. This is an assumption that is troublesome for corporate finance literature, because of the considerable heterogeneity present in many empirical corporate finance settings, Roberts and Whited (2012).

Furthermore, the fixed effect model does not account for persistence in the dependent variable. Lagged dependent variables help account for temporal relationships in data, reflecting delayed effects or feedback mechanisms. However, even after controlling fixed effects or random effects, the lagged dependent variable may still be correlated with the error term due to its dependence on past shocks.

Wintoki et al. (2012) point out that a common mistake in the corporate finance literature is the insufficient recognition of the impact of dynamic relationships, where the dependent variable is influenced by its past values. To address issues related to dynamic structure, researchers often include a lagged dependent variable. However, estimating models with both a lagged dependent variable and unobserved fixed effects may violate the exogeneity assumption required for consistent estimation in the fixed effect model, resulting in bias estimates, Flannery and Hankins (2012).

4.4.2 Generalised Method of Moments estimation

To test whether the validity of our observations in the static fixed effect model is robust to temporal dependencies we extend our analysis by deploying system GMM as an estimation tool. The system GMM accounts for unobserved heterogeneity by controlling for time-invariants firm-

specific effects, similar to fixed effect models. However, it also addresses dynamic endogeneity, where lagged variables account for the temporal relationships in data, capturing delayed effects or feedback mechanisms. A key advantage of the system GMM approach is the capability to use lagged values of explanatory variables as instruments to mitigate endogeneity caused by reverse causality or simultaneous causality. Additionally, it can use first-differenced lagged values of explanatory variables as instruments, provided they satisfy the orthogonality condition. This instrumental variable approach improves the reliability of our estimates by reducing bias due to endogenous regressors.

We follow the intuition of Arellano and Bover (1995) and Blundell and Bond (1998) to estimate coefficients using lagged regressors of the explanatory variable as internal instruments as set out in equation (4.2). We use the `xtrabond2` command in Stata developed by Roodman (2006) which offers additional flexibility in instrument selection. The regression model for analysing this question is shown below

Equation 4.2

$$\gamma_{it} = \alpha + \sum_s k_s \gamma_{it-s} + \beta_1 \text{Overalrating}_{it} + \beta_2 \text{DETASS}_{it} + \beta_3 \text{TOTASS}_{it} + \beta_4 \text{FCF}_{it} + u_i + \varepsilon_{it} \quad s=1, \dots, p, \quad (4.2)$$

Where γ_{it} is our dependent variable of firm performance, **Overalrating** is the explanatory variable of interest, $\beta_2 \text{DETASS}_{it}$ is the ratio of debt to total assets, $\beta_3 \text{TOTASS}_{it}$ is firm size, as measured by total assets, $\beta_4 \text{FCF}_{it}$ is free-cash flow, u_i is unobserved firm-specific effect mitigated by System GMM, ε_{it} is an idiosyncratic error term and $\sum_s k_s \gamma_{it-s}$ captures the dynamic effect of past values of y on its current value, when s is the lag length and p the number of lags for the dependent variable.

As with a standard fixed effect model, it is important to test the statistical validity of the instrumental variables i.e. they are not correlated with the error term. We do so by conducting the Hansen J test of overidentifying restrictions (Nguyen, 2014). A high p-value (commonly above 0.1) implies that the null hypothesis—that the instruments are valid—cannot be rejected. In contrast, a low p-value indicates potential instrument invalidity, raising concerns about biased estimates. The Hansen test is preferred to the Sargan test, as it more reliable in empirical settings where heteroskedasticity and autocorrelation in the error terms are suspected.

To ensure the reliability of GMM estimates, it is important not only to confirm instrument validity but also to verify that the error terms are not serially correlated. This is assessed using the Arellano-Bond (AR) test, which examines autocorrelation in the first-differenced residuals. The AR (1) test often indicates significant first-order serial correlation, which is expected due to the transformation process of differencing. However, the more critical diagnostic is the AR (2) test, which evaluates whether second-order serial correlation is present. A non-significant AR (2) p-value indicates no serial correlation in the original error terms, thereby supporting the validity of using lagged variables as instruments. In contrast, a significant AR (2) result raises concerns about endogeneity in the instruments, calling into question the consistency of the GMM estimates.

4.5 Results

The objective of this study is to analyse the impact of corporate governance quality on firm performance. My primary concern is whether unobserved heterogeneity results in biased estimates

in my regression model. I employ a fixed effects approach to control for firm-specific, time-invariant factors. The fixed effects approach is frequently employed within the corporate finance literature, and I adopt this approach earlier in the thesis.

As stated previously, our explanatory variable is a proxy of corporate governance quality, Overallrating, and we use three measures of corporate performance, ROA, ROE and Tobin Q. The results of the regression analysis for our accounting-based proxies for firm performance are in Table 4.2 and Table 4.3, while our regression results for our market-based measure are in Table 4.4. Year dummies are included in all regressions to remove any extraneous source of variance from the results. Standard errors are used in the fixed effects estimation. All t-statistics are based on robust standard errors.

Table 4.2: FE Model Estimates on corporate governance and ROA

This table shows estimates of regressions of corporate governance quality on firm performance. The dependent variable is firm performance using ROA. The main independent variable is Overallrating our measure of corporate governance quality. Debt-to-asset (DETASS), total asset (TOTASS), and free cash flow (FCF) are employed as control variables.

Explanatory variable	ROA			
	B	std. err.	t	(P> t)
Overallrating	1.159	0.105	11.06	0.000
DETASS	-0.163	0.106	-15.3	0.000
-				
TOTASS	3.66E-14	6.39E-14	-0.57	0.567
FCF	7.67E-13	2.14E-13	3.58	0.000
YEAR				
2018	0.373	0.192	1.94	0.052
2019	0.04	0.192	0.21	0.834
2020	-0.591	0.194	-3.04	0.002
2021	-0.396	0.196	-2.01	0.044
2022	0.969	0.197	4.91	0.000
2023	0.414	0.197	2.09	0.036
Number of observations	3123			
Number of groups	452			

Table 4.3: FE Model Estimates on corporate governance and ROE

This table shows estimates of regressions of corporate governance quality on firm performance. The dependent variable is firm performance using ROE. The main independent variable is Overallrating our measure of corporate governance quality. Debt-to-asset (DETASS), total asset (TOTASS), and free cash flow (FCF) are employed as control variables.

Explanatory variable	ROE			
	B	std. err.	t	(P> t)
Overallrating	2.072	0.331	6.25	0.000
DETASS	-0.199	0.337	-5.9	0.000
TOTASS	-5.41E-13	2.02E-13	-2.68	0.007
FCF	2.89E-12	6.78E-13	4.26	0.000
YEAR				
2018	0.732	0.609	1.2	0.229
2019	-0.157	0.609	-0.26	0.796
2020	-1.433	0.614	-2.33	0.02
2021	-1.357	0.622	-2.18	0.029
2022	1.534	0.624	2.46	0.014
2023	0.177	0.626	0.28	0.778
Number of observations	3122			
Number of groups	452			

Table 4.4: FE Model Estimates on corporate governance and Tobin's Q

This table shows estimates of regressions of corporate governance quality on firm performance. The dependent variable is firm performance using Tobin's Q. The main independent variable is Overallrating our measure of corporate governance quality. Debt-to-asset (DETA_{SS}), total asset (TOTASS), and free cash flow (FCF) are employed as control variables.

Explanatory variable	AVEQ			
	β	std. err.	t	(P> t)
Overallrating	0.109	0.398	2.73	0.006
DETA _{SS}	-0.019	0.004	-4.61	0.000
TOTASS	2.18E-14	2.43E-14	0.90	0.37
FCF	-5.42E-14	8.14E-14	-0.67	0.506
YEAR				
2018	0.141	0.073	1.93	0.054
2019	0.155	0.073	0.21	0.832
2020	0.103	0.073	1.40	0.162
2021	0.168	0.074	2.25	0.025
2022	-0.084	0.075	-1.12	0.262
2023	-0.528	0.051	-7.03	0.000
Number of observations	3124			
Number of groups	452			

My results indicate a consistent picture in terms of the sign and magnitude of the corporate governance rating coefficient across all models. The effect size is meaningful based on the positive t-statistic and p-value well below standard threshold levels. My null hypothesis that corporate governance rating does not affect firm performance based on our chosen proxies is invalid. Instead, I find evidence of a meaningful relationship between our explanatory variable, corporate governance rating, and our chosen proxies of firm performance. These findings are consistent with previous literature, Morck et al. (1989), Hermalin and Weisbach (1991), Gugler and Yortoglu (2003).

Despite the consistency of the results and the widespread use of fixed effect approaches, I recognise the limitations of my approach. Firstly, the fixed effect model does not account for persistence in the dependent variable, which may produce biased or inconsistent results, Wintoki et al (2012). Secondly, although fixed effect estimators can mitigate some omitted variables bias, they do not directly address the problem of endogeneity. Indeed, implicit in a fixed effect regression is an assumption of exogeneity, which may not be reasonable in a corporate finance framework.

To address these concerns and to confirm the robustness of our results, we extend our analysis by deploying system GMM as an estimation tool. System GMM allows us to address dynamic issues, where firm performance is a function of both current and past corporate governance, while also mitigating endogeneity problems, by employing lagged regressors of the explanatory variable as internal instruments.

As previously, our explanatory variable is a corporate governance rating, *Overalrating*, and our dependent variable is corporate performance, are represented by ROA, ROE and Tobin Q. The models include controls for omitted variable bias consistent with the prior literature including the ratio of debt to total assets (*DETA*SS), firm size, as measured by total assets (*TOTA*SS), and free-cash flow representing the ability of the firm to generate cash (*FCF*). We also include year dummies to control for common time factors.

Firstly, we consider the results from our analysis of corporate governance quality on accounting-based measures of firm performance, ROA and ROE. The results of our system GMM model are displayed in Table 4.5 and 4.6.

Before addressing the implications of the coefficients, it is important to check the validity of the instruments. Our null hypothesis that all instruments are valid, i.e. not correlated with the error term. For both models, the instruments pass AR1 and AR2 implying exogeneity under an assumption of constant variance for the error term, or homoskedasticity. In terms of over-identification, our null hypothesis that all instruments are valid, i.e. not correlated with the error term. To confirm the validity of IV is robust under a heteroskedastic error term structure we conduct a Hansen test. In terms of ROA, we identify valid instruments, but a p-value only modestly greater than 0.05 indicates a weak instrument for ROE and an invalid instrument for Tobin Q (Roodman, 2006).

Staiger and Stock (1997) suggest that the F-statistics of instrumental variables should be larger than 10 to ensure that the maximum bias in IV estimators to be less than 10 %. We re-ran the ROA model with a single lag as an instrumental variable, but the results were not materially different.

In terms of the regression results I see a positive and significant coefficient for *Overalrating*, when either ROA or ROE are used as the dependent variable. A 1 unit increase in governance quality leads to a 7.66 increase in ROA, while a similar change in our explanatory variable leads to an 8.80 increase in ROE.

I find limited evidence of a persistence in the dependent variable. For ROA, the first lag of the explanatory variable is not statistically significant and displays only weak persistence, while the influence of first lag value of ROE is positive but weak - only about 9% of past effects carry over. The result is statistically significant only for ROE, while other coefficients including for both second lags are not statistically significant.

The results support my original findings regarding a positive and significant relationship between corporate governance quality and firm performance are valid even when one accounts for both the potential of dynamic relationships or feedback loops and endogeneity concerns. Our results are clearer for ROE than ROA, where we only identify a weak instrument.

Table 4.5: GMM Model Estimates on corporate governance and ROE

Note: This table reports the results of the System GMM regression of firm performance measured by accounting methods on CG rating (Overalrating) variables and other control variables. Lags 1 and 2 of the levels of firm performance variable, CG rating and other control variables (DETASS, TOTASS, and FCF) are employed as GMM-type instruments for the first-differenced equation. Year dummy variables are included in the regression but not reported. The Arellano-Bond test for AR (1) and AR(2) is used to check for serial correlation in first-differenced errors, while the Hansen test assesses the validity of the instruments.

Explanatory variable	Dependent variable: ROE			
	B	Corr. std. err.	z	(P> z)
	1	2	3	4
Lagged ROA – 1	0.379	0.09	4.19	0.000
Lagged ROA – 2	0.029	0.054	0.53	0.593
Overalrating	8.799	4.400	2	0.046
DETASS	0.021	0.332	0.65	0.170
TOTASS	1.19E-15	3.82E-14	0.03	0.408
FCF	4.74E-15	1.54E-12	0.00	0.113
Year dummy variables				Yes
Number of observations				3105
Number of groups				452
Number of instruments				104
Arellano-Bond test for AR (1)				0.002
Arellano-Bond test for AR (2)				0.991
Hansen test of over identification				0.052

Table 4.6: GMM Model Estimates on corporate governance and ROA

Explanatory variable	Dependent variable: ROA			
	β	Corr. err.	std. z	(P>[z])
	1	2	3	4
Lagged ROA – 1	0.235	0.169	1.39	0.165
Lagged ROA – 2	-0.038	0.079	0.47	0.635
Overalrating	7.655	1.976	3.87	0.000
DETASS	-0.037	0.027	1.37	0.170
TOTASS	1.35E-14	1.63E-14	0.83	0.408
FCF	9.99E-13	6.31E-13	1.58	0.113
Year dummy variables				Yes
Number of observations				3110
Number of groups				452
Number of instruments				23
Arellano-Bond test for AR (1)				0.000
Arellano-Bond test for AR (2)				0.399
Hansen test of over identification				0.368

Note: These tables report the results of the System GMM regression of firm performance measured by accounting methods on CG rating (Overalrating) variables and other control variables. Lags 1 and 2 of the levels of firm performance variable, CG rating and other control variables (DETASS, TOTASS, and FCF) are employed as GMM-type instruments for the first-differenced equation. Year dummy variables are included in the regression but not reported. The Arellano-Bond test for AR(1) and AR(2) is used to check for serial correlation in first-differenced errors, while the Hansen test assesses the validity of the instruments.

Turning to the other proxy of firm performance, Tobin Q, deployed in my fixed effect framework. I repeat the System GMM modelling exercise with the same specifications as equation (4.2). My results do indicate a positive relationship between corporate governance rating and firm performance, but the effect is not statistically significant. Furthermore, I am unable to validate the instruments as the Hansen test indicates an endogeneity problem with the instruments, even if the AR (1) and AR (2) tests are supportive of a System GMM estimation.

The results, see Table 4.7, indicate that my initial findings regarding the use of a market-based measure of firm performance, Tobin Q, as a dependent variable may not be robust to dynamic relationships or feedback loops and endogeneity concerns. Although these results are unsatisfactory, the result does not invalidate our earlier findings. Indeed, the question of whether Tobin Q is the most appropriate measure of firm performance in Japan comes up frequently in the literature.

Table 4.7: GMM Model Estimates on corporate governance and Tobin Q

Explanatory variable	Dependent variable: AVEQ			
	β	Corr. err.	std. z	(P> z)
	1	2	3	4
Lagged ROA – 1	0.876	0.127	6.9	0.000
Lagged ROA – 2	-0.068	0.129	0.52	0.598
Overalrating	0.402	0.267	1.5	0.133
DETASS	0.001	0.003	0.33	0.739
TOTASS	2.66E-16	1.47E-15	0.18	0.857
FCF	6.48E-14	8.71E-14	-	0.457
Year dummy variables				Yes
Number of observations				3104
Number of groups				452
Number of instruments				104
Arellano-Bond test for AR (1)				0.019
Arellano-Bond test for AR (2)				0.745
Hansen test of over identification				0.001

Note: This table reports the results of the System GMM regression of firm performance measured by market measures on CG rating (Overalrating) variables and other control variables. Lags 1 and 2 of the levels of firm performance variable, CG rating and other control variables (DETASS, TOTASS, and FCF) are employed as GMM-type instruments for the first-differenced equation. Year dummy variables are included in the regression but not reported. The Arellano-Bond test for AR(1) and AR(2) is used to check for serial correlation in first-differenced errors, while the Hansen test assesses the validity of the instruments.

We consider three possible explanations and propose future analysis to investigate further. First, there may be a difference in how governance affects short-term accounting metrics (ROA, ROE) vs. long-term valuation (Tobin Q). Operational efficiency improvements may have an immediate effect on accounting terms and consequently may be more sensitive to the market reforms identified during our time period, Bebcuk et al., (2009), Wintoki et al. (2012). In contrast, market measures are driven by long-term market expectations but can be distorted by short term earnings trends such as a profit windfall driven by a falling yen. Second, market inefficiencies such as cross-shareholdings or a greater emphasis on a bank-centric financing model may serve to weaken the translation effects of corporate governance improvements to market-based measures, Morck & Nakamura, (1999), Aggarwal et al. (2007), Hoshi & Kashyap, (2001).

The translation effect may partly explain why the Tokyo Stock Exchange has placed a greater emphasis on an alternative market-based valuation tool, the price-to-book ratio. The price-to-book ratio offers an avenue for further study when seeking to address the causality between corporate governance quality and performance. However, the measure is more shareholder-centric and

simpler than Tobin Q, which better captures capital allocation and investor perception and is less tied to accounting metrics.

Finally, Tobin Q may be subject to measurement error due to market-based fluctuations, such as the covid shock or other macroeconomic shocks that obscure firm-specific governance effects, Flannery & Hankins (2012). In addition, Hoshi and Kashyap (2001) finds that historical cost accounting for assets inflates Tobin Q ratios in Japan. A potential avenue for future study is to consider industry adjusted Tobin Q or combine it with accounting metrics, Gompers et al. (2003), Wintoki et al. (2012).

4.6 Conclusion

Our primary contribution to the literature is a comprehensive and econometrically defensible analysis of the relation between corporate governance quality and firm performance. We take into account the endogenous nature of the relation between governance and performance. Also, with the help of a GMM framework we take into account potential dynamic structure issues that may bias coefficients.

We find evidence of a positive and statistically significant relationship between governance quality and accounting-based performance metrics. These findings remain robust even after accounting for dynamic relationships and endogeneity concerns, supporting prior literature on governance-performance linkages.

However, the results for the market-based measure, Tobin Q, are inconclusive, as the relationship lacks significance, and the instruments fail the validity tests. This discrepancy may stem from differences in how governance affects short-term accounting performance versus long term market valuation, or it could be a result of inefficiencies in Japan, e.g. cross shareholdings and bank-centric financing.

Future research should explore alternative performance metrics such as price to book ratio, longer time horizons and Japan-specific market dynamics to better understand corporate governance's impact on market-based measures of performance.

Finally, the study also sheds some light on the ongoing debate about the validity of a convergence argument in corporate governance. Some authors have argued the benefits from corporate governance may not be universally applicable but may be dependent on institutional settings at a country level, Yoshikawa (2009), Shinozawa (2024). Although not a primary focus on this study, institutional settings are given an important role by those who argue that corporate governance is unlikely to converge to a common optimum level across jurisdictions. This study finds tentative evidence that supports equivalence in how the mechanisms of corporate governance impact firm performance despite Japan's unique institutional settings. To add greater strength to this argument one potential avenue for my future research is including a cross-country study to assess whether the magnitude of the effect is significantly different given the institutional settings.

In conclusion, the main contribution of this study is to help assuage concerns that researchers that found a positive relationship between corporate governance and performance may have overlooked important empirical considerations – especially evident in the fixed effect approach to addressing persistence and endogeneity. The results are supportive for efforts to improve

corporate governance in Japan and suggest better corporate governance quality can boost firm performance and the efficiency of capital allocation in the economy.

Chapter 5 - Conclusion

5.1 Overview

We set ourselves the challenge of examining the role of key participants in Japan's capital markets in driving firm performance. Specifically, this thesis has investigated the influence of firm performance of the following three explanatory variables: institutional investors, Main Banks and corporate governance quality. We identified meaningful relationships with our response variable of interest – firm performance – which we believe contributes to our understanding of the operation of Japan's capital markets.

In Chapter 2, we employed a fixed-effect approach to regress the proportion of institutional ownership of a company on its performance, using our chosen proxies of return on assets, return on equity and Tobin's Q. We subsequently introduce a two-stage least squares regression approach with instrumental variables to address endogeneity concerns typical in corporate finance research. The findings indicate a strong causal relationship between institutional ownership and firm performance when measured by accounting metrics, but not by market-based indicators. Moreover, institutional ownership positively impacts firm value, when interacted with information environment proxies such as analyst coverage. However, the proportion of independent directors does not show a similar effect. These results indicate that institutional investors are acting in-line with the expectations of a shareholder-centric model by seeking to maximise firm value. In addition, the evidence suggest that effective monitoring and information flow are important supplementary factors for institutional investors to contribute to firm value.

Chapter 3 examines whether maintaining a Main Bank relationship has benefited firms in Japan after the Global Financial Crisis (GFC). The study employs propensity score matching to assess the impact of Main Bank ties on three measures of firm performance. Contrary to theoretical expectations that these relationships lower agency costs or strengthen monitoring via dual ownership, the findings reveal a consistently negative and statistically significant effect. Rather than supporting shareholders interest, Main Banks may weaken shareholder monitoring and discourage managerial risk-taking.

Finally, Chapter 4 examines the causal relationship between corporate governance quality and firm performance in Japan, focusing on TOPIX 500 firms. We use fixed-effect regression models and the Generalised Method of Moments techniques that use internal instruments to tackle both dynamic nature of relationships and endogeneity problems. The findings reveal a significant positive relationship between corporate governance quality and accounting-based measures of firm performance, even after controlling for potential biases identified by the literature. The effects are not consistent for our market-based measures of performance.

5.2 Contribution to the literature

Our primary contribution to the literature is to improve our understanding of how key elements of both a shareholder-centric capital market model, and a bank-centric capital model, have contributed to firm performance in Japan. We find a positive and statistically significant

relationship between the presence of institutional investors and the quality of corporate governance on firm performance, even when endogeneity and dynamic structure problems are addressed. In addition, we find the presence of Main Banks, synonymous with bank-centric governance, weighs on firm performance, when confounding factors are controlled for.

Our analysis timeframe is different for each study based on data availability. However, across the research we have covered a series of periods marked by market and regulatory changes that have placed greater emphasis on a shareholder-centric governance model. Consequently, the study sheds some light on the ongoing debate about the validity and desirability of convergence in corporate governance system.

Some researchers argue that there is more than one distinct solution to the optimal allocation of capital, questioning whether the shareholder-centric governance model – common in Anglo-Saxon economies – will take root in jurisdictions with institutional complementarities, rent-seeking interest groups, divergent property rights, and differing social norms, Yoshikawa and Rasheed (2009). However, we find evidence that in Japan, at least, the expectations of a shareholder-centric model are valid for the elements we tested. Conversely, the findings of our study are not consistent with the expectations of a bank-centric model of corporate governance.

Of course, we do not test an exhaustive list of characteristics of a shareholder-centric capital market model so we cannot conclude that the operating model of Japanese firms is fully consistent with a shareholder-centric system, such as those in the Anglo-Saxon economies. However, we do offer evidence for our chosen explanatory variables that is consistent with the expectations of a shareholder-centric model of governance when assessing company performance in Japan. This adds weight to the view that Japan is benefiting from a transition to a capital markets model that is more closely aligned to a shareholder-centric model of governance.

Another important contribution to the literature relates to the conflicting evidence generated by our primary dependent variable of interest in our study, firm value. There was a noticeable difference in both the direction and significance of our regression coefficients between our three proxies of firm performance in both our study of institutional investors and corporate governance quality. While our accounting-based measures of firm performance, ROA and ROE, generated consistent findings, our results for our preferred market-based measure of Japanese firm performance, Tobin's Q, diverged on a number of occasions. These results were despite the relatively high Pearson coefficient of these market and accounting-based measures, indicating a strong, positive linear relationship. This finding is worthy of greater consideration.

Previously studies have observed a noticeable difference between the relationship between firm performance and corporate governance depending on the performance metric used, Lindenberg & Ross (1981); Kaplan and Zingales (1997). In relations to corporate governance, Demsetz & Villalonga (2001) found that market-based measures such as Tobin's Q have weak or inconsistent relationships with performance than accounting measures.

The divergence between accounting and market-based measures of firm performance originates in the relative bias towards shorter term and longer term factors. ROA and ROE relate to historical profitability and the efficiency of the use of equity or assets, while Tobin's Q is biased towards growth opportunities and future profitability. Enhancements in operational efficiency can have an

immediate impact on financial metrics, making them more responsive to the market reforms observed during our study period (Bebchuk et al., 2009; Wintoki et al., 2012). On the other hand, market-based indicators reflect long-term expectations that factor in structural headwinds to earnings growth. Understanding how these definitional differences may limit the interpretation of the results is an important next step for our research.

At this stage, we can offer some potential causes of the divergence. For example, as stated above the numerator of Tobin's Q reflects the market's valuation of the firm, which includes expectations about future profitability and growth opportunities. These factors are subject to market-based fluctuations, such as a temporary profit surge caused by a depreciating yen or macroeconomic shocks that obscure firm-specific governance effects, Flannery & Hankins (2012). In contrast, the denominator — the estimated replacement cost of the firm's physical assets — excludes intangible assets and future investment potential. As a result, firms that underinvest may appear more valuable on a Tobin's Q basis, potentially inflating valuations, Dyvrik (2015). This creates ambiguity in interpreting Tobin's Q, especially when scale efficiency and cost discipline vary in importance, Hayashi (1982).

One important question to ask is whether the divergence in market and accounting based measures are more pronounced in Japan? Given the accumulation of large cash balances on corporate balance sheets it is possible that catch-up in operational efficiency may be more pronounced. On the other hand, the evidence that Japan is subject to more rapid sentiment shifts than say in U.S. markets is more limited, at least based on the volatility of the Japanese stock markets, as measured the Nikkei Stock Average Volatility Index. That said, it is possible that market or sector inefficiencies such as cross-shareholdings or the enduring influence of a bank-centric financing model may serve to weaken the translation effects of corporate governance improvements to market-based measures such as Tobin's Q, Morck & Nakamura, (1999), Aggarwal et al. (2007), Hoshi & Kashyap, (2001).

As for underinvestment hypothesis, especially in intangible assets, it is unclear if Japan is more vulnerable to this phenomenon than the US, given the relatively high bias to manufacturing sectors with a high ratio of tangible assets, compared to markets with a high weighting to IT, healthcare or financial services. In contrast, Japanese companies may be more vulnerable to scale efficiency and cost discipline effects, due to their integrated supply chains and focus on costs improvement for margin expansion in a shrinking market, Ahmadjian and Lincoln (2001). Although we are unable to test these hypotheses here, the limitations of our proxies for firm performance, particularly the market-based measure, may augur for an examination of alternatives to Tobin's Q.

We propose two potential avenues for investigation. The first relates to adjustments on the numerator, such as moving averages or exclusion of market shocks to reduce distortion derived from volatile shifts in investor sentiment. Although we do seek to control for macro shocks in our modelling work through the inclusion of a year dummy variable, some effects with sector level implications such as the impact of a rapid yen appreciation or depreciation on exporters may not be captured. The second solution relates to the denominator, with the inclusion of a simpler to calculate asset-based measure such as the price-to-book ratio, reflecting book value rather than requiring the calculation of replacement costs. Likewise, in future work we could apply new

measures of operating efficiency proposed by Dyvbiik (2015) which assess scale efficiency and cost discipline effects more clearly.

5.3 Limitations and future study

Other limitations to our study relate to the mechanisms by which our three chosen explanatory variables influence the performance of firms. We assume that institutional investors create value through their engagement and voting activities, but we are unable to isolate institutional investor activity by type. This partly reflects the private nature of engagement activity by institutional investors and ambiguity regarding how the primary incentive mechanisms operate under Japanese government structures. Likewise, we choose to consider corporate governance at an aggregate level rather than to examine individual components or a sub-group of governance attributes. Future research should address which component is the more powerful determinate of firm performance.

Turning to other potential future study areas, we have already discussed the divergence in market and accounting-based measures of our chosen variable of interest firm performance. However, it may also be possible to extend our analysis to consider the impact of key elements of Japan's capital market model on other important economic variables such as risk-taking or entrepreneurship and capital investment. If reforms of the governance of corporate and capital markets are to trigger an upturn in corporate performance as prescribed by the Japan Revitalisation Strategy introduced by the Japanese government in 2013, then the effects should be evident in broader measures of economic activity.

Finally, we encourage the application of the empirical techniques employed in this paper to other jurisdictions. Although we have only tested aspects of a shareholder-centric and bank-centric model of governance in Japan, it would be revealing to understand if the relative merits of our explanatory variables on firm performance are replicated in other countries outside the Anglo-Saxon sphere of influence. To add greater strength to the argument in favour of convergence one potential avenue for my future research is including a cross-country study to assess whether the magnitude of the effects is significantly different given a range of different institutional settings.

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