Japan's Diversification Discount

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Abstract

This paper uses data for over 1,900 Japanese firms for the period 1999 - 2013 to examine the net costs and benefits of corporate diversification. Previous studies have documented a significant negative effect for Japan, i.e. a diversification discount, but we show that there is large variation with many diversified firms actually trading at a premium relative to a theoretical portfolio of single segment firms. We find that for firms with strong corporate governance, firm values are high and there is an efficient fund transfers from low- to high-productivity divisions. Only when corporate governance is weak, diversified firm values are low consistent with capital misallocation where funds are transferred from high-to low-productivity divisions.

Keywords: Corporate Governance, Diversification, Japan

1 Introduction

Until the late 1990s, the consensus among researchers and practitioners was that corporate diversification leads to an average discount on firm value. Recent studies, however, have questioned the assumption that inefficient diversification destroys value. These studies suggest that the diversification discount might stem from self-selection bias and the endogeneity of diversification decisions, or even from data and measurement problems. For example, Villalonga (2004) provides evidence that self-selection by firms with different investment opportunities can explain (at least some of) the conglomerate discount. Although there has been no clear consensus, the present-day thinking is that corporate diversification alone does not drive the documented discount or premium in firm value.

In this paper, we use data for over 1,900 Japanese firms for the period 2000 - 2013 to examine the net costs and benefits of corporate diversification. Previous studies have documented a significant negative effect for Japan, but we show that there is a large variation with many diversified firms actually trading at a premium relative to a theoretical portfolio of single segment firms. We find that for firms with strong corporate governance, firm values are high and there are efficient fund transfers from low- to high-productivity divisions. Only when corporate governance is weak are diversified firms' values are low, consistent with capital misallocation where funds are transferred from high-to low-productivity divisions.

Theoretical research does not provide clear predictions about the net costs and benefits of diversification. In markets with no frictions, the Modigliani-Miller theorem holds and M&As are zero NPV transactions, i.e. diversification should be irrelevant to firm value. Most firms, however, operate in more than one industry so over the last decade, numerous theories on diversification motives and the (ex ante) costs and benefits associated with the diversification decision have been developed.

Agency theory suggests that managers have incentives to diversify their firms in order to (i) increase managerial power, their compensation and the private benefits of

control; (ii) to reduce employment risk and (iii) to increase their entrenchment. Managers, therefore, tend to over-invest and expand their firms more than what is optimal for shareholders. Aggarwal and Samwick (2003) is one of the first papers to model the two agency costs of diversification - private benefits and risk reduction. Fulghieri and Hodrick (2006), however, examine the interaction between agency conflicts in a model with diversification synergies and show that the presence of synergies modifies the entrenchment incentive of a divisional manager.

The use of re-allocation policies in the internal capital markets of multi-segment firms is another important diversification motive. In diversified firms, cash flows generated by one segment may be used to subsidize investment in other divisions and a segment's assets can be used as collateral for obtaining funding for other segments of the firm. This cross-subsidization can be efficient, if it helps the firm eliminate some of the costs of financial constraints. Alternatively, reallocation in internal capital markets can be inefficient, if the firm underinvests in divisions with better growth opportunities and over-invests in divisions with worse prospects. Wulf (2009), for example, analyzes the efficiency versus the agency problems of internal capital markets in a moral hazard model. He shows that investment inefficiency depends on division the manager's ability to skew information, his or her compensation incentives, and the public image of the investment opportunity.[1]

Empirical studies also provide mixed results regarding the sign and magnitude of the diversification discount. Lang and Stulz (1993) use their "excess value" methodology and find a large and significant discount for diversified firms, compared to a portfolio of single-segment firms. Similarly, Berger and Ofek (1995) document a large diversification discount and argue that value is lost when firms engage in unrelated diversification and over-invest in inefficient cross-subsidization. Their results have been replicated for

[1]In addition, there could be a purely financial motive for diversification as combining divisions with imperfectly correlated cash flows reduces the probability of default and increases debt capacity. This creates value through an increased tax shield. Finally, dynamic models, such as Gomes and Livdan (2004), show that diversification can be a value-maximizing response to increase firm's growth. After certain time, core investments become unprofitable so diversification becomes a rational strategy for such firms. Also, diversified firms can use economies of scope, due to declining fixed costs of production and eliminating redundancies across different segments.

different sample periods, different countries and for globally diversified firms.[2]

More recent studies such as Villalonga (2001) and Campa and Kedia (2002), however, show that diversified firms already traded at a discount prior to diversifying, i.e. diversifying and non-diversifying firms differ systematically. Graham et al. (2002) show that the discount appears because the segments acquired by diversifying firms were discounted prior to their acquisition. In general, the effect of diversification appear to differ from firm to firm, industry to industry and over time. Santalo and Becerra (2008), for example, show that the effects of diversification is heterogeneous across industries, whereas Kuppuswamy and Villalonga (2007) analyze the recent financial crisis and find that there is a change in the diversification discount over time associated with the role financial constraints play in determining the value of diversification.

Our results show that there is a large variation with many diversified firms trading at a premium relative to a theoretical portfolio of single segment firms. We examine two possible explanations. First, we consider Rajan et al. (2000) and examine whether diversified firms with weak corporate governance face more severe agency problems that arise from segment-managers' propensity to lobby for firm-wide resources. In Rajan et al's model, segments with more influence obtain more resources leading to an over-investment problem and other dead-weight costs. These inefficient transfers from high- to low- productivity divisions dissipate value for diversified firms which drives the diversification discount. Alternatively, Lamont (1997), Shin and Stulz (1998), (1998); Khanna and Tice (2001) argue that if growth opportunities are likely to be imperfectly correlated among segments, diversified firms need less cash to meet their investment demand. Harford et al. (2003),Haushalter et al. (2007), Acharya et al. (2007) andDenis and Sibilkov (2010) also show that cash acts as a hedge for firms against financial constraints and predation risk, especially in downturns. We examine whether diversified firms with strong governance have high values that correspond to efficient fund transfers from low- to high-productivity divisions and as a result lower cash holdings.

Figure 1 shows the year on year mean and median values for the cash to total

[2]For example, Servaes (1996) and Klein (2001) find an average discount for conglomerate mergers.

assets ratio for the subsamples of diversifies and single-segment firms during our sample period. The figure shows that both the average and the median diversified firm holds significantly less cash than the average and median focused firm. The overall difference is large, 28.78%, and statistically significant. We examine the channels through which diversification affects value. In particular, we show that diversification can have an important effect on value via the interaction of the firms governance structure and the inter-divisional transfers or cash flows. On the one hand, diversification can lead to dissipation of cash flows if managers inefficiently allocate capital across divisions by subsidizing poorly performing divisions with cash flows from profitable divisions, i.e. managers engage in self-dealing. On the other hand, diversification can increase value as it can serve as a natural hedge via the diversification of imperfectly correlated divisions' cash flows and investment opportunities and the reduction in informational problems. We show that for firms with strong corporate governance, firm values are high. This evidence supports the complementarity growth hypothesis. When corporate governance is weak, however, firm values are low which is in line with the agency cost theory, i.e. consistent with capital misallocation where funds are transferred from high- to low-productivity divisions.

Our study uses data on Japanese firms. Japan provides an ideal case to study the effect of diversification on firm value for several reasons. First, Japanese firms have the highest cash-to-assets ratio amongst the top industrialized countries. Rajan and Zingales (1995) examine cash holdings of companies across the G7, and find that Japanese firms held substantially more cash than their G7 counterparts. Pinkowitz and Williamson (2001) argue that Japan's main bank system exacerbates this problem because the banks induce their industrial affiliates to hold excessive cash as a way of expropriating wealth, a result that reinforces earlier findings on the role of main banks in Japan.[3]

Second, Japanese firms are well-known for extensive diversification with highly com-

[3]Peek et al. (2005) show that an important contributing factor to the poor economic performance is the gross misallocation of credit by banks. Japanese banks had the perverse incentives to provide additional credit to the weakest firms because troubled Japanese banks wanted to avoid the realization of losses on their own balance sheets. This "evergreening" behavior was compounded by the incentives arising from the extensive corporate affiliations.

petitive internal firm structure with divisions competing over resources and influences. Institutions such as lifetime employment and seniority-based wages create incentives for 'tournament"-like promotion. These institutional structures represent a fairly close description of Rajan et al. (2000) model. The difficulty of mid-career job changes increases the stakes of the tournament within the firm and can exacerbate the coordination problem described by Rajan et al. (2000).

The Japanese economy has performed poorly over the last two decades. Morck and Nakamura (1999) argue that Japanese corporate governance helps explain the poor economic performance of the Japanese corporate sector. In particular, the existence of cross-shareholdings with the main bank and other firms in the keiretsu created incentives for widespread misallocation of capital. The problem was exacerbated since hostile takeovers were non-existent and M&A typically happened between agreeing parties with the approval of friendly institutional shareholders. Under this system, creditors, especially banks, played an important role in governance, and shareholders' control rights were far less important.

Since the late 1990s, the Japanese government has introduced market and corporate governance reforms to move to a shareholder-focused model with the goal of improving economic performance.[4] For some firms, corporate governance has improved significantly. For example, the importance of the main bank and the keiretsu systems have declined and this has shifted corporate governance control from the creditors to the shareholders. For other firms, the benefits of the governance reforms have been successfully offset as incumbent managers seek to protect themselves from an increasingly active market for corporate control, especially from foreign investors. Hamao et al. (2010) provide evidence on the returns to foreign investor activism in Japan between 1998 and 2009. They report largely mixed evidence on the ability of activist investors

[4]Corporate governance reforms include the liberalization of corporate laws that had previously restricted or prevented corporate takeovers, spinoffs, and reorganizations; the use of stock options as management compensation; the availability of stock repurchases; the introduction of laws allowing shareholders to sue managers; reforms in financial reporting and auditing rules; a 2001 law that required banks to reduce their corporate shareholdings; and reforms designed to reduce corporate cross-holding of shares.

to reform Japanese companies, and the widespread adoption of poison pills since 2006.

Our paper contributes to the literature on the interaction of corporate governance and diversification strategies. The findings of Anderson et al. (1998) suggest that while governance structures are related to the level of corporate diversification, they fail to explain the magnitude and persistence of the diversification discount. In a related article, Hoechle et al. (2012) report evidence that corporate governance failures can explain the diversification discount but only in certain settings. In contrast, Hund et al. (2010) provide an explanation of the encountered diversification discount, which does not rely on managerial action. Using a rational learning model from Pástor and Pietro (2003), they find that rational learning about average profitability can lead to a discount if diversified firms have less uncertainty about average profitability than focused firms. In this case, diversification would be neither good nor bad.

This paper is also related to a growing literature exploring the efficiency of internal capital markets. Sautner and Villalonga (2010) show that higher ownership concentration leads to lower degree of corporate diversification but enhances the efficiency of internal capital markets. Duchin and Sosyura (2013) derive the conditions under which positive and negative effects of internal capital markets dominate. They show that for firms with weak governance, divisional managers with social ties to the CEO are associated with lower investment efficiency/higher value. When information asymmetry is high, however, managerial ties lead to efficiency/higher value by simplifying information transfer. Finally, Glaser et al. (2013) provide empirical evidence that managerial power and connections lead to frictions in internal capital allocation, i.e. powerful and connected managers achieve higher capital allocations at times of financial slack.

The remainder of the paper is organized as follows. Section 2 describes the data, explains how we construct the main variables of interest and presents some summary statistics. Section 3 discusses our empirical methods, presents out estimation results and their interpretation. Section 4 considers some implications and extensions. Section 5 concludes the paper and provides suggestions for future research.

2 Data and Summary Statistics

We start with the complete list of publicly traded firms in the Nikkei NEEDS Financial Quest Database. We exclude: (i) financial firms and utilities, but not industrial firms with financial segments as this will reduce our sample size significantly; (ii) firm-years with missing data on cash holdings and short-term securities, book assets, sales, operational cash flows, market to book ratios, leverage, and net working capital; (iii) firm-years where cash holdings exceed the value of total assets; (iv) those displaying asset or sales growth exceeding 100% and (v) all firm-year observations without each segment's industry (SIC code).

Our final sample consists of 1,940 firms for period 2000 to 2013. 761 firms in our sample have multi-segments and 1179 firms have a single segment. Our measure of firm value, Tobins Q, is adjusted to account for two things: (i) many Japanese firms hold land and land prices in Japan have almost doubled since the 1980s (ii) purchase accounting.

First, we follow the method outlined in Hoshi and Kashyap (1990) to adjust Tobins Q for the replacement value of land and tax adjustments. Second, Custódio (2013) argues that purchase accounting creates a significant upward bias since the assets acquired in a merger are reported at their transaction-implied value which is typically higher than the targets pre-merger book value. Thus, the market-to-book ratio of assets tends to be lower for the post-merger entity than for the portfolio combining the two pre-merger entities. [5]

Figure 2 presents a comparison between the distributions of Tobins Q for diversified firms and single segment firms over time for the period 2000-2010. The figure suggests that there are no significant differences for the period 2000-2010. Of course, this univariate statistic does not take into account the industries of the diversified firms' segments. It may simply be the case that diversified firms have segments in industries with high Q values, but that the firm still trades at a discount to the weighted Q-value of its segments. Figure 3, on the other hand, presents box plots of excess value for each year

[5] Maksimovic and Phillips (2006) show that because conglomerates are more acquisitive than focused firms their market-to-book ratios, the usual empirical proxy for Tobins Q, tend to be lower.

during the period 2000-2010. A positive excess value suggests that the diversified firm trades at a premium to the asset-weighted Q value of its segments and a negative number suggests the existence of a diversification discount. The figure shows that there is both cross-sectional and time variation in the diversification premium/discount. In line with previous evidence, the figure suggests that the diversification discount/premium is time-varying.

Next we turn to our formal analysis and hypothesis testing. Our first hypothesis is based on the analysis in Rajan et al. (2000). They argue that internal politics within the firm are the root source of the misallocation of capital. Their model assumes that division managers can choose to undertake one of two projects. The first is an efficient project that will result in the optimal outcome for the firm as a whole, but whose returns may be redistributed to other divisions of the firm. The second is a defensive project that will result in a lower return, but whose return can be retained within the division. The authors show that the key factor in determining whether divisions undertake the efficient project or the defensive project is the difference in resource-weighted opportunities among divisions within the firm, a concept they refer to as diversity. [6]

Following Rajan et al, we calculate diversity as:

$$\text{Diversity} = \frac{\sqrt{\frac{1}{n-1}\sum_{i=1}^{n}(w_i q_i - \bar{w}\bar{q})^2}}{\frac{1}{n}\sum_{i=1}^{n} q_i} \tag{1}$$

where w_i is the weighting of segment i in the firm, given by the ratio between its assets and the total assets of the firm and q_i is the Tobins Q for segment i. Each segment's Q is calculated using the annual averages of Tobins Q across all standalone firms in each 2-digit SIC code industry and applied here as indirect measures of divisional

[6] Previous studies (e.g. Opler et al. (1999), measure diversification by the number of different business segments or industries the firm reports. This measure, however, is a crude proxy for diversification since all segments might operate in the same industry or it might be that they operate in different industries, but that these industries are closely related to each other. Therefore, it is important to measure cross-divisional diversity directly, and include the number of business segments as a control.

investment opportunity. [7] Rajan et al argue that when diversity is small, the surplus that a divisional manager would give up by choosing the efficient project is not very different from how much he could appropriate from other division managers also selecting their efficient projects and incentives are aligned so that all managers select their efficient projects, resulting in a first-best outcome. However, when diversity is large, then managers of divisions with more resources and better opportunities may prefer to select their defensive projects as this will result in a larger retained surplus than if they had selected their efficient projects and had their surpluses redistributed ex-post.[8]

In order to ensure that the diversity measure does not simply capture differences in cross-divisional concentration, we follow Berger and Ofek (1995) who suggest using the Herfindahl index of the assets of segments to measure the degree of concentration in a diversified firm. The Herfindahl index is constructed as the share of segment i's assets in the firms total assets. A focused firm with a single division has a Herfindahl index of 1 whereas the more diversified the firm, the closer the index is towards zero. The Herfindahl index is constructed according to the formula

$$H = \sum_{i=1}^{n} s_i^2 \tag{2}$$

where s_i is the share of segment i's assets in the firm's total assets.

In order to examine the effect of corporate governance on the value of diversification, we construct several proxies for managerial agency costs that capture managerial entrenchment and managerial control. These variables measure how easy/difficult it is for managers to hoard resources or expropriate resources from other divisions. As argued by Larcker et al. (2007), researchers still do not have a proper understanding of the

[7] Although this measure of divisional investment opportunities has been criticised by previous studies, we do not have division-level data required to calculate the direct Tobins Q for each segment.

[8] Although ideally headquarters could overcome this problem by instituting a rational ex-post surplus sharing rule, this might be difficult to achieve in practice. However, headquarters can transfer resources among divisions before projects are selected in such a way that diversity is reduced and thus incentives are realigned so that managers will select their efficient projects. Such transfers would, however, require headquarters to shift resources from large divisions with good opportunities to small divisions with poor opportunities. In this way, the firm may actually misallocate funds in order to achieve a second-best outcome.

appropriate measurement of good corporate governance or of the number of dimensions that are necessary to provide a comprehensive assessment of the quality of corporate governance. We employ two type of variables as proxies for corporate governance that are particularly important to the Japanese context: (i) the shareholdings of major shareholder groups, as well as the concentration of bank borrowings (proxied by the ratio of borrowings from the largest lender to total assets); (ii) dummy variables for governance committee and ex-CEO is chairman of the Board, as well as Board size. In the spirit of Gompers et al. (2001) governance index, we construct measures of corporate governance based on indicators that gauge the extent to which a firm has adopted good governance policies.

Table 1 contains summary statistics for the subsamples of single segment and diversified firms. It shows that single segment firms and diversified firms differ across most of the variables presented. In particular, the average Tobin's Q is higher for single segment firms than for diversified firms. Furthermore, single segment firms hold significantly more cash and less debt than diversified firms. Diversified and single segment firms also differ significantly in their shareholder structure. The shareholdings of banks, funds/trusts, insurance companies and foreign investors are significantly larger in diversified firms than in single segment firms, while the opposite is true of the shareholdings of non-financial corporation and individual investors.

Table 2 presents summary statistics of the diversified firms only. On average, diversified firms have Tobins Q of 1.638 whereas the average asset weighted Tobins Q is 1.799. Both the median and mean firm has 3 segments. On average, firms with several divisions trade at discount with excess value of -0.159 although this is economically small and statistically indistinguishable from zero). Average diversity is 0.345 and the Herfindahl index is 0.584. The next section contains our regression results and their interpretation.

3 Empirical Methods and Estimation Results

3.1 Divisional Transfers

As discussed in the previous section, the diversity depends on the dispersion of asset-weighted investment opportunities among the segments within a firm. This leads to the standard deviation of segment asset-weighted Q's for a firm divided by the equally-weighted average Q of segments in firm as a measure of diversity. The cross-divisional transfers, on the other hand, are calculated as follows:

$$\frac{CAPEX_j}{Assets_j} - \frac{CAPEX_j^{ss}}{Assets_j^{ss}} - \sum_{j=1}^{N} w_j \left(\frac{CAPEX_j}{Assets_j} - \frac{CAPEX_j^{ss}}{Assets_j^{ss}} \right) \tag{3}$$

where the first two terms represent the difference between division j's asset weighted investment and the average asset weighted investment of the single segment firm in the same industry. The third term is an adjustment for the fact that diversified firms have lower cost of capital and better access to external financing and therefore may be investing more than a single segment firm.

The first set of results examines the effect of diversity on cross-divisional transfers. The empirical test requires us to create four different dependent variables using a segment's Q and its asset-weighted investment opportunities. In particular, we place each segment into one of four groups depending on whether its Q is larger or smaller than the average Q of all segments within the firm and whether the asset-weighted investment opportunities are above or below the mean for all the segments within the firm. Then for each firm and each year, we weight the investment ratio (i.e. transfers) of each segment and sum across all of the segments for each of the four groups. The result is the net transfers to the segments in a particular year for a particular firm. We thus have a different dependent variable for each of the four groups. These groups are depicted in Table 3.

The explanatory variables are our measure of diversity as well as the inverse of the

equally weighted Q's of the segments in a firm.[9] Also included as explanatory variables are firm size (logarithm of total sales) and year dummy variables. In order to control for firm-level unobserved heterogeneity we estimate the equations using fixed effects.

Focusing on the relationship between diversity and transfers, the model makes two central predictions. The first is that as diversity increases so will the transfers from divisions with relatively high resource-weighted opportunities and relatively low (unweighted) opportunities to divisions with relatively low resource-weighted opportunities and relatively high (unweighted) opportunities. Using Table 3, the model predicts that as diversity increases funds will flow from group 3 to group 2.

The second prediction of the model is that as diversity increases so will the transfers from divisions with relatively high resource-weighted opportunities and relatively high opportunities to divisions with relatively low resource-weighted opportunities and relatively low opportunities. Using Table 3, the model predicts that as diversity increases funds will flow from group 1 to group 4. However, if diversity grows past a given level and the difference in opportunities among divisions is large enough, then the model predicts that the opportunity cost of transferring resources from the division with good opportunities to the division with poor opportunities is so large that the firm will no longer find it rational to make the transfer.

In terms of our empirical test, the model thus predicts that for groups 1 and 3, the coefficient on the diversity term should be negative and for groups 2 and 4 the coefficient on the diversity term should be positive. The results of table 4 are consistent with the predictions of the model of Rajan et al. (2000), but contradict the predictions of the Efficient Internal Market theories (e.g. Matsusaka and Nanda (2002), Stein (1997) and Williamson (1975)). Columns 1 and 4 of table 4 show that as diversity increases, so do transfers from segment with above-average opportunities to segments with below-average opportunities. This result is the opposite of what the Efficient Internal Market theories predict.

A number of studies, such as Berger and Ofek (1995) and Bhagat et al. (1990), argue

[9]The inclusion of these variables follows the analysis of Rajan et al. (2000).

that firms increase efficiency when they become more focused. If this is the case, then the results reported in table 4 may simply be mistaking focus for diversity. In order to check whether or not this is the case we follow Berger and Ofek (1995) and include the Herfindahl index of the assets of segments to control for the degree of focus in a diversified firm in our regression specifications. The results are reported in Table 5. Our main results from table 4 remain statistically significant and have the same sign.

Table 4 shows that as diversity increases, so do transfers from segment with above-average resource-weighted opportunities to segments with below-average resource-weighted opportunities. However, Table 4 does not provide information on whether diversity increases or decreases the efficiency of capital allocation within the firm on net. Columns 1 and 4 suggest that diversity decreases efficiency as funds move in the "wrong" direction (i.e. away from large divisions with goods opportunities and towards small divisions with poor opportunities). On the other hand, columns 2 and 3 suggest that diversity actually increases efficiency.

In order to measure the overall effect of diversity on efficiency we combine the four possible outcomes of table 3 by weighting the *adjusted investment ratio* (the proxy for net transfers into a division) of each division by the (asset-weighted) difference between its Tobin's Q and the average Tobin's Q of all segments in the firm. This *relative value added by allocation* is given by

$$\text{RVABA} = \frac{\sum_{j=1}^{n} Assets_j(q_j - \bar{q}) \left[\frac{CAPEX_j}{Assets_j} - \frac{CAPEX_j^{ss}}{Assets_j^{ss}} - \sum_{j=1}^{n} w_j \left(\frac{CAPEX_j}{Assets_j} - \frac{CAPEX_j^{ss}}{Assets_j^{ss}} \right) \right]}{Assets} \tag{4}$$

The result of regressing value added by allocation on the same explanatory variables as Table 4 are reported in column (1) of Table 6. The results suggest that a one-standard deviation increase in diversity decreases the total value added by allocation by an amount equal to 47% of its standard deviation. Thus, the overall effect of diversity on the internal capital allocation within Japanese firms is negative.

In constructing our measure of value added by allocation in column (1) of table 6, we used the firm's average Q to determine whether a segment has good or poor investment opportunities compared to other segments and we subtracted the average investment excess investment of diversified firms (compared to single segment firms) from each segment. One problem is that by doing this we effectively rule out the possibility that a diversified firm might offer an advantage in that it can raise more funds for investment in aggregate. To check for robustness we use an alternative measure, called *absolute value added by allocation*, calculated as

$$\text{AVABA} = \frac{\sum_{j=1}^{n} Assets_j(q_j - 1)\left[\frac{CAPEX_j}{Assets_j} - \frac{CAPEX_j^{ss}}{Assets_j^{ss}}\right]}{Assets} \tag{5}$$

Column (2) reports the results of this estimation and shows that the qualitative results are unchanged when we use the alternative measure of value added by allocation. In aggregate the internal transfer of resources is inefficient.

If diversity has an effect on firm value, then the value added by allocation should be an important channel of transmission. To investigate this channel we estimate the relationship between the excess value of the firm, measured above, and our measure of diversity and report the results in table 7. Column (1) uses relative value added by allocation, while column (2) uses absolute value added by allocation as the main explanatory variable. One can see that in both cases value added by allocation has a positive effect on firm value. Thus, the negative relationship observed between internal transfers and value added by allocation should translate into a negative effect on firm value.

Ultimately, we want to understand not only the overall effect that diversity has on firm value but also the drivers of cross-sectional heterogeneity of this effect. To the extent that firm value is enhanced or destroyed through the reallocation of capital among segments, the results in tables 6 and 7 shed new light on the issue. However, we can also examine directly the effect of diversity on firm value. We do this by estimating the relationship between the excess value of the firm, measured as the difference between

firms Q value and the Q value of a theoretical portfolio of standalone firms (which we refer to as *excess value*), and our measure of diversity and other control variables. In the notation of Lang and Stulz (1993), we calculate

$$\text{Excess Value} = q - \sum_{j=1}^{n} w_j q_j \tag{6}$$

where q is the Tobin's q of the diversified firm, w_j is the weight of division j's assets to total assets of the firm and q_j is the asset-weighted q of single segment firms in the same industry as division j. The results are reported in Table 11. The negative coefficient on diversity in both columns (1) and (2) suggest that, on the whole, diversity has a negative relationship with the excess value, i.e. it is an important diver of the diversification discount. In the next section, we turn to investigate the interaction between corporate governance and diversity to examine the value of diversification as a corporate strategy.

3.2 Diversity and Corporate Governance

The analysis presented above suggests that while the lower cross-divisional correlations in cash flows and investment opportunities and the larger size of diversified firms should offer advantages over focused firms, managerial agency costs may prevent these advantages from being realized and instead dissipate value via inefficient cross subsidization. In this context, the role of corporate governance is to manage and align the various interests of the firms stakeholders in an efficient way. Our next set of results examines whether either the inefficient internal transfers themselves or the market's translation of those transfers into firm value are altered under various corporate governance structures. In the section, we attempt to introduce measures of corporate governance into the analytical framework presented in the previous section in order to investigate this possibility.

We begin by including the shareholdings of major shareholder groups, as well as the concentration of bank borrowings (proxied by the ratio of borrowings from the largest

lender to total assets) and their interactions with the diversity variable. Specifically, we create a dummy variable that takes a value of 1 if a specific group of shareholders owns more than 20% of shares and 0 otherwise. Similarly, we create a dummy variable that takes a value of 1 if the ratio of borrowings from the largest lender to total assets is larger than 10% and 0 othwerwise. The results of this exercise, reported in Table 8.

The results suggest that in firms with high shareholdings of non-financial corporations and foreign shareholders, the transfers away from divisions with good investment opportunities and high resource-weighted opportunities (columns (1) and (5)) are exacerbated by diversity and the transfers towards divisions with good investment opportunities but low resources (columns (2) and (6)) increase with diversity. The results also suggest that when bank borrowing is more concentrated, the inefficient transfers towards divisions with poor investment opportunities but large resources is magnified by diversity, while large non-financial corporate shareholdings reduce this negative effect of diversity. On the other hand, high non-financial corporate shareholdings tend to inefficiently increase the flow of funds towards divisions with poor opportunities and few resources as diversity increases.

In short, large non-financial corporate shareholdings tend to magnify the effect of diversity as predicted by the model of Rajan et al. (2000). Foreign shareholder tend to have a similar effect, although only for divisions with promising investment opportunities.

We saw in table 6 that the net effect of these internal transfers was inefficient. Diversity is, on balance, a net negative to value creation. However, this may not have been so. One may wonder whether different corporate governance institutions affect whether the net result is positive or negative. To investigate this possibility, we include the percent of shares held by major shareholder groups as well as their interactions with our diversity variable and report the results in table 9. Columns (1) and (3) report the results using relative value added by allocation while columns (2) and (4) report the results using absolute value added by allocation.

The results are similar for both measures of value added by allocation and suggest that the negative relationship between diversity and value added by allocation that was observed in table 6 is reduced when a firm's borrowings are concentrated in one lender. In Japan, banks have traditionally played an important role in corporate governance, but the insignificant and unstable estimated coefficient on bank shareholdings suggest that their impact on corporate governance occurs more through the lending relationship than through their position as equity owners.

Furthermore, depending on the definition of value added used, it appears as though foreign shareholders exacerbate the overall negative effect of diversity even though, on average, the firms in which they invest have higher value added.

Next, we examine whether the interaction between diversity and more direct measures of corporate governance has an effect on firm value. First, we create two variables - one to measure the level of corporate governance and the other to measure management entrenchment. The corporate governance index is comprised of four dummy variables - for whether or not the firm has a governance committee, whether the board size is below the average of 12 seats, whether or not the firm has a nomination committee and whether or not the firm has a compensation committee. The management entrenchment index is comprised of three dummy variables too - whether or not the chairman is an ex-CEO, whether or not the CEO is a member of the board and whether or not the firm has a staggered board.

In both cases we simply add the dummy variables together to form our indices. We then augment the regressions for the four groups of inter-divisional transfers with these indices and interaction variables, i.e. the product of diversity and our corporate governance and management entrenchment measures. The results are reported in Table 10. Unfortunately because of the small sample size of the corporate governance data, our results are not estimated very precisely. However, a few patterns can be observed.

Firstly, management entrenchment appears to have no effect either on the resource flows or on the effect of diversity itself. On the other hand, corporate governance does

seem to have an effect and the effect appears to be concentrated in those divisions with large resources (groups (1) and (3)). In the case of divisions with large resources and good opportunities, good governance appears to reduce the inefficient impact of diversity. In the case of divisions with large resources and poor opportunities, good governance appears to amplify the efficient impact diversity, as predicted by both the efficient internal capital market theory and the theory of Rajan et al. (2000).

Similarly, we consider the effect of corporate governance on the relationship between diversity and excess value. The estimation results are reported in Table 11. The first two columns suggest that, on average, bank shareholdings mitigate the negative impact of diversity on excess value, although the excess value of firms with high bank shareholdings is lower on average. Although other shareholder groups appear to have an effect on transfers within the firm's internal capital market, this does not appear to translate into an effect on the excess value of firms in general.

Columns (3) and (4) introduce our governance and management entrenchment dummy variables. The small sample size prevents us from being able to draw strong conclusions, but it appears as though a high degree of management entrenchment tends to amplify the negative impact of diversity on excess value.

4 Conclusion

In this paper, we employed the framework of Rajan et al. (2000) to assess the impact of corporate governance on the internal capital markets and value of diversified firms in Japan.

First, we documented large variation for the value of diversification: many diversified firms trade at a premium relative to a theoretical portfolio of single segment firms, although most tend to trade at a discount, as observed in other countries. We then provided evidence that diversification affect firm value via the firm's internal capital market and proceeded to analyze how corporate governance affects the impact of corporate diversification of internal resource allocation and firm value.

In particular, our results suggest that non-financial corporate shareholders and foreign shareholders tend to increase internal capital flows in a manner consistent with the theory of Rajan et al. (2000). In other words, it appears these shareholder groups help to allocate capital in a way that achieves the second-best outcome in firms constrained by internal political rivalries.

We also find that, although internal transfers can be both negative and positive from the perspective of efficient capital allocation, on balance the transfers create value when a firm's borrowings are concentrated in a single lender. This may reflect the strong relationship between banks and firms that form the heart of Japan's main bank system. On the other hand, foreign shareholders appear, on balance, to amplify the negative impact of diversity on value through reallocation of capital.

Finally, we analyzed the impact of the different shareholder groups on excess value directly and found that excess value is positively related to bank shareholdings.

While we do find that the influence of capital providers is correlated with internal transfers as well as the relationship between diversity and value creation, our results on the effects of corporate governance and management entrenchment do not allow us to draw strong conclusions. The results that we present in this paper suggest that the effects of corporate governance are concentrated on the capital flows of larger divisions and that good governance increases the efficiency of capital flows to and from these divisions.

On the other hand, management entrenchment tends to compound the negative effect of diversity on excess value, suggesting that entrenched management do not control internal political rivalries within the firm.

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5 Tables and Figures

Table 1: T-tests

	Diversified Firms		Single Segment Firms			
	Mean	Obs	Mean	Obs	Difference	p-Value
Tobin's Q	1.638	2957	1.793	6744	-0.155	0.000
Market-To-Sales Ratio	1.181	2957	1.354	6744	-0.173	0.000
Market-To-Book Ratio	1.115	2957	1.181	6744	-0.066	0.001
Ln(Sales)	11.381	2957	10.476	6744	0.905	0.000
Leverage	0.206	2957	0.176	6744	0.030	0.000
Cash/Assets	0.139	2957	0.175	6744	-0.036	0.000
Borrowings From Largest Lender/Assets	0.042	2956	0.041	6565	0.001	0.537
Bank Borrowings/Assets	0.131	2956	0.128	6565	0.004	0.212
Percent of Shares Held By Banks Among Top 30	14.662	2847	10.283	5712	4.379	0.000
Percent of Shares Held By Non-Financial Corporations Among Top 30	18.745	2847	20.772	5712	-2.026	0.000
Percent of Shares Held By Funds/Trusts Among Top 30	8.774	2847	5.742	5712	3.031	0.000
Percent of Shares Held By Individuals Among Top 30	6.723	2847	12.685	5712	-5.963	0.000
Percent of Shares Held By Foreigners Among Top 30	4.553	2847	3.591	5712	0.961	0.000
Percent of Shares Held By Insurance Companies Among Top 30	4.822	2847	2.828	5712	1.994	0.000

Table 2: Summary statistics

Variable	**Mean**	**Std. Dev.**	**Min.**	**Max.**	**N**
Tobin's Q	1.638	0.99	0.462	15.084	2957
Market-To-Sales Ratio	1.181	0.984	0.129	19.891	2957
Ln(Sales)	11.381	1.416	6.996	16.656	2957
Average of Segment q (Equally-Weighted)	1.785	0.625	0.828	11.8	2957
Average of Segment q (Asset-Weighted)	1.799	0.691	0.645	11.8	2957
Excess Value	-0.159	1.101	-10.309	13.523	2955
Diversity Proxy	0.345	0.189	0.001	1.058	2957
Inverse of Equally-Weighted q	0.602	0.146	0.085	1.208	2957
Number of Segments	2.948	1.058	2	8	2957
Herfindahl Index (Assets)	0.584	0.197	0.149	0.995	2957

Table 3: Transfer Groups

	$w_i q_i > \bar{w}\bar{q}$	$w_i q_i < \bar{w}\bar{q}$
$q_i > \bar{q}$	1	2
$q_i < \bar{q}$	3	4

Table 4: Diversity And Transfers

	(1)	(2)	(3)	(4)
Inverse of Equally-Weighted q	0.019***	-0.003	-0.001	-0.021***
	(0.004)	(0.004)	(0.006)	(0.004)
Diversity Proxy	-0.024***	0.025***	-0.030***	0.020***
	(0.005)	(0.005)	(0.008)	(0.004)
Size	0.002	-0.002	-0.004	-0.000
	(0.003)	(0.002)	(0.003)	(0.002)
Observations	2096	1991	1212	1852
R^2	0.046	0.020	0.029	0.066

Standard errors in parentheses

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

Year dummy variables are included in all models.

Table 5: Focus

	(1)	(2)	(3)	(4)
Inverse of Equally-Weighted q	-0.003	0.002	0.007*	-0.004*
	(0.003)	(0.003)	(0.003)	(0.002)
Diversity Proxy	-0.024***	0.024***	-0.014*	0.007*
	(0.006)	(0.006)	(0.006)	(0.004)
Size	-0.008***	0.007***	-0.004*	0.001
	(0.002)	(0.002)	(0.002)	(0.001)
Herfindahl Index (Assets)	-0.011	0.014*	-0.021**	0.009
	(0.008)	(0.007)	(0.007)	(0.005)
Observations	4357	4731	3061	4029
R^2	0.024	0.022	0.031	0.024

Standard errors in parentheses

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

Year dummy variables are included in all models.

Table 6: Value Added By Allocation

	(1)	(2)
Inverse of Equally-Weighted q	0.080***	0.198***
	(0.007)	(0.020)
Diversity Proxy	-0.047***	-0.161***
	(0.008)	(0.020)
Size	-0.005	-0.006
	(0.004)	(0.011)
Observations	2957	2957
R^2	0.087	0.088

Standard errors in parentheses

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

Year dummy variables are included in all models.

Table 7: Excess Value And Efficiency of Investments

	(1)	(2)
Relative Value Added By Allocation	3.732***	
	(0.516)	
Size	-0.360***	-0.362***
	(0.109)	(0.106)
Absolute Value Added By Allocation		2.536***
		(0.191)
Observations	2955	2955
R^2	0.047	0.095

Standard errors in parentheses

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

Year dummy variables are included in all models.

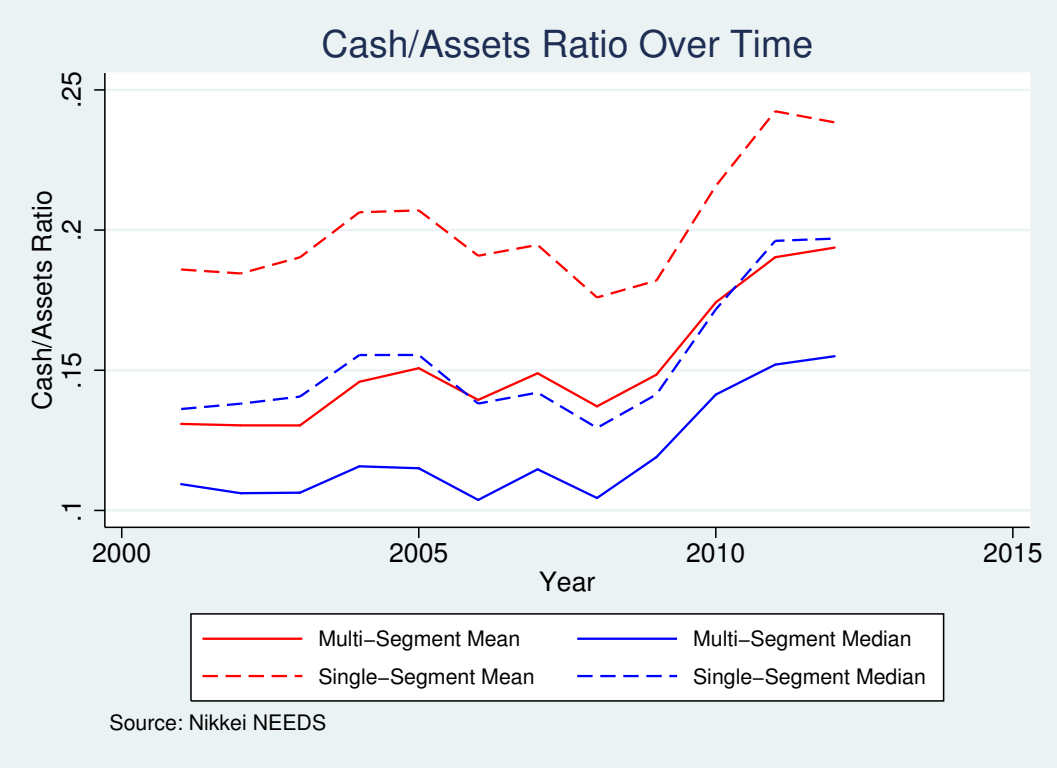

Figure 1: Cash Holdings

Table 8: Shareholders And Transfers

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Size	0.002	-0.001	-0.005	0.000	0.002	-0.002	-0.004	0.000
	(0.003)	(0.002)	(0.003)	(0.002)	(0.003)	(0.002)	(0.003)	(0.002)
Leverage	-0.010	-0.005	-0.000	0.013	-0.007	-0.006	-0.002	0.010
	(0.008)	(0.006)	(0.009)	(0.007)	(0.007)	(0.006)	(0.009)	(0.007)
Cash/Assets	-0.014	-0.006	0.007	0.021*	-0.015	-0.007	0.012	0.017
	(0.009)	(0.008)	(0.012)	(0.009)	(0.009)	(0.008)	(0.012)	(0.009)
High Bank Shareholdings	0.001	-0.001	-0.000	-0.001	0.005	-0.003	0.000	-0.003
	(0.001)	(0.001)	(0.002)	(0.001)	(0.002)	(0.002)	(0.003)	(0.002)
High Largest Lender/Assets	-0.000	-0.002	0.010***	-0.001	-0.002	0.003	0.002	0.002
	(0.002)	(0.002)	(0.003)	(0.002)	(0.003)	(0.003)	(0.004)	(0.003)
High Corp. Shareholdings	0.000	-0.000	-0.000	0.002	0.007*	-0.007**	0.007	-0.003
	(0.002)	(0.001)	(0.002)	(0.002)	(0.003)	(0.003)	(0.004)	(0.003)
High Foreign Shareholdings	-0.002	0.002	0.001	0.000	0.009	-0.006	0.001	-0.003
	(0.003)	(0.002)	(0.005)	(0.003)	(0.005)	(0.005)	(0.009)	(0.006)
Inverse of Equally-Weighted q					0.019***	-0.003	-0.000	-0.022***
					(0.004)	(0.004)	(0.006)	(0.004)
Diversity Proxy					-0.015**	0.015*	-0.025*	0.015**
					(0.006)	(0.006)	(0.010)	(0.005)
Diversity× High Bank Shareholdings					-0.009	0.006	-0.000	0.007
					(0.006)	(0.006)	(0.011)	(0.005)
Diversity× High Largest Lender/Assets					0.006	-0.017	0.033*	-0.008
					(0.008)	(0.010)	(0.013)	(0.007)
Diversity× High Corp. Shareholdings					-0.022**	0.025***	-0.026*	0.016*
					(0.007)	(0.007)	(0.011)	(0.007)
Diversity× High Foreign Shareholdings					-0.034*	0.028*	-0.003	0.008
					(0.014)	(0.013)	(0.030)	(0.017)
Observations	2096	1991	1212	1852	2096	1991	1212	1852
R^2	0.018	0.005	0.031	0.037	0.061	0.039	0.069	0.078

Standard errors in parentheses

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

Year dummy variables are included in all models.

Table 9: Value Added By Allocation and Shareholders

	(1)	(2)	(3)	(4)
Inverse of Equally-Weighted q	0.079***	0.199***	0.080***	0.196***
	(0.007)	(0.020)	(0.007)	(0.020)
Diversity Proxy	-0.047***	-0.162***	-0.042**	-0.215***
	(0.008)	(0.020)	(0.013)	(0.034)
Size	-0.005	-0.007	-0.006	-0.010
	(0.004)	(0.011)	(0.004)	(0.011)
High Bank Shareholdings	0.002	0.032	0.008	0.002
	(0.008)	(0.020)	(0.012)	(0.032)
High Largest Lender/Assets	-0.004	0.004	-0.012*	-0.025
	(0.003)	(0.009)	(0.006)	(0.016)
High Corp. Shareholdings	-0.003	-0.000	-0.007	-0.010
	(0.004)	(0.011)	(0.008)	(0.022)
High Foreign Shareholdings	0.002	0.007	0.004	0.025*
	(0.002)	(0.005)	(0.004)	(0.011)
Diversity× High Bank Shareholdings			-0.015	0.067
			(0.024)	(0.064)
Diversity× High Largest Lender/Assets			0.032*	0.113**
			(0.014)	(0.038)
Diversity× High Corp. Shareholdings			0.011	0.027
			(0.022)	(0.057)
Diversity× High Foreign Shareholdings			-0.007	-0.058*
			(0.010)	(0.027)
Leverage			-0.025	-0.070*
			(0.013)	(0.034)
Cash/Assets			-0.046**	-0.059
			(0.016)	(0.041)
Observations	2957	2957	2957	2957
R^2	0.088	0.090	0.096	0.099

Standard errors in parentheses

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

Year dummy variables are included in all models.

Table 10: Governance And Transfers

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Good Governance	-0.014*	0.005	0.016*	0.004	-0.014*	0.006	0.016*	0.004
	(0.006)	(0.007)	(0.007)	(0.004)	(0.006)	(0.007)	(0.007)	(0.004)
High Man. Entrenchment	0.006	0.002	-0.003	-0.002	0.006	0.002	-0.003	-0.001
	(0.005)	(0.005)	(0.005)	(0.003)	(0.005)	(0.005)	(0.005)	(0.003)
Size	-0.002	-0.004	0.003	0.004	-0.005	-0.004	0.003	0.006
	(0.008)	(0.006)	(0.005)	(0.004)	(0.008)	(0.006)	(0.005)	(0.004)
Inverse of Equally-Weighted q	-0.006	0.014	-0.011	-0.023*	-0.005	0.013	-0.011	-0.021*
	(0.015)	(0.011)	(0.012)	(0.009)	(0.015)	(0.011)	(0.012)	(0.009)
Diversity Proxy	-0.049*	0.001	0.004	0.039**	-0.051*	0.002	0.004	0.039**
	(0.020)	(0.020)	(0.019)	(0.012)	(0.020)	(0.020)	(0.020)	(0.012)
Diversity × Governance	0.042*	-0.019	-0.076*	-0.017	0.042	-0.022	-0.075*	-0.016
	(0.021)	(0.024)	(0.029)	(0.013)	(0.021)	(0.025)	(0.030)	(0.013)
Diversity × Man. Entrenchment	-0.015	0.000	-0.005	-0.002	-0.013	0.001	-0.005	-0.002
	(0.019)	(0.016)	(0.018)	(0.012)	(0.019)	(0.017)	(0.019)	(0.012)
High Bank Shareholdings	0.005	-0.002	0.001	0.000	0.005	-0.002	0.001	0.000
	(0.003)	(0.003)	(0.003)	(0.002)	(0.003)	(0.003)	(0.003)	(0.002)
High Largest Lender/Assets	-0.030*	-0.006	0.020**	-0.004	-0.030	-0.004	0.021**	-0.007
	(0.015)	(0.010)	(0.007)	(0.007)	(0.015)	(0.010)	(0.008)	(0.007)
High Corp. Shareholdings	0.002	-0.000	0.004	-0.001	0.003	-0.001	0.004	-0.001
	(0.007)	(0.006)	(0.010)	(0.005)	(0.007)	(0.006)	(0.011)	(0.005)
High Foreign Shareholdings	0.012*	-0.002	-0.004	-0.003	0.010	-0.003	-0.004	-0.001
	(0.005)	(0.005)	(0.005)	(0.003)	(0.005)	(0.005)	(0.005)	(0.003)
Leverage					-0.030	-0.007	0.002	0.025*
					(0.018)	(0.017)	(0.016)	(0.010)
Cash/Assets					0.001	-0.020	-0.002	0.036*
					(0.026)	(0.023)	(0.023)	(0.016)
Observations	309	278	203	290	309	278	203	290
R^2	0.105	0.039	0.215	0.110	0.118	0.044	0.215	0.159

Standard errors in parentheses

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

Year dummy variables are included in all models.

Table 11: Value of Diversified Firm and Diversity

	(1)	(2)	(3)	(4)
Inverse of Equally-Weighted q	3.059***	3.023***	1.621***	1.684***
	(0.175)	(0.173)	(0.456)	(0.455)
Diversity Proxy	-3.271***	-4.220***	-0.601	.
	(0.303)	(0.325)	(1.308)	.
Size	-0.458***	-0.441***	-0.289	-0.221
	(0.100)	(0.099)	(0.238)	(0.239)
Leverage	-1.037***	-0.851**	-0.743	-0.556
	(0.300)	(0.297)	(0.588)	(0.593)
Cash/Assets	-0.466	-0.280	0.851	0.958
	(0.370)	(0.366)	(0.864)	(0.862)
High Bank Shareholdings	-1.088***	-1.061***	.	.
	(0.286)	(0.282)	.	.
High Largest Lender/Assets	0.333*	0.300*	0.247	-0.069
	(0.140)	(0.138)	(0.985)	(0.993)
High Corp. Shareholdings	0.121	0.119	0.161	0.183
	(0.200)	(0.197)	(0.287)	(0.286)
High Foreign Shareholdings	-0.051	-0.005	-0.048	-0.045
	(0.095)	(0.094)	(0.228)	(0.226)
Diversity× High Bank Shareholdings	2.163***	2.048***	.	-1.669
	(0.569)	(0.562)	.	(1.415)
Diversity× High Largest Lender/Assets	-0.455	-0.422	-4.043	-3.015
	(0.337)	(0.333)	(3.598)	(3.620)
Diversity× High Corp. Shareholdings	-0.223	-0.168	-0.009	-0.083
	(0.513)	(0.506)	(1.157)	(1.152)
Diversity× High Foreign Shareholdings	0.182	0.081	0.349	0.285
	(0.244)	(0.241)	(0.733)	(0.730)
Herfindahl Index (Assets)		2.559***		1.997
		(0.337)		(1.035)
Good Governance			-0.003	0.069
			(0.210)	(0.213)
High Man. Entrenchment			0.477*	0.473*
			(0.191)	(0.190)
Diversity × Governance			0.346	0.080
			(0.710)	(0.720)
Diversity × Man. Entrenchment			-1.178	-1.214*
			(0.610)	(0.607)
Observations	2955	2955	396	396
R^2	0.200	0.220	0.141	0.152

Standard errors in parentheses

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

Year dummy variables are included in all models.

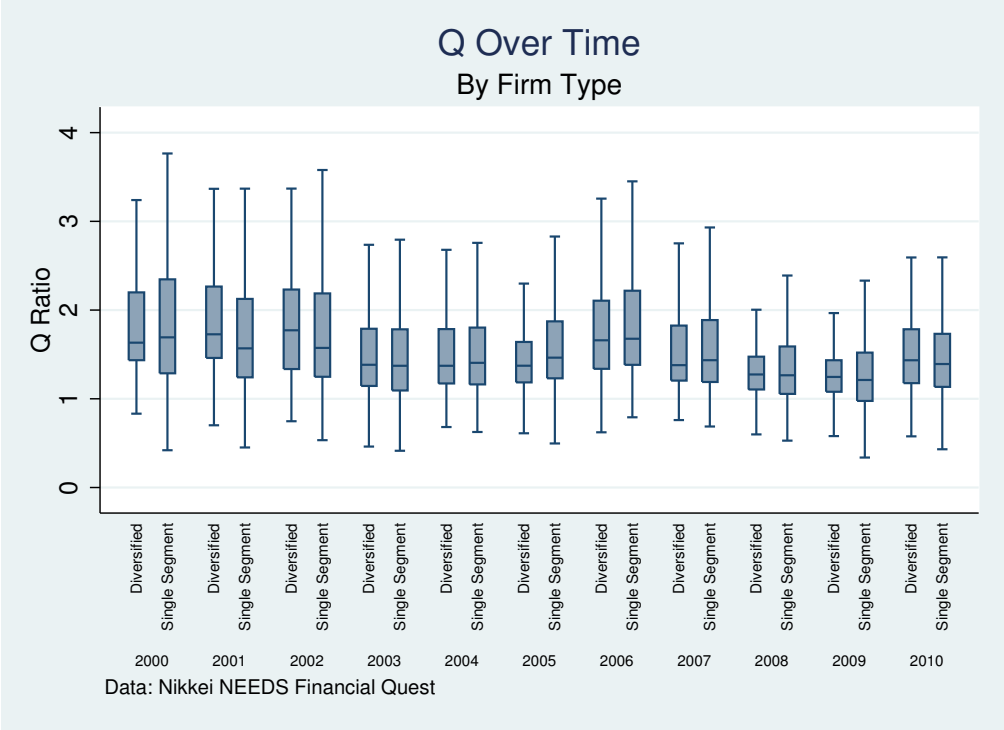

Figure 2: Distribution of Tobin's Q Over Time By Firm Type

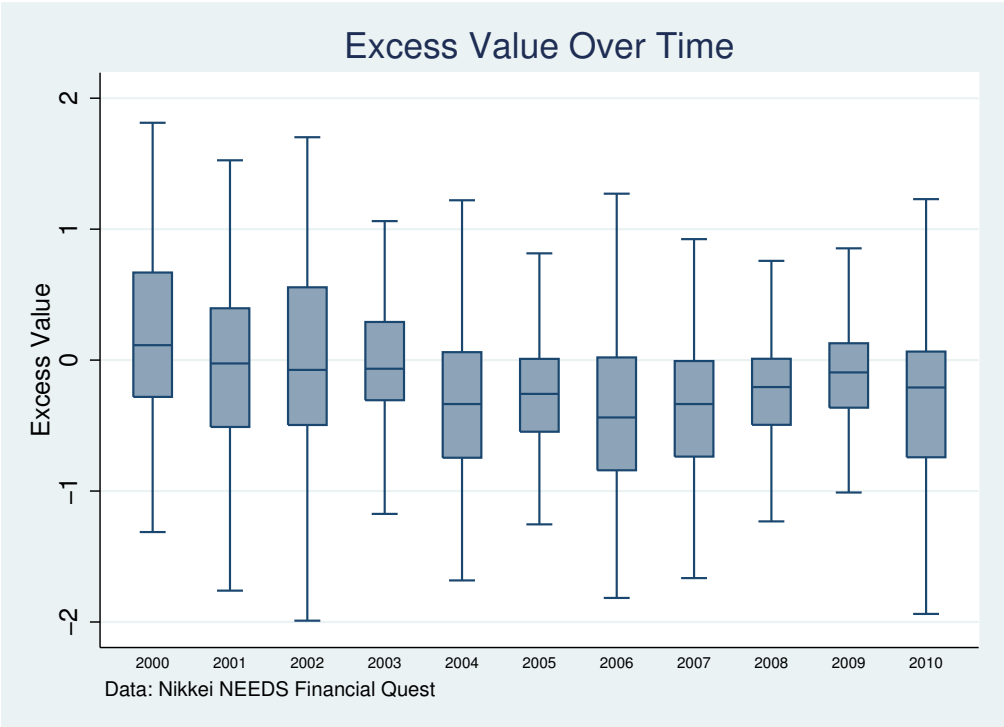

Figure 3: Distribution of Excess Value Over Time