Corporate Payout Policy in Japan

Abhinav Goyal
University College Dublin*

Cal Muckley
University College Dublin†

Abstract

This paper examines cash dividends and share repurchases in Japan - discerning between *keiretsu* and non-*keiretsu* groupings of firms - during the period 1990 to 2008, a period of extensive Japanese corporate governance reform. As in the United States, share repurchases in Japan have grown strikingly across firm groupings even relative to cash dividends which have also increased. Unlike in the United States, cash dividends remain the dominant form of payout across the groupings of firms in Japan. Despite extensive corporate governance reform, the *keiretsu* grouping of firms exhibits a comparative reticence to alter its corporate payout policy. In particular, it remains the case that *keiretsu* firms disburse relatively large amounts of cash, they rely relatively heavily on cash dividends rather than share repurchases, they exhibit a greater tendency to discontinue cash dividend payouts, their payouts are relatively sensitive to earnings and these payouts respond relatively rapidly with respect to earnings. In addition, the cash dividend payouts in *keiretsu* firms have been relatively concentrated, while these payouts from non-*keiretsu* firms concentrate increasingly over time. The findings also suggest that larger firms in Japan are more likely to payout and if they decide to do so they tend to payout more. As the level of concentration of ownership in Japanese firms increases the amount of cash dividends disbursed decreases. Privatized firms are more likely to pay cash dividends and if they decide to do so and they are not *keiretsu* affiliated they tend to payout more.

1 Introduction

What determines Japanese corporate payout policy? Does Japan's financial deregulation towards a more market oriented system have implications for Japanese corporate payout policy - particularly for the payout policy of the *keiretsu* affiliated grouping of firms? Does the determination of corporate payout policy in Japan differ from corporate payout policy determination in the United States? Two interlinked strands of the finance literature motivate this article. The first strand relates to the determination of corporate payout policy and the second strand relates to studies of the Japanese *keiretsu* corporate governance structure.

The topic of corporate payout policy determination is fraught with potentially mutually inclusive theories. By way of a foundation, the Miller-Modigliani (1961) irrelevance proposition indicates that, within a stylised setting, once corporate investment policy is optimal (*i.e.* once the Fisherian Net Present Value rule is satisfied), corporate payout policy has no implication for the value of the firm. In this setting, corporate payout policy merely involves different methods of distributing free cash flows and hence has no implication for the value arising from capital budgeting decisions. Notwithstanding, DeAngelo, and DeAngelo (2006) conclude that the distribution/retention decision with regard to free cash flows, even assuming the stylised setting outlined in the Miller-Modigliani (1961) proposition, has 'first-order value consequences'. In brief, this follows from the fact that the feasible set of distribution/retention decisions, in the Miller-Modigliani (1961) stylised setting, is exactly the optimal set, *i.e.* full payout. This effectively precludes a payout policy decision. To mitigate for this oversight, DeAngelo and DeAngelo (2006) advocate an extension of the classic Fisherian Net Present Value 'rule' with regard to capital budgeting decisions, to include the distribution of the full present value of free cash flows during the life of the firm. Essentially, it is now evident that there is considerable scope for value creation and destruction, by means of corporate payout policy. As a result, the determination of corporate payout policy merits careful attention.

In relaxing the configuration of assumptions underpinning the Miller-Modigliani (1961) proposition extended to include the assumption of full payout, several theories, which are mutually inclusive in principle, arise concerning the determination of the timing and form of optimal corporate payout policy. The open question appears to hinge on the relative importance of these theories with regard to explaining the determination of corporate payout policy. In particular, these theories comprise: *first*, the so-called agency cost-based life cycle theory (see Fama and French, 2001 and Grullon *et al.* 2005, DeAngelo and DeAngelo, 2006, DeAngelo, DeAngelo and Stulz, 2006) which implies that the decision to distribute or retain free cash flows, a trade-off between the prospect of credit constraints and excessive financial slack, varies according to the evolution of the phases of the firm's life cycle *i.e.* as typified by a firm's size, profitability, the nature of its capital structure and the growth opportunities of the firm. The reconciling of Jensen's agency theory (Jensen, 1986 and LaPorta *et al.* (2000)) with the life-cycle theory appears particularly beneficial. Indeed, the agency requirement of persuasion, on the part of the principal, for the agent to distribute free cash flows may be requisite such that the corporation disgorges cash. *Second*, the so-called signaling theory (see Bhattacharya 1979, John and Williams, 1985, and Miller and Rock, 1985) which emphasises the importance of utilising corporate payout policy, to circumvent the information asymmetry which may arise between the management

of the firm, who enjoy insider information, and the firm's investors. *Third*, the catering theory (see Baker and Wurgler, 2004a, b and Li and Lie, 2006) of corporate payout policy determination, which highlights the importance of corporate payout policy to satisfy the preferences of various, possibly time-varying, heterogenous payout clienteles, who ascribe a corresponding dividend premium (discount) to share prices.

In this article, we turn to examine the relative importance of these theories of corporate payout policy determination in the Japanese corporate environment for several compelling reasons. In the first instance, the co-existence of affiliated and non-affiliated firms, to *keiretsu* industrial groupings within the Japanese corporate sector, implies an opportunity to examine the determination of corporate payout policy across distinct corporate governance structures, associated with differing levels of agency costs and informational asymmetries, within the borders of a single nation (Dewenter and Warther, 1998 and Wu and Xu, 2005). As we know, these market imperfections - levels of agency costs and informational asymmetries - are centrally important to theoretical models of corporate payout behaviour. Second, following extensive financial deregulation these *keiretsu* affiliated and non-affiliated corporate governance structures may be developing along similar lines, implying a possible convergence in payout policy determination in Japan. In addition, these developments in the corporate governance environment in Japan are expected to facilitate a greater displacement of wealth across assets. This may, following Baker and Wurgler (2004a, b), introduce a dividend premium effect. Third, the Japanese corporate environment is important. It is underpinned by the Japanese economy which, despite a declining trend in its real gross domestic product growth rates since the 1960s, remains of global economic importance.[1] In the same vein, the Japanese economy comprises a stock market of global significance, the Tokyo Stock Exchange.[2] Taking these three points together, the Japanese corporate environment may comprise a valuable opportunity to examine the implications of market imperfections - agency costs and information asymmetries - with regard to the determination of corporate payout policy against a backdrop of extensive deregulation and a globally important economy which is linked to a globally important stock exchange.

Notwithstanding the outlined relevance of the Japanese corporate environment with regard to developing our understanding of the determination of corporate payout policy behaviour, there is a dearth of evidence concerning the payout policy of corporations headquartered in Japan and listed on the Tokyo Stock Exchange. In contrast, the evolution and determination of corporate payout policy in the United States has received considerable attention in the literature (Allen and Michaely, 2003 and Skinner, 2008 and the references there-in). In particular, a relatively small series of articles focus, in the main, on Japanese corporate payout policy (see Dewenter and Warther, 1998, Gul, 1998, Conroy *et al.*, 2000, Charitou, 2000 and Kato *et al.* 2002) while an even more limited set of contributions, to the international corporate payout policy literature, include Japan in their analyses (see Denis and Osobov, 2008, Chay and Suh, 2009 and Lee and Suh, 2009). Taken together, these studies tend to neglect the implications of the distinctive corporate governance structures in Japan for Japanese corporate payout and/or they neglect the surge in share repurchases

---

[1]According to the International Monetary Fund 2008 and the World Bank 2008 estimates of sovereign real GDP, Japan is one of the largest three global economies, after the European Union and the United States.

[2]Japan's national stock exchange, the Tokyo Stock Exchange, exhibits a market capitalization which remains the second largest in the world, after the New York stock exchange. See www.world-exchanges.org.

conducted in Japan. In our study, we contribute to the literature on corporate payout policy by accounting, *inter alia*, for both repurchases of shares as well as the *keiretsu* origin of a significant cohort of Japanese corporations.

To elaborate on our contribution to the literature on corporate payout policy in Japan, its novelty is fivefold. *First*, in contrast to the preponderance of the literature, which focuses on why firms alter their dividends, the information content of dividends (Benartzi *et al.* 1997 and Grullon *et al.* 2002) and more recently whether or not to pay dividends (Baker and Wurgler 2004a,b, DeAngelo *et al.* 2006 and Denis and Osobov 2008) we follow von Eije and Megginson (2008) and provide evidence concerning the centrally important question of why some firms disburse high dividends (or total payouts) relative to others. *Second*, we contrast the corporate payout policy of *keiretsu* affiliated and non-affiliated groupings of Japanese firms as well as its determination prior to the banking crisis of 1998 and during the subsequent regime of extensive legislative reform which aims to render the Japanese corporate environment more market oriented. *Third*, with resepct to our data, we study 1377 firms headquartered in Japan, of which 204 firms are affiliated to the *keiretsu*, during the period 1990 through to 2008. This implies a considerably larger sample than those samples previously employed to investigate corporate payout policy in Japan.[3] *Fourth*, we mitigate in several ways for shortcomings in the extant literature. Specifically, the Japanese corporate payout policy literature neglects to consider, when assessing the importance of the agency-cost based theory, the leverage of the firm. In respect to the life-cycle theory, the age of the firm since its date of incorporation is not yet examined in the literature on Japanese corporate payout. In addition, when assessing informational asymmetries and cash flow uncertainty, the extant Japanese literature on corporate payout neglects to account for the proxy explanatory variables, earnings reporting frequency and income risk. *Finally*, in the vein of Skinner (2008) and von Eije and Megginson (2008) as well as Denis and Osobov (2008), we turn to assess dividend payout, both in respect to its development over time and in regard to the determination of the dividend payout. Taken together, we therefore document and explain, with considerable novelty, the total corporate payout policy of Japanese firms, with a particular focus on *keiretsu* affiliated and non-affiliated groupings.

Our findings can be summarised using three sets of key points. First, the findings indicate that as in the United States, share repurchases in Japan have grown strikingly - across *keiretsu* and non-*keiretsu* firm groupings - even relative to cash dividends which have also increased. This rapid growth in cash dividends and share repurchases in Japan commences in 1999 in the immediate wake of the enactment of a raft of legislation aimed at reforming Japanese corporate governance. Unlike in the United States, however, cash dividends remain the dominant form of payout across the groupings of *keiretsu* affiliated and non-affiliated firms in Japan. Second, despite the enactment of this raft of legislation, specific to the *keiretsu* grouping of firms is a comparative reticence to alter its corporate payout policy. In particular, the *keiretsu* firms continue to disburse relatively large amounts of cash throughout, they persist in relying relatively heavily on cash dividends rather than share repurchases, they show a relatively pronounced tendency to discontinue cash dividends, they show a relatively great sensitivity to earnings and a relatively large

---

[3]For example, the next most extensive study of Japanese firm payout policy is provided by Denis and Osobov, 2008, which examined 12,747 observations of firm years while we study 18,554 observations of firm years.

speed of adjustment parameter, in relation to the Lintner (1956) model, with respect to earnings alterations and *keiretsu* firms are relatively reluctant to avail of cash dividends as well as share repurchases, rather than just cash dividends, to absorb the variation in firm earnings. These findings are indicative of the continuation of a relatively flexible *keiretsu* payout policy in Japan, which is consistent with a continuing relative absence of agency costs and information asymmetries in these firms. In addition, the cash dividend payouts in *keiretsu* firms have been relatively concentrated, while these payouts from non-*keiretsu* firms concentrate increasingly over time.

Third, controlling for a large set of pronounced effects, previously documented in the literature, we examine the relative importance in explaining the corporate payout of proxy explanatory variables associated with the phase of the financial life-cycle of the firm, the presence of agency costs, the firm's investment opportunity set, uncertainty in the firms' cashflows, information asymmetries, the recent stock market performance, catering theory effects, whether the firm has been privatized and a secular trend in payouts over time. The findings suggest *inter alia* that larger firms are more likely to payout and if they decide to do so they tend to payout more. As the level of concentration of ownership in Japanese firms increases the amount of cash dividends disbursed decreases. Privatized firms are more likely to pay cash dividends and if they decide to do so and they are not *keiretsu* affiliated they tend to payout more. Furthermore, it is noteworthy that internal measures of cash flow uncertainty, relating to net income and the operating rate of return, are associated with a decline in the probability of a firm to pay cash dividends and, income risk in particular, is also associated with a decline in the amount of cash dividends paid as well as the probability of a firm to undertake share repurchases. Finally, the earnings to asset ratio is associated, across firm groupings, with a declining effect over time on the decision to pay cash dividends and an increasing positive effect on the amounts of cash dividend payout. Taken together, despite a relative reluctance on the part of *keiretsu* firms to alter their payout policies, these findings reflect a marked growth in payout in Japan across firm groupings. The relative importance of agency costs and life cycle theory to explain the payout policies of Japanese firms is evident from the regression analyses with regard to the likelihood to pay of Japanese firms and their payout amounts.

The remainder of this article is organized as follows. In Section 2 the received literature on Japanese corporate payout policy is assessed with a view to motivating our study. In Section 3 our data set is outlined and the constructed proxy explanatory variables are described. In Section 4 we present and discuss our hypotheses and our empirical results. Finally, a summary and concluding remarks are presented in the last section.

2 Japanese Corporate Payout Literature

The quintessential characteristic feature of the Japanese corporate sector, dating back to the 1950s, is the co-existence of *keiretsu* and non-*keiretsu* structures of corporate governance (Berglöff and Perotti, 1994 and Milhaupt, 2005).

The *keiretsu* structure of corporate governance comprises firms affiliated either vertically, through buyer and seller relationships, or horizontally, typically organised around a financial institution *e.g.* the DKB, Fuyo, Mitsubishi, Mitsui, Sanwa, and Sumitomo *keiretsu*. These *keiretsu* groupings have existed in a safe guarded regulatory environment

allowing preferential trade relations as well as close financial and personal relations with its main bank, extending to implications for the corporate governance of the firm (Aoki, Patrick and Sheard, 1994). In particular, horizontal affiliations entail a main bank serving to fulfill three centrally important functions. First, the main bank provides access to finance for even the most highly leveraged firms (Prowse, 1992). Second, the main bank serves to monitor the member firms by availing of its informational advantage (Hoshi, Kashyap and Scharfstein, 1991, Douthett and Jung, 2001 and Bartov, Goldberg and Kim, 2001). Third, the main bank may aid and/or gradualy unwind *keiretsu* member firms which are in financial distress (Hoshi, Kashyap and Scharfstein, 1990, Schaede, 2004).

One argument is that these facets of the *keiretsu* corporate governance structure have enabled financing and disciplining which imply fewer agency conflicts, fewer informational asymmetries and a markedly longer-term perspective than generally arises in the broader financial markets or in those firms in Japan which are not affiliated to a *keiretsu* industrial grouping (Dewenter and Warther, 1998 and Wu and Xu, 2005). [4] In the context of this corporate environment, where there are possibly marked differences in terms of market imperfections across *keiretsu* affiliated and non-affiliated firms in Japan, there is a valuable opportunity to assess the importance of theories of corporate payout policy determination which are founded on these market imperfections.

Notwithstanding, the *keiretsu* structure of corporate governance is not necessarily extant. Milhaupt (2005) and Schaede (2006) find that the prevalence of the *keiretsu* corporate governance structure has possibly declined during recent decades, alongside Japan's financial deregulation. This deregulation, which commenced in the mid-1970s but which has been fast-tracked since 1998 in a so-called 'Big Bang' of legislative reform has been implemented in the Japanese corporate environment with a view to moving that environment towards a relatively market oriented corporate governance and finance system and, as a result, has involved a disintermediation process away from a main bank oriented system. Specifically, since the banking crisis of 1998, a raft of legislation has been drafted culminating in the New Corporate Law in 2006 (Gibson, 1998 and Schaede, 2006b) and has incentivated the reorganisation of the Japanese corporate environment.

Alongside these considerable legislative and governmental interventions, cross and long-term shareholdings have markedly declined in Japan between 1990 and 2002 (Milhaupt, 2005). In addition, Morck and Nakamura (1999, 2000) indicate that there were relatively few takeovers in Japan prior to the late 1990s while Brown and Fung (2009) document considerable growth in take over activity in Japan subsequent to the regulatory 'Big Bang' in 1998, specifically during the period 2000 through to 2004. As indicated by Schaede (2004), 'the pillars of the keiretsu and the main bank system began to crumble' as a result of regulatory reform initiated in 1998.[5] Indeed, even in the few years prior to the 'Big Bang' regulatory reform in 1998, Wu and Xu (2005) find that Japanese corporate dividend policy commences to have a significant positive impact on firm value consistent with the

---

[4]Wu and Xu (2005) observe that while the centrally important role of the financial institution has been viewed as mitigating for agency conflicts and information asymmetries, the financial institution may also avail of the arrangement as a rent seeking opportunity. Hence, the relative absence of market imperfections in *keiretsu* affiliated firms does not necessarily imply that the corporate governance of these firms is value-maximising (Morck and Nakamura, 1999, Hoshi and Kashyap, 2001 and Wu and Xu, 2005).

[5]By 2003, the Japanese government was obliged to purchase bank shares on a large scale to enable the Japanese banks to maintain the 8 % BIS capital adequacy ratio.

importance of corporate payout policy in a competitive environment exhibiting market imperfections.

Japan-specific Studies of Corporate Payout

To commence, we consider a set of studies which focuses principally on Japan. Dewenter and Warther (1998) assume differing levels of informational asymmetries and agency conflicts across the Japanese corporate environment and firms in the United States. They report corroborative evidence with regard to Japanese dividend policy. In particular, Japanese firms exhibit weaker stock price responses to dividend omissions and initiations, Japanese firms are less reluctant to discontinue and reduce dividends, and following the Lintner (1956) model's speed-of-adjustment coefficient, the dividend payouts of Japanese firms are more responsive to variations in earnings than U.S. firms. In addition, they show that the payout policy of *keiretsu* firms, compared with non-*keiretsu* firms, is relatively responsive to firm performance and it is consistent with fewer informational asymmetries and fewer agency costs. Taken together, the reported findings are consistent with the joint hypothesis that Japanese firms, and affiliated *keiretsu* firms in particular, experience less information asymmetry and fewer agency conflicts than U.S. firms, and, moreover, that these market imperfections affect dividend policy.

Nevertheless, Charitou (2000) elaborates on the information content in the dividend payout policy of Japanese firms. He reports that during the period 1984 through to 1995 the dividend reductions of Japanese firms are indicative of the trajectory of future earnings. However, Charitou (2000) neglects to account for a key feature of an important cohort of Japanese firms, the *keiretsu* corporate governance structure. In contrast to these latter findings in Charitou (2000), Conroy *et al.* (2000) report findings which control, *inter alia*, for *keiretsu* interdependencies and find that the information content and real cash flow effect of dividend anouncements, as observed on share prices during the period, 1988 to 1993, is tenuous and is restricted to forecasts of next year's dividend. In particular, Conroy *et al.* (2000) avail of the practice of firms in Japan to announce dividends and earnings as well as associated management forecasts of dividends and earnings simultaneously, with a view to disentangling the real and purely informational effects of cash dividends. Their findings in respect to corporate payout in Japan are consistent with the Modigliani-Miller (1961) dividend irrelevance proposition.

Turning to the contribution of Gul (1998). He examines, *inter alia*, the corporate payout policy of Japanese firms in the period 1988 to 1992, and reveals a robust negative relation between firm growth opportunities and dividend yield, while allowing for *keiretsu* affiliation, firm size, industry regulation and profitability. In addition, his findings reflect higher debt levels, even controlling for growth opportunities in affiliated *keiretsu* firms, consistent with a relatively interdependent corporate governance structure in these firms reducing the probability of bankruptcy. Gul (1998) also indicates that *keiretsu* firms tend to payout more than non-emphkeiretsu firms. In contrast, Kato *et al.* (2002) find evidence that dividend policy is not used to primarily curtail the over-investment dilemma in Japan but rather it is used to convey information about the firms' future cash flows. In addition, they indicate that investment spending is very sensitive to liquidity constraints and that the market reacts relatively strongly to dividend announcements for non-*keiretsu* firms relative to *keiretsu* firms.

7

Taken together, the set of Japan-focused studies indicates a relatively weak stock price reaction to dividend announcements in Japan relative to the stock price reaction in the United States. This is consistent with the assumption that Japanese firms tend to have fewer agency conflicts and a relatively low level of informational asymmetries, however, there is some controversy concerning the relative importance of these market imperfections. In addition, it should be noted that the single country studies neglect to account for a range of proxy variables allowed for in relatively recent international studies of corporate payout and, in addition, they do not reflect the emergent importance of share repurchases as a component of corporate payout in Japan.

International Studies of Corporate Payout which include Japan

More recently, several international studies of corporate payout policy, have included an examination of Japanese corporate payout (Denis and Osobov, 2008, Chay and Suh, 2009 and Lee and Suh, 2009).

Turning firstly to the international corporate payout study in relation to firms listed in the US, Canada, UK, Germany, France and Japan by Denis and Osobov (2008). This study adopts both time series and cross-sectional analyses, with a US$ numeraire currency, to investigate, *inter alia*, the propensity of firms to pay cash dividends in Japan during the period 1989 through to 2002. The study indicates a slight decline in the observed propensity to pay cash dividends and the relative prevelance of cash dividend abandonment in Japan, this is probably due to transitory earnings problems during the econonomic slowdown of the 1990s. The study also provides mixed findings in respect to catering theory, despite an estimated positive dividend premium, the median annual percentage of firms in Japan that switch their dividend status in a given year is less than 5%, and the switch in status appears to be unrelated to the dividend premium. In addition, Denis and Osobov (2008) report a positive relation between the propensity to pay dividends and firm size, profitability as well as the capital mix of retained earnings to total equity of the firm. They also report that growth opportunities are mixed across dividend payers and non-payers in Japan and mixed results are also found with regard to the sign of the relation between dividend payout amounts and growth opportunities, contingent on the proxy explanatory variable used and the sample of Japanese firms examined. On the whole, these findings clearly run counter to the first-order importance of the signaling and catering hypotheses while these findings do, nevertheless, lend considerable support to the life cycle theory of corporate payout policy in Japan.

Motivated by survey findings provided by Lintner (1956) and Brav *et al.* (2005) with respect to the importance of cash-flow uncertainty in payout policy determination, Chay and Suh (2009), adopt a year-by-year cross-sectional methodology, and examine scaled corporate payout internationally including a focus on Japan during the period 1994 through to 2005. They find that cash flow uncertainty (*i.e.* stock return volatility) exerts a strong relatively pronounced (relative to other important theoretical determinants) negative influence on the amount and probability of dividend payout (scaled by earnings or sales) of firms in Japan, as well as internationally. Interestingly, they also find that this effect is independent to the phase of the financial life-cycle of the firms involved and comparable in importance to the impact of profitability on payout. It may follow that this negative relation arises from the increased costliness of raising funds externally as cash flow uncertainty

rises in conjunction with the 'sticky' dividend phenomenon which implies an aversity, on the part of management, to allow dividends to decline. As in Denis and Osobov (2008), findings indicating ambiguity, with regard to the importance of growth opportunities, and hence agency contracting costs, as a determinant of scaled payout are reported (there is a significant negative correlation between dividends scaled by earnings and the market to book ratio, there is a markedly less pervasive correlation between dividends scaled by sales and the market to book ratio, leaving considerable ambiguity). Turning to total payout, which includes share repurchases, cash flow uncertainty also imparts a negative effect on the amount of total payout (also scaled by earnings or sales).

Lee and Suh (2009) examine the sample period from 1998 through to 2006 and provide an examination of firms involved in dividend payouts, share repurchases as well as non-payers in Japan (as well as in Australia, Canada, France, Germany, the United Kingdom and the United States). First, they report that Japan is conspicuous, outside the United States, in exhibiting a high incidence of share repurchases, nevertheless, payouts in Japan stem principally from cash dividends. Second, those Japanese firms which do not pay cash dividends and perform share repurchases tend to be at the early stage of the firm's financial life cycle. They tend to be small firms with low profitability although with high profit variability. They also report, contrary to the signaling theory of corporate payout, that share repurchases are a flexible means of distributing cash built up through reductions in capital expenditure rather than improved operating performance. This finding is in line with the free cash flow hypothesis, the agency-cost based life-cycle theory. In short, the firms don't finance repurchases by reducing dividends - these payout methods are not perfect substitutes. Lee and Suh (2009) also report differences in firm characteristics (firm size, profitability, retained earnings and cash-flow variability) in regard to share repurchase activity across dividend payers (large firm size and large cash holdings - in contrast to Grulon and Michaely 2002) and non-payers. These findings are also in line with the lifecycle theory.

Taken together, while Denis and Osobov (2008), Chay and Suh (2008) and Lee and Suh (2009) provide valuable insight into the corporate payout policy of Japanese firms their contributions neglect to account for important proxy explanatory variables of the various theories examined. Specific proxy variables related to the agency-cost based lifecycle theory of corporate payout are neglected, for example, whether the firm has been privatised and the age of the firm - i.e. the number of years elapsed since incorporation. In addition, in regard to informational asymmetries, these articles neglect to account for the earnings reporting frequency of the firms. The studies also neglect to account for a specific type of income risk, a scaled measurement of the standard deviation of net income. Furthermore, market value, a key proxy explanatory variable for the lifecycle phase and the median market to book value, the key measurement with respect to catering theory, are not adopted either in Chay and Suh (2008) or Lee and Suh (2009). Thus, their importance with regard to Japanese corporate payout, has not been examined since the period prior to 2002, and then solely in respect to the propensity of firms to pay.

Furthermore, the leverage ratio and the relative stock return have not been considered, except in regard to the share repurchases behaviour in Lee and Suh (2009) while the ownership structure, the standard deviation of operating income and the volatility of the stock returns are not examined except as a cross-sectional determinant of corporate payout pol-

icy in Chay and Suh (2008). Therefore, these marked omissions indicate an opportunity to re-examine corporate payout policy in Japan. Finally, these international studies also neglect to address the *keiretsu* character of an important cohort of Japanese firms with a view to explicating the determination of corporate payout policy. Ofcourse, these two co-existing structures of corporate governance in Japan, the structure of *keiretsu* affiliated and the structure of non-affiliated firms, provides a valuable opportunity to evaluate predominant theories of corporate payout policy with respect to agency costs and infomration asymmetries in Japan.

3   Data and Proxy explanatory variables

Our data, which extends from 1990 through to 2008, is sourced in the *Worldscope* and the *Amadeus* databases, as detailed in table 1. The data is tailored such that it excludes firms in the financial and utilities industries, as well as American Depositary Receipts and foreign firms. The sample also excludes firms whose dividends are greater than their total sales, firms whose dividend, net income or sales figures are omitted and firms with negative book value of equity, market to book ratio, sales, dividends or share repurchases. In addition, we search the databases for active as well as dead and suspended listings in order to avoid survivor bias. Otherwise, the sample comprises every firm headquartered in Japan which is also listed on the Tokyo stock exchange, for which there is available our set of proxy explanatory variables. These filters yield 1377 industrial (and transport) firms, of which 204 firms are affiliated to the Japanese *keiretsu*.[6] Within this group, 423 firms disclose their cash dividend policy in 1990 of which 399 are cash dividend payers. This figure is 1371 in 2008 of which 1210 pay cash dividends. Turning to repurchase observations, there are 43 firms which disclose their share repurchases policy in 1990 with only a single firm observed to conduct share repurchases. This figure grows to 840 firms disclosing their policy in 2008 with 538 firms conducting share repurchases. The total sample includes 18,554 firm-year observations on cash dividends of which 16,203 are cash dividend payers and 2,351 are firms that do not pay cash dividends. There are 7,534 firm-year observations on share repurchases of which 3,915 firm-year observations are for repurchasers and 3,619 for non-repurchasers. Our study examines the Japanese circumstances, separately investigating *keiretsu* and non-*keiretsu* firms, using a real Japanese yen numeraire (1990 prices) in each instance.

[**Please insert table 1 about here**]

Our principal payout variables are cash dividends (DIV) and share repurchases (SR). Share repurchases correspond to actual gross amounts.[7] We arrange our principal proxy

---

[6]Following Brown and Fung (2004), our classification is obtained from Industrial Groupings in JapanThe Anatomy of the Keiretsu (Brown & Company 1999, 2001). As indicated by Wu and Xu (2005), the affiliation to *keiretsu* groupings tends to be stable over time. Only firms in the six largest *keiretsu* groupings are categorised as *keiretsu* members. Firms which are listed after 2001 are assumed not to be affiliated to *keiretsu* groupings due to the unavailability of more recent data.

[7]Fama and French, 2001 and Skinner, 2008 adjust the share repurchases of their samples of United States firms for employee stock options, acquisitions and/or price manipulation to obtain a net measurment of share repurchases. Their approximation adopts the value of treasury stock to approximate the share repurchases

explanatory variables into groups according to their advocated theoretical linkages with respect to explicating the agency cost-based theory, the catering theory, the life-cycle theory and the signaling theory of corporate payout policy as well as a grouping of proxy variables which are included by way of a robustness check. Our Japanese observations are denominated using a local currency numeraire, with a view to avoiding spurious inferences following from the pronounced fluctuation of the reference global currency, during the period 1990 through to 2008.

We assess the empirical importance of the agency cost-based theory adopting 5 proxy explanatory variables. First, following Dittmar and Mahrt-Smith *et al.* (2007) and Pinkowitz *et al.* (2006) we adopt cash and short term investments (CASH) as a measurement of prospective agency costs. The greater these prospective costs, the greater the expected corporate payout. In a similar vein, following Chay and Suh (2009) and LaPorta *et al.* (2000) the more concentrated the ownership of the firm (OWN), the smaller the scope for prospective agency costs. Finally, in regard to agency costs, following Black (1976), Jensen (1986) and von Eije and Megginson (2008), we adopt a leverage ratio (LR) *i.e* the book value of debt divided by the book value of assets, to approximate for the scope for prospective agency costs. The greater the leverage of a firm the smaller the scope for prospective agency costs and the smaller the expected payoff. Alternatively, it should be noted, that the higher leverage may proxy for a firm's maturity which would imply a possible positive relation between firm payout and the leverage ratio (LR). Fourth, in respect to the development of the firm's set of investment opportunities, we include in our specifications the change in total assets (DAA) following Fama and French (2001) and Denis and Osobov (2008). Finally, also following in the line of these latter studies, we adopt the market to book ratio (MBF) to reflect the set of the firm's investment opportunities. The larger the investment opportunity set, the smaller the expected payout. Essentially, the shallower the investment opportunity set, for any given level of cash (CASH) there is a greater scope for sub-optimal investment by way of agency costs.

Turning now to the life-cycle theory of corporate payout policy, we adopt 3 proxy explanatory variables. First, following Pan (2007) and von Eije and Megginson (2008), we include the age (AGE) of the firm since its date of incorporation. This proxy explanatory variable for the phase of the life-cycle of the firm is expected to exhibit a positive relation with corporate payout. In addition, following, DeAngelo *et al.* (2006) we include a proxy explanatory variable for the phase of the life cycle of the firm, the ratio of retained earnings to total equity (RETE) and, in the vein of, Fama and French (2001) as well as Grullon and Michaelly (2002) we adopt the market value of the firm to reflect firm size (SIZE), another complementary indication of the phase of the life cycle of the firm. The greater the maturity of the individual firm whether reflected in retained earnings to total equity (RETE) or firm size (SIZE), the greater its expected payout.

With regard to catering theory, we follow Baker and Wurgler (2004a,b) and specify a dummy variable (CCD), for frequent payers, that takes the value 1 if natural logarithm of the median market to book value of a paying firm is greater than the natural logarithm of the median market market to book value of a non-paying firm, otherwise zero. The focus,

with regard to catering theory, is whether there is a payout (dividend or share repurchase) premium effect and, if so, how this effect varies over time.

To assess the empirical importance of the signaling theory of corporate payout policy we turn to a single proxy explanatory variables. We initially follow Wood (2001) and von Eije and Megginson (2008) and specify an Earnings Reporting Frequency (ERF) variable, corresponding to the frequency at which earnings are reported, by a firm, per annum. The greater the frequency, the smaller the expected payout and the lower the incentive to payout. Alternatively, it is noted that a greater reporting frequency may result in a larger payout due to greater transparency.

In addition we adopt 7 further control variables which are also expected to impact corporate payout. Following Lintner (1956), Miller and Rock (1985) and von Eije and Megginson (2008), we specify an explanatory variable corresponding to the Earnings Ratio (EA). It is computed as the earnings before interest but after tax divided by the book value of total assets. The greater the earnings ratio, the greater the expected payout. Another variable examined is income uncertainty. Anticipated income uncertainty is expected to negatively impact cash dividend payouts due to the expected information content of a subsequent cash dividend decline deteriorating firm value as well as the tendency for external financing to be relatively costly. This latter proxy explanatory variable is operationalised in three ways: (1) income risk (SDS) is computed following von Eije and Megginson (2008) as the standard deviation of income during the last 5-years scaled by total sales, (2) operating profitability volatility (INCV) is computed following Chay and Suh (2009) as the three-year standard deviation of the operating rate of return and (3) cash-flow uncertainty (VOL24) is computed following Chay and Suh (2009) and Lintner (1956) as the standard deviation of stock returns during the most recent 3-year period. The greater the income uncertainty, the smaller the expected payout. Next, following von Eije and Megginson (2008), we include a lagged return (DPP). There is expected to be a negative relation between this explanatory variable and subsequent payout. Following D'Souza and Megginson (1999) and von Eije and Megginson (2008) we include a dummy variable indicating if the firm has been privatised (PRIV) or not. If the firm has been privatised, there is expected to be a consequent positive payout. Following Fama and French (2001) as well as Denis and Osobov (2008), we also include in our specifications a year variable (Year), with a view to assessing secular trends over time.

4   Empirical Findings

Figure 1 presents the number of observed firms and the number of observed *keiretsu* firms disclosing their payout policies as well as the number of these firms actually making payments during the period 1990 to 2008. In addition, Figure 1 indicates the total number of observed firms which discontinue payouts in each year. In particular, Figure 1a and Figure 1b present these measurements in regard to cash dividends and share repurchases, respectively.

It is interesting that while the number of observed *keiretsu* firms paying cash dividends remains high and virtually stable throughout, the number of these firms conducting share repurchases increases markedly, from a low base, after 1999. Turning to the total number of *keiretsu* and non-*keiretsu* firms, this cohort of firms exhibits a comparable pattern with

regard to share repurchases, however, alongside the increasing number of observed firms over time, following from new listings and improved data coverage, the total number of these firms paying cash dividends increases throughout the period 1990 to 2008. The proportion of the total number of observed firms paying cash dividends declines only marginally over time. Taking these inferences together, the proportion of *keiretsu* firms electing to conduct cash dividends or share repurchases, in the post-1999 period, is relatively high, in comparison to non-*keiretsu* firms. While the number of firms choosing to discontinue cash dividend payouts remains low, with moderate peaks in 2000 and 2003, the number of firms discontinuing share repurchases is relatively high and grows gradually since 2000, reflecting a relative variability (stemming principally from non-*keiretsu* firms) of the number of firms conducting share repurchases.[8] In short, payout discontinuation is generally unusual, particularly in the context of cash dividend payments.

These findings indicate that the development of the proportion of Japanese listed firms paying cash dividends appears markedly different to the stark declines in this proportion evident in listed firms in the United States (Fama and French, 2001) and in the European Union (von Eije and Megginson, 2008), however, the growing proportion of Japanese listed firms conducting share repurchases is comparable to findings in the the United States (Fama and French, 2001) and in the European Union (von Eije and Megginson, 2008) albeit in Japan this phenomenon is relatively striking.

Table 2 indicates an annual summary of the total number of Japanese firms observed corresponding to Figure 1. In addition, it presents an annual summary of the number of observations of firms which disclose both their cash dividend and their share repurchase policies, the observed number of firms which pay only cash dividends or conduct only share repurchases and the table presents the annual summary of the number of observations of firms which conduct both types of payout. The table also presents the real value of total payout, cash dividends and share repurchases each year. The two most interesting series in this table describe the evolution in the number of companies that disburse both cash dividends and conduct share repurchases and the total real value of observed firm payout in Japan. The series corresponding to firms availing of both forms of payout indicate a marked growth in the number of observations of these firms since 2000 (197 firms in 2000 to 526 firms in 2008), while the number of firms which solely repurchase shares remains small (14 firms in 2000 and 11 firms in 2008) and the number of observed firms which solely pay cash dividends exhibits considerable variation although not a clear trend over time (242 firms in 2000 and 265 firms in 2008). The other particularly interesting series corresponds to the total real value of payout, this series exhibits remarkable growth especially since 2000 (600.65 billions of Japanese yen in 2000 to 2420.66 billions of Japanese yen in 2008), with an increasingly important proportion of this value stemming from share repurchases although at no point does the value of share repurchases surpass the real value amount stemming from cash dividends. Hence, unlike in the United States, where firms which only pay dividends are largely extinct (Skinner, 2008) a substantial minority of firms exclusively pay cash dividends in Japan. Albeit the proportion of observed firms exclusively paying cash dividends is declining over time. Overall, as found in the European Union (von Eije and Megginson, 2008) and in the United States (Fama and French, 2001 and Skinner, 2008),

---

[8]The mean proportion of *keiretsu* affiliated firms electing to discontinue cash dividends (2.75%) is relatively high in the full period(1.89% for non-affiliated firms) and this effect is even more pronounced since 1999 (3.61% of affiliated firms and 1.95% of non-affiliated firms.)

total real payout is growing over time with relatively pronounced growth stemming from the real value of the share repurchases conducted.

[Please insert figure 1 and table 2 about here]

Figure 2 illustrates the real Japanese Yen amounts of observed total payouts, cash dividend and share repurchase payouts for all firms, *keiretsu* as well as non-*keiretsu* firms, during the period 1990 to 2008. Since 1999, there has been a marked and virtually systematic increase year-on-year in real payout amounts across payout methods for all groupings of observed firms.[9] A decomposition of total payout into cash dividend and share repurchase payouts, across *keiretsu* and non-*keiretsu* firms, highlights three points of particular interest. First, the growth in share repurchase payout amounts, across *keiretsu* and non-*keiretsu* firms, is relatively pronounced as it is initiated at a low base. Second, while the preponderance of payout is in the form of cash dividends throughout across firms, *keiretsu* firms show a relative proportionate reluctance to allow share repurchases to contribute to total payout. Third, it is also noteworthy that *keiretsu* firm payout, as opposed to non-*keiretsu* firm payout, is distinctive in regard to the initiation of share repurchses with a one year lead in 1999 as well as the striking three-fold spike in total real cash dividend payout, exhibited by *keiretsu* firms, in 2001.[10] In contrast, the total real payout of observed non-*keiretsu* firms increases relatively gradually and no such spike in payout is evident.

Table 3 indicates an annual summary of the observed real Japanese yen payout amounts, corresponding to the illustrations in Figure 2. In addition, the table indicates the average per firm payout across payout methods and categories of firms - all Japanese firms, *keiretsu* firms and non-*keiretsu*. It is noteworthy that despite the lead exhibited by *keiretsu* firms, as indicated in figure 1, in the initiation of share repurchases since 1999, non-*keiretsu* firms tend to payout relatively more real Japanese yen per firm in this way over time. The most interesting new finding, however, indicated by this table is the tendency for the *keiretsu* firm cash dividend and total payout amounts to virtually systematically exceed the corresponding payout amounts of non-*keiretsu* firms, both prior to and since 1999.

Overall, therefore, the payout policy of the *keiretsu* firms is relatively conservative over time. Typically *keiretsu* firms tend to payout relatively more, on a per-firm basis, and there is an evident preference in *keiretsu* firms to payout by way of cash dividends rather than share repurchases, as initially illustrated in figure 2.

[Please insert figure 2 and table 3 about here]

Table 4 indicates the decile distribution, calibrated with respect to total real payout, of real cash dividend and share repurchase payouts for the observed Japanese, *keiretsu* and non-*keiretsu* firms during the years 1990, 1999 and 2008. Overall, there has been a concentration of corporate payout across payout methods, among a small number of firms,

---

[9]There was a 10% ceiling, relative to share face value, on the amount of cash dividends paid in Japan which was relaxed in 1998, as detailed in Schaede 2006a. Hatakeda and Isagawa (2004) indicate that following a 1998 revision of the Commercial Law firms were allowed to use their capital reserves for stock repurchases exceeding 10% of outstanding shares without a requirement of approval at a shareholders' meeting.

[10]The primary reason for this spike in cash dividend payout in 2001 is that the *keiretsu* firm Techno Ryowa Limited (ISIN No. JP3545040002) paid 197.04 billion yen in 1990 Prices against.

in Japan. For example, in 1990 the top two deciles of payers account for 69.7% of cash dividend payout while this level of concentration increases marginally in 1999, and it grows to 80.1% of cash dividend payout in 2008. The top two deciles also present a marked increase in concentration levels with regard to share repurchase payout conducted, rising from 77.5% in 1999 to 92.3% in 2008. This heightened concentration of payout among payers, across payout methods in recent times, is corroborated by the presented Herfindahl indices, and is in line with findings in the United States (Fama and French, 2001 and DeAngelo, DeAngelo and Skinner, 2004) and in the European Union (von Eije and Megginson, 2008).

Of particular interest, in the Japanese context, is that this growth in concentration levels stems from the observed non-*keiretsu* firms. Specifically, there is a marked concentration of cash dividend payouts (the top two deciles correspond to 61.3% of cash dividend payouts in 1990, 71.5% in 1999 and 80% in 2008) and share repurchase payouts (the top two deciles correspond to 70% in 1999 and 92% in 2008) in non-*keiretsu* firms over time. In contrast, the concentration of cash dividend payouts in *keiretsu* firms declined between 1990 and 1999 (the top two deciles correspond to 81.1% in 1990 and 76% in 1999) although it remains relatively high in 2008 (79% in 2008) comparable to 1999 levels. The concentration of share repurchase payouts in *keiretsu* firms declines between 1999 and 2008 according to the corresponding Herfindahl indices while the top two deciles indicate that the level of concentration is approximately stable (90% in 1999 and 94.5% in 2008), alongside the growing popularity of this method of payout as detailed in earlier tables. Taking these findings together, the *keiretsu* firms exhibit relatively conservative behaviour with respect to the concentration of payout throughout the period, 1990 to 1998, while the non-*keiretsu* firms exhibit a convergence to a comparable level of concentration across cash dividend and share repurchase payouts over time.

[**Please insert table 4 about here**]

In table 5 it is indicated that the proportion of cash dividend payers in Japan declines marginally during the period 2000 to 2003 while the proportion of cash dividend payers tends to increase thereafter, until 2008. A comparable pattern is evident across *keiretsu* and non-*keiretsu* firms. In addition, table 5 indicates whether these altering proportions of Japanese, *keiretsu* and non-*keiretsu* firms, which elect to disburse cash dividends, are due to alterations in company characteristics or due to alterations in the propensity of these firms to disburse cash dividends. Alongside the actual proportions of firms choosing to pay cash dividends, the table presents the expected out-of-sample estimates of the percent of firms expected to be involved in paying cash dividends, provided by logit regressions specified to include the important traditional explanatory variables: the market value (SIZE), the earnings ratio (EA), the market-to-book value of the firm (MBF) and the asset growth rate (DAA). The specified regression parameters are estimated during the base period 1990-99. The findings reveal a declining propensity to pay cash dividends in Japan during these latter decades, comparable to findings in the United States (Fama and French, 2001 and Denis and Osobov, 2008) and in Europe (von Eije and Megginson, 2008). In fact, a comparable declining propensity to pay is evident across *keiretsu* and non-*keiretsu* firms, while this declining propensity is relatively pronounced in *keiretsu* firms. It is noteworthy, however, that the variation in firm characteristics over time results in a relatively stable expected percentage of firms paying cash dividends in Japan (ranging from about 90% in

2001 to 94% in 2004) and in non-*keiretsu* firms (ranging from about 90% in 2001 to 94% in 2004). In contrast, the expected percentage of *keiretsu* firms paying cash dividends is relatively varied, ranging from about 90% in 2001 to 98% in 2008. This contrast, between actual and expected percentages of *keiretsu* firms paying cash dividends, is indicative of a relatively pronounced decline in the propensity to pay in *keiretsu* firms which reflects a marked resistance - a relatively conservative cash dividend payout policy. In summary, in every instance, with respect to Japanese, *keiretsu* and non-*keiretsu* firms, the expected proportion of payers exceeds the actual observed proportion of payers hence indicating a declining propensity to pay cash dividends over time which is particularly pronounced in *keiretsu* affiliated firms.

[**Please insert table 5 about here**]

In Panel A of Table 6, as well as in Table 7, the results of the logistic random effects panel regressions are presented which indicate the impact of the explanatory variables, outlined in Table 1, on the probability of paying cash dividends and repurchasing shares. These Tables present eleven key findings.

First, turning to the 4 traditional explanatory variables - firm size (SIZE), the earnings-to-assets ratio (EA), the market-to-book value of the firm (MBF) and the asset growth rate (DAA) - adopted to explain the probability to pay in the United States. In Japan, the firm size (SIZE) and the earnings-to-assets ratio (EA) are significant with the expected positive signs with regard to the probability to pay cash dividends while neither the market-to-book value of the firm (MBF) nor the asset growth rate (DAA) is significant. The size (SIZE) explanatory variable also impacts the probability of firms, specifically non-*keiretsu* firms, to repurchase shares. In addition, it is noteworthy that the impact of the earnings-to-assets ratio (EA) is declining over time for all firms as well as with regard to *keiretsu* and non-*keiretsu* firms. Notwithstanding, the earnings-to-assets ratio (EA) effect is relatively pronounced with regard to *keiretsu* firms.[11] Finally, contrary to our expectations, although the market-to-book value of the firm (MBF) explanatory variable is not significant across all firms, *keiretsu* firms exhibit an emergent significant positive effect of this explanatory variable on the probability to pay cash dividends. Nonetheless, the overall effect of the market-to-book value of the firm (MBF) explanatory variable is negative and marginally significant for *keiretsu* firms.

Second, the leverage ratio (LR) explanatory variable systematically significantly impacts the probability to pay with the expected negative sign over time and across Japanese, *keiretsu* and non-*keiretsu* firms, with a significantly pronounced effect in the latter sub-period for *keiretsu* firms.[12] This result indicates the emerging importance of agency costs and/or financial covenants in influencing particularly *keiretsu* firm cash dividend policy in Japan. Third, as per our expectation, the operating profitability volatility (INCV) and income risk (SDS) explanatory variables are associated with a significant negative effect on the probability to pay cash dividends. In regard to income risk (SDS), this effect declines significantly over time across firms except for *keiretsu* firms where the effect is stable over

---

[11]It is noteworthy that *keiretsu* firms exhibit a declining adjusted earnings to total assets ratio relative to non-*keiretsu* firms.

[12]It is worthwhile noting that across *keiretsu* and non-*keiretsu* firms there is a general decline in the rate of leverage to total assets (LR) over time, which is relatively pronounced for non-*keiretsu* firms.

time and relatively pronounced. Income risk (SDS) also negatively impacts the probability to conduct share repurchases. Notably, cash flow uncertainty (VOL24) does not impart a negative influence on the probability to pay in Japan, except for marginally in the first sub-period.

Fourth, the explanatory variable corresponding to the passage of time (YEAR) indicates a declining inclination of Japanese firms to pay cash dividends which is significant during the full period, 1990 to 2008. This finding, allowing the coefficients to vary over time and including a wide range of explanatory variables, confirms the results presented in Table 5 with respect to the propensity of firms to pay cash dividends and the increasing concentration of non-*keiretsu* affiliated firms in particular. In the same context, the results also confirm a systematic increasing inclination of Japanese, *keiretsu* and non-*keiretsu* firms to conduct share repurchases over time.

Fifth, the privatized firms (PRIV) are significantly more likely to pay cash dividends than other firms and this finding is robust and across *keiretsu* and non-*keiretsu* firms in the latter sub-period. Nevertheless, the process of privatization does not impact the probability of a firm to conduct share repurchases. Sixth, the earnings reporting frequency (ERF) variable has a positive coefficient over the full period as well as the sub-periods, though this effect is not significant during the sub-periods. In addition, a marginally significant negative effect for the earnings reporting frequency (ERF) is estimated on the probability of firms to conduct share repurchases. The effect on the probability to pay cash dividends may follow from the possibility of increased monitoring due to an increased report frequency to signal qualities of the firm to investors. Seventh, contrary to the expectations implied by catering theory, the country specific catering dummy (CCD) has a significant negative sign both in the whole period and in the latter sub-period. Curiously, this finding suggests that firms are less likely to pay cash dividends when a valuation premium is assigned to dividend paying firms. However, our construction of the catering theory dummy variable using cash dividends may render this explanatory variable less than ideal with regard to share repurchases. In addition, our use of a lagged catering dummy explanatory variable may have adversely affected our results.

Eighth, unexpectedly the annual change in stock price measured at the end of the previous year (DPP) imparts an emergent positive effect on a firm's probability of paying cash dividends. In the first sub-period its effect is significantly negative while in the latter sub-period the effect is positive and in the overall period the effect of the DPP variable is significantly positive. Ninth, the cash holdings (CASH) explanatory variable significantly accounts for the probability to pay cash dividends in the first sub-period but not in the other periods. That said, the non-*keiretsu* firms exhibit a significantly different emergent negative effect of the cash holdings (CASH) variable on the probability to pay cash dividends relative to the insignificant effect exhibited by the *keiretsu* firms.[13] Tenth, as per expactations, the concentration of ownership (OWN) explanatory variable exhibits a systematic significant negative effect on the probability of firms to conduct share repurchases, however, there is no systematic negative effect on the probability of firms to pay cash dividends.[14]

---

[13]*Keiretsu* firms are conspicuous in that they exhibit a decline in the percentage of cash holdings (CASH) over time.

[14]It is worthwhile noting that across *keiretsu* and non-*keiretsu* firms, there is a decline in the concentration of ownership (OWN), which is relatively pronounced for *keiretsu* firms.

Finally, the remaining explanatory variables, concerning firm age (AGE) and retained earnings to total equity (RETE), have no impact on the likelihood of firms to pay cash dividends, except in regard to *keiretsu* firms where there is an emergent positive effect documented over time. In addition, older *keiretsu* firms tend to be less likely to decide to repurchase shares while, in line with our expectations, non-*keiretsu* firms are increasingly likely to repurchase shares over time.

[Please insert tables 6 and 7 about here]

Turning now to investigate the impact of the explanatory variables, outlined in Table 1, on the amounts of real cash dividends paid and the shares repurchased. In Panel B of Table 6, as well as in Table 8, the results of our random effects panel regressions are presented. In total, these Tables also present ten key findings.

First, as we anticipated, the age of the firm (AGE) and the retained earnings to total equity (RETE) explanatory variables positively influence the amounts of real cash dividends paid in the full period, however, the effects in the sub-periods are not significant. That said, there does appear to be an emergent positive effect associated with the retained earnings to total equity (RETE) explanatory variable in *keiretsu* firms and also a positive effect is documented with regard to share repurchases in non-*keiretsu* firms. The firm size (SIZE) explanatory variable positively impacts both the amount of real cash dividends and share repurchases, with an increasing positive effect over time on these real cash dividend payouts. In addition, it is noteworthy that the effects of firm size (SIZE) are more pronounced with regard to *keiretsu* firms than non-*keiretsu* firms although these effects are growing with regard to the amount of real cash dividends paid by non-*keiretsu* firms over time.

Second, as expected, the concentration of ownership (OWN) variable impacts negatively the amounts of both real cash dividends and share repurchase payouts. However, this negative effect stems from with non-*keiretsu* firms for share repruchases. Also, as anticipated, the cash holdings (CASH) variable positively impacts the amount of real payouts although this effect is not significant in the latter sub-period with regard to real cash dividends and the positive effect on share repurchases stems from non-*keiretsu* firms. Unexpectedly, the leverage ratio (LR) positively impacts real cash dividend payouts over the full period and this effect becomes more pronounced over the sub-periods - stemming from non-*keiretsu* firms. This curious result implies that heightened leverage is associated with greater cash dividend payouts.

Third, as per our expectation, earnings (EA) positively impact the amount of real cash dividends paid with the magnitude of this effect growing over time with respect to non-*keiretsu* firms. This increase in the sensitivity of cash dividends to earnings is in stark contrast to the findings of Brav, Graham, Harvey and Michaely (2005) and Skinner (2008) with regard to the payout behaviour of firms listed in the United States.

Fourth, the market-to-book value of the firm (MBF) impacts real cash dividends negatively as per our expectations although this effect is declining over the sub-periods. Curiously, the asset growth variable (DAA) indicates the need to finance assets appears to impact real cash dividends positively albeit with a small effect. Fifth, concerning the explanatory variables related to uncertainty, income risk (SDS) negatively impacts real cash dividends paid, as per our expectation, with this effect becoming increasingly pronounced

over time in respect to non-*keiretsu* firms. In contrast, there is an unexpected positive impact of the cash flow uncertainty (Vol24) and operating profitability volatility (INCV) variables in the earlier sub-period although this is not evident in the later sub-period or the full period. This anomolous cash flow uncertainty (Vol24) influence stems primarily from the *keiretsu* firms examined. That said, the cash flow uncertainty (VOL24) variable does negatively impact the real share repurchase amounts of the *keiretsu* firms examined.

Sixth, the earnings reporting frequency (ERF) variable influences real cash dividend payouts positively in the first sub-period and in the full period however it is associated with a negative influence on real cash dividends in the second sub-period. This emergent finding of a negative influence may reflect a pressure on firms to disburse more cash as the earning reporting frequency (ERF) per annum declines, due to increased informational asymmetries.

Seventh, our catering dummy (CCD) variable presents an unexpected negative influence on real cash dividends paid in the full period examined, however, in the latter sub-period there is a significant emergent positive effect. This finding indicates some support for the catering theory across *keiretsu* and non-*keiretsu* firms during the latter sub-period, from 2000 to 2008. That said, our model specification to assess the catering theory may not be altogether appropriate as this theory specifically relates to the probability of cash payouts rather than their real value amounts.

Eighth, the annual change in stock price measured at the end of the previous year (DPP) variable exhibits an unexpected emergent albeit small positive effect on real cash dividend amounts and the repurchase of shares with this marginal effect originating primarily from the non-*keiretsu* firms in the latter sub-period and with regard to share repurchases. Ninth, with respect to the expected positive privatization (PRIV) effects on real cash dividends and share repurchases, the estimated effects are positive and they differ significantly across *keiretsu* and non-*keiretsu* firms. In particular, while there are emergent positive effects on real cash dividend amounts in *keiretsu* firms these effects are not significant. In contrast, there are positive effects on real cash dividend amounts in non-*keiretsu* firms throughout the period. In addition, the positive impact of privatization on share repurchase amounts in *keiretsu* firms is significantly higher than its impact in non-*keiretsu* firms, where there are no such effects. As a result, firms that were once state owned but are now privatized are not only more likely to pay cash dividends, as indicated in Table 6 Panel A and Table 7, than other firms but they also payout more when they do decide to pay.

Finally, as per the the growth in real payouts documented in Figure 2, the passage of time (YEAR) explanatory variable suggests an emergent positive impact on the payout of real cash dividends which differs across *keiretsu* and non-*keiretsu* firms. Specifically, this emergent positive effect stems both from *keiretsu* and non-*keiretsu* firms, although in the full period the effect is significantly more pronounced in non-*keiretsu* firms.

[**Please insert table 8 about here**]

5   Responsiveness to Earnings

In Table 9 we present findings with respect to whether cash dividend payouts are becoming decreasingly responsive to earnings - more conservative - and whether the total payouts,

of firms, which also conduct share repurchases, are becoming increasingly responsive to earnings as indicated by Brav, Graham, Harvey and Michaely (2005) and Skinner (2008) for US data. In order to accomplish this, we construct a data set corresponding to regular payers and regular repurchasers. Specifically, we consider 1159 firms, during the period 1990-2008, which pay cash dividends at least at 5 year intervals and 573 firms which conduct share repurchases at least at 3 year intervals. Hence, we consider firms which disburse 97% of total cash dividend payout during the period 1990 -2008 and 79% of share repurchase payout during this period. At the same time, the set of firms examined comprises 84% of the firms that pay cash dividends and 42% of the firms that conduct share repurchases during this period.

In particular, our analyses involve the estimation of stylized Lintner (1956) regression models for cash dividends, share repurchases and total payout for our constructed data set of the industrial firms, which regularly payout, in Japan. We use pooled regression analysis with robust standard errors clustered at the firm level for this estimation. Our stylized Lintner (1956) regression models are specified :

$$\Delta D_t = \alpha_0 + \alpha_1 EBIAT_t - \alpha_2 D_{t-1} + \epsilon_t.$$

where ΔD_t corresponds to a contemporary change in payout, $EBIAT_t$ corresponds to contemporary earnings before interest and after tax, D_{t-1} corresponds to payout lagged by one year. In the Equation α_1 represents the sensitivity to earnings coefficient and α_2 the speed of adjustment coefficient. Elsewhere in the Table, N corresponds to the number of observations and PoR to the target payout ratio, which is evaluated as (α_1/α_2). We estimate the Eq. (1) for two sub-periods (1990 to 1999 and 2000 to 2008), across cash dividends, share repurchses and total payout, in order to examine how the relation between earnings and payout evolves over time.

In Table 9, in the panel A with respect to cash dividends, we find a significantly stronger effect of earnings on cash dividends over time, with the predicted signs, with regard to Japanese, *keiretsu* and non-*keiretsu* firms. This finding is in contrast to the Brav, Graham, Harvey, and Michaely (2005) and Skinner (2008) findings in the United States, though it is in line with the findings of von Eije and Megginson (2008) in Europe. Moreover, the speed of adjustment of cash dividends to earnings increases significantly with respect to time, especially for *keiretsu* firms (from 0.12 to 0.73; from 0.07 to 0.92 and from 0.20 to 0.31 for Japanese, *keiretsu* and non-*keiretsu* firms, respectively). In addition, there is a significant difference between the speed of adjustments exhibited by *keiretsu* and non-*keiretsu* firms in the second sub-period, where the speed of adjustment of *keiretsu* firms' cash dividend payout to earnings is relatively quick since 1999. Finally, with regard to cash dividends, the target payout ratio rises across Japanese firms (from .08 to .11) and non-*keiretsu* firms (from 0.09 to 0.17) and it remains approximately stable with regard to *keiretsu* firms (from 0.06 to 0.05). Taking these findings together, there is an increasing sensitivity of cash dividend payout to earnings across firms in Japan and the speed of adjustment is relatively quick in *keiretsu* firms and their targetr payout ratio is relatively stable.

In regard to share repurchases, in panel B of the table, we also find increases in the earnings coefficient of share repurchases over time, however, these increases are not statistically significant in *keiretsu* firms although these increases are statistically significant

across Japanese and non-*keiretsu* firms. The corresponding speed of adjustment parameters decline significantly across the Japanese firms and the non-*keiretsu* firms although the decline is insignificant for *keiretsu* firms. So, while share repurchases in Japan and in non-*keiretsu* firms show significant increases in their responsiveness to variation in earnings, these firms which regularly payout cash, become more reluctant to let repurchases follow earnings quickly. This finding is in line with the von Eije and Megginson (2008) finding, for regular payers in the European Union, that share repurchases follow earnings significantly more closely, albeit more slowly, in the 2001 to 2005 sub-period. Once again inferred target payout ratios rise considerably across Japanese and non-*keiretsu* firms although the target payout ratio remains approximately stable over time for *keiretsu* firms. Overall, these findings suggest that *keiretsu* firms exhibit relatively conservative share repurchase policies over time.

Turning to total payout, in panel C of the table, the stylized Lintner (1956) regression models show an increase in the impact of earnings over time on total payout for Japanese firms, non-*keiretsu* firms and *keiretsu* firms, although this increase is not significant for *keiretsu* firms. Clearly, these increases stem both from a rise in the sensitivity of cash dividends and the sensitivity of share repurchases to earnings, albeit the effect arises largely from a rise in the sensitivity of cash dividends to earnings, particularly for *keiretsu* firms. Furthermore, the speed of adjustments of total payouts to earnings increase significantly over time, especially for *keiretsu* firms (from 0.13 to 0.63; from 0.03 to 0.89 and from 0.25 to 0.57 for Japanese, *keiretsu* and non-*keiretsu* firms, respectively). This increased sensitivity of payout to earnings is comparable to findings in the United States presented in Skinner (2008). Again, the same pattern of increasing target payout ratios is evident over time across Japanese firms, non-*keiretsu* firms although not across *keiretsu* firms. Taken together, these findings indicate that firms in Japan, when setting payout policy, are increasingly responsive to earnings, albeit this effect is less pronounced with regard to *keiretsu* firms and their share repurchases policies.

In line with the findings presented in von Eije and Megginson (2008), in regard to the European Union, earnings in Japan in the latter sub-period, 2000 to 2008, influence cash dividends more than share repurchases, across both *keiretsu* and non-*keiretsu* firms. Findings for the total payout version of the stylized Lintner (1956) regression model, compared to the cash dividend version of this model, are stronger for non-*keiretsu* firms although the findings across these models are similar for Japanese fims and for *keiretsu* firms. Overall, this indicates that non-*keiretsu* firms, in particular, increasingly avail of cash dividends and share repurchases , rather than just cash dividends, to absorb the variation in firm earnings. In contrast, it is evident that *keiretsu* firm payouts are relatively conservative over time.

[**Please insert Table 9 about here**]

6   Summary and Concluding Remarks

In this article we evaluate the relative importance of agency-cost theory, catering theory, life-cycle theory and signaling theory to explain corporate payout policy in Japan. We avail of a large database of listed industrial corporations, during the period 1990 through to 2008, to examine the evolution of cash dividends as well as share repurchases and the impact, if

any, of a wide range of pertinent proxy explanatory variables with regard to actual payouts in Japan. In addition, we specifically examine the corporate payout policies of groupings of *keiretsu* affiliated and non-affiliated firms both prior to and since the so-called 'big bang' of deregulation and corporate governance reform in Japan.

Our findings can be summarised by three sets of key points. First, the findings indicate that as in the United States, share repurchases in Japan have grown strikingly - across *keiretsu* and non-*keiretsu* firm groupings - even relative to cash dividends which have also increased. This rapid growth in cash dividends and share repurchases in Japan commences in 1999 in the immediate wake of the enactment of a raft of legislation aimed at reforming Japanese corporate governance. Unlike in the United States, however, cash dividends remain the dominant form of payout across the groupings of *keiretsu* affiliated and non-affiliated firms in Japan. Second, specific to the *keiretsu* grouping of firms is a comparative reticence to alter its corporate payout policy. In particular, the *keiretsu* firms tend to disburse relatively large amounts of cash throughout, they persist in relying relatively heavily on cash dividends rather than share repurchases, they show a relatively pronounced tendency to discontinue paying cash dividends as well as a relatively pronounced responsiveness to earnings. Furthermore, the cash dividend payouts in *keiretsu* firms have been relatively concentrated, while these payouts from non-*keiretsu* firms concentrate increasingly over time. These findings are consistent with a continuing relative absence of agency costs and informational asymmetries in affiliated *keiretsu* firms compared with non-*keiretsu* firms. Third, controlling for a large set of pronounced effects, previously documented in the literature, we examine the relative importance in explaining corporate payout of proxy explanatory variables associated with the phase of the financial life-cycle of the firm, the presence of agency costs, the firm's investment opportunity set, uncertainty in the firms' cashflows, information asymmetries, the recent stock market performance, catering theory effects, whether the firm has been privatized and a secular trend in payouts over time. The findings suggest *inter alia* that larger firms are more likely to payout and if they decide to do so they tend to payout more. As the level of concentration of ownership in Japanese firms increases the amount of cash dividends disbursed decreases. Privatized firms are more likely to pay cash dividends and if they decide to do so and they are not *keiretsu* affiliated they tend to payout more. Taken together, these findings reflect a marked growth in payout in Japan since 1999 across all firms however this occurs against the backdrop of a relative reluctance on the part of *keiretsu* firms to alter their payout policies. With respect to the various theories of corporate payout considered, the relative importance of agency costs and life cycle theory to explain the payout policies of Japanese firms is particularly evident from the regression analyses with regard to both the likelihood to pay of Japanese firms and their payout amounts.

It is well established that corporate governance in Japan differs dramatically from that in the U.S., but researchers come to different conclusions about whether agency costs or information asymmetries are principally responsible for the timing and form of the distinctiviness of corporate payout policy in Japan. Overall, we find in support of the agency cost-based life cycle theory to explain corporate payout policy determination across Japanese firms.

References

[1] Allen, F. and Michaely, R. (2003). "Payout Policy, in Constantinides et. al.". *Handbook of Economics and Finance,* North Holland.

[2] Aoki, M., Patrick, H. and P. Sheard (1994). "The Japanese Main Bank System - Its relevance for Developing and Transforming Economies". *Clarendon Press Oxford*

[3] Brown, C. and Fung, C. (Winter 2009). "Keiretsu Affiliation and Stock-market-driven acquisitions". *Journal of Financial Research*. Vol. 32, Issue No. 4, Pg. 479-503.

[4] Baker, M. and Wurgler, J. (Jun. 2004a). "A Catering Theory of Dividends". *Journal of Finance*. Vol. 59, Issue No. 3, Pg. 1125-1165.

[5] Baker, M. and Wurgler, J. (Aug. 2004b). "Appearing and disappearing dividends: the link to catering incentives". *Journal of Financial Economics*. Vol. 73, Issue No. 2, Pg. 271-288.

[6] Bartov, E., Goldberg, S. R. and Kim, M. (June 2001). "The Valuation-relevance of Earnings and Cash-flows: An International Perspective". *Journal of International Financial Management and Accounting*. Vol. 12, Issue No. 2, Pg. 103-132.

[7] Berglof, E. and Perotti, E. (Oct. 1994). "The Governance Structure of the Japanese Financial Keiretsu". *Journal of Financial Economics*. Vol. 36, Issue No. 2, Pg. 259-284.

[8] Benartzi, S., Michaely, R. and Thaler, R. H. (Jul. 1997). "Do Changes in Dividends Signal the Future or the Past?". *Journal of Finance*. Vol. 52, Issue No. 3, Pg. 1007-1034.

[9] Black, F. (Dec. 1976). "The Dividend Puzzle". *Journal of Portfolio Management*. Vol. 2, Issue No. 3, Pg. 5-8.

[10] Bhattacharya, S. (Spring 1979). "Imperfect Information, Dividend Policy and The Bird In The Hand' Fallacy". *Bell Journal of Economics*. Vol. 10, Issue No. 1, Pg. 259-270.

[11] Brav, A., Graham, J. R., Harvey, C. R. and Michaely, R. (Sept. 2005). "Payout Policy in the 21st Century". *Journal of Financial Economics*. Vol. 77, Issue No. 3, Pg. 483-527.

[12] Charitou, A. (June 2000). "The Impact of Losses and Cash Flows on Dividends: Empirical Evidence for Japan". *Abacus*. Vol. 36, Issue No. 2, Pg. 198-225.

[13] Chay, J. B. and Suh, J (July 2009). "Payout Policy and Cash-Flow Uncertainty". *Journal of Financial Economics*. Vol. 93, Issue No. 1, Pg. 88-107.

[14] Conroy, R. M., Eades, K. M. and Harris, R. S. (June. 2000). "A Test of the Relative Pricing Effects of Dividends and Earnings: Evidence from Simultaneous Announcements in Japan". *Journal of Finance*. Vol. 55, Issue No. 3, Pg. 1199-1227.

[15] DeAngelo, H. and DeAngelo, A. (Feb. 2006). "The Irrelevance of the MM Dividend Irrelevance Theorem". *Journal of Financial Economics*. Vol. 79, Issue No. 2, Pg. 293-315.

[16] DeAngelo, H., DeAngelo, A. and Stulz, R. M. (Aug. 2006). "Dividend Policy and the Earned/Contributed Capital Mix: A Test of the lifecycle Theory". *Journal of Financial Economics*. Vol. 81, Issue No. 2, Pg. 227-254.

[17] Denis, D. J. and Osobov, I. (July 2008). "Why do firms pay dividends? International evidence on the determinants of dividend policy". *Journal of Financial Economics*. Vol. 89, Issue No. 1, Pg. 62-82.

[18] Dewenter, K. L. and Warther, V. A. (June 1998). "Dividends, Asymmetric Information, and Agency Conflicts: Evidence from a Comparison of the Dividend Policies of Japanese and U.S. Firms". *Journal of Finance*. Vol. 53, Issue No. 3, Pg. 879-904.

[19] Dittmar, A. and Mahrt-Smith, J. (Mar. 2007). "Corporate governance and the value of cash holdings". *Journal of Financial Economics*. Vol. 83, Issue No. 3, Pg. 599-634.

[20] Douthett, E. B. and Jung, L. (2001). "Japanese Corporate Groupings (Keiretsu) and the Informativeness of Earnings"'. *Journal of International Financial Management and Accounting* Vol. 12, Issue No. 2, Pg. 133159.

[21] D'Souza, J. and Megginson, W. L. (Aug. 1999). "The Financial and Operating Performance of Privatized Firms during the 1990s". *Journal of Finance*. Vol. 54, Issue No. 4, Pg. 1397-1438.

[22] Fama, E. F. and French, K. R. (Apr. 2001). "Disappearing Dividends: Changing Characteristics or Lower Propensity to Pay?". *Journal of Financial Economics*. Vol. 60, Issue No. 1, Pg. 3-43.

[23] Gibson, M. S. (Jul. 1995). "Can Bank Health Affect Investment? Evidence from Japan". *Journal of Business*. Vol. 68, Issue No. 3, Pg. 281-308.

[24] Grullon, G. and Michaely, R. (Aug. 2002). "Dividends, Share Repurchases, and the Substitution Hypothesis". *Journal of Finance*. Vol. 57, Issue No. 4, Pg. 1649-1684.

[25] Grullon, G., Michaely, R. and Swaminathan, B. (Jul. 2002). "Are Dividend changes a sign of Firm Maturity?". *Journal of Business*. Vol. 75, Issue No. 4, Pg. 387-424.

[26] Grullon, G., Michaely, R., Benartzi, S. and Thaller, R. H. (2005). "Dividend Changes Do Not Signal Changes in Future Profitability". *Journal of Business*. Vol. 78, Issue No. 5, Pg. 1659-1682.

[27] Gul, F. A. (Oct. 1998). "Growth opportunities, capital structure and dividend policies in Japan". *Journal of Corporate Finance*. Vol. 5, Pg. 141-168.

[28] Hatakeda, T. and Isaga, N. (2003). "Stock price behaviour surrounding stock repurchase announcements: Evidence from Japan". *Pacific-Basin Finance Journal* 12, pp. 271-290.

[29] Hoshi, T. and Kashyap, A. (2001). "Corporate Financing and Governance in Japan: The Road to the Future". *MIT Press, Cambridge, MA.*

[30] Hoshi, T., A. Kashyap, and Scharfstein, D. (Sept. 1990). "The role of banks in reducing the costs of financial distress in Japan". *Journal of Financial Economics* Vol. 27, Issue No. 1, Pg. 67-88.

[31] Hoshi, T., A. Kashyap, and Scharfstein, D. (1991). "Corporate Structure, Liquidity, and Investment: Evidence from Japanese Industrial Groups". *Quarterly Journal of Business and Economics* Vol. 106, Pg. 3360.

[32] Jensen, M. C. (May 1986). "Agency Costs of Free Cash Flow, Corporate Finance, and Takeovers". *American Economic Review.* Vol. 76, Issue No. 2, Pg. 323-329.

[33] Jo, H. and Pan, C. (2009). "Why Are Firms with Entrenched Managers More Likely to Pay Dividends". *Review of Accounting and Finance.* Vol. 8, Issue No. 1, Pg. 87-116.

[34] John, K. and Williams, J. (Sept. 1985). "Dividends, Dilution, and Taxes: A Signalling Equilibrium". *Journal of Finance.* Vol. 40, Issue No. 4, Pg. 1053-1070.

[35] Kato, H. K., Loewenstein, U. and Tsay, W. (Sept. 2002). "Dividend policy, Cash Flow, and Investment in Japan". *Pacific Basin Finance Journal.* Vol. 10, Issue No. 4, Pg. 443-473.

[36] LaPorta. R., Lopez-de-Silanes, F., Shleifer, A. and Vishny, R. W. (Feb. 2000). "Agency Problem and Dividend Policies Around the World". *The Journal of Finance.* Vol. 55, Issue No. 1, Pg. 1-33.

[37] Lee, B. S. and Suh, J. (Feb. 2009). "Two Types of Repurchasing Firms and Cash Holdings: International Evidence". *Working Paper, Florida State University.*

[38] Li, W. and Lie, E. (May 2006). "Dividend Changes and Catering Incentives". *The Journal of Financial Economics.* Vol. 80, Issue No. 2, Pg. 293-308.

[39] Lintner, J. (May 1956). "Distribution of Incomes of Corporations Among Dividends, Retained Earnings, and Taxes". *The American Economic Review.* Vol. 46, Issue No. 2, Pg. 97-113.

[40] Milhauput, C. J. (Nov. 2005). "In the Shadow of Delaware? The Rise of Hostile Takeovers in Japan". *Columbia Law Review.* Vol. 105, Issue No. 7, Pg. 2171-2216.

[41] Miller, M. H. and Modigliani, F. (Oct. 1961). "Dividend Policy, Growth, and the Valuation of Shares". *Journal of Business.* Vol. 34, Issue No. 4, Pg. 411-433.

[42] Miller, M. H. and Rock, K. (Sept. 1985). "Dividend Policy under Asymmetric Information". *Journal of Finance.* Vol. 40, Issue No. 4, Pg. 1031-1051.

[43] Morck, R. and Nakamura, M. (Feb. 1999). "Banks and Corporate Control in Japan". *Journal of Finance.* Vol. 54, Issue No. 1, Pg. 319-339.

[44] Morck, R., Nakamura, M. and Shivdasani, A. (Oct. 2000). "Banks, Ownership Structure, and Firm Value in Japan". *Journal of Business.* Vol. 73, Issue No. 4, Pg. 539-567.

[45] Prowse, S. D. (July 1992). "The Structure of Corporate Ownership in Japan". *Journal of Finance.* Vol. 47, Issue No. 3, Pg. 1121-1140.

[46] Pinkowitz, L., Stulz, R. and Williamson R. (Dec. 2006). "Does the Contribution of Corporate Cash Holdings and Dividends to Firm Value Depend on Governance? A Cross-country Analysis". *Journal of Finance*. Vol. 61, Issue No. 6, Pg. 27252751.

[47] Schaede, U. (Oct. 2006a). "The Strategic Logic of Japanese Keiretsu, Main Banks and Cross-Shareholdings Revisited". *Centre on Japanese Economy and Business Working Paper series, Columbia University* http://digitalcommons.libraries.columbia.edu/japanwps/243.

[48] Schaede, U. (Oct. 2006b). "Competition for corporate control: Institutional investors, investment funds, and hostile takeovers in Japan". *Centre on Japanese Economy and Business Working Paper series, Columbia University.*

[49] Skinner, D. J. (Mar. 2008). "The Evolving Relation between Earnings, Dividends, and Stock RepurchasesAre". *Journal of Financial Economics*. Vol. 87, Issue No. 3, Pg. 582-609.

[50] von Eije, H. and Megginson, W. L. (Aug. 2008). "Dividends and Share Repurchases in the European Union". *Journal of Financial Economics*. Vol. 89, Issue No. 2, Pg. 347-374.

[51] Wood, A. (2001). "Death of the dividend? CFO Europe research report"'. *The Economist Group, London.*

[52] Wu, X. and Xu, L. L. (Jan. 2005). "The Value Information of Financing Decisions and Corporate Governance during and after the Japanese Deregulation". *Journal of Business*. Vol. 78, Issue No. 1, Pg. 243-280.

Figure 1: Number of industrial firms in Japan paying cash dividends and repurchasing shares, 1990 to 2008

Figure 1a: Cash dividends
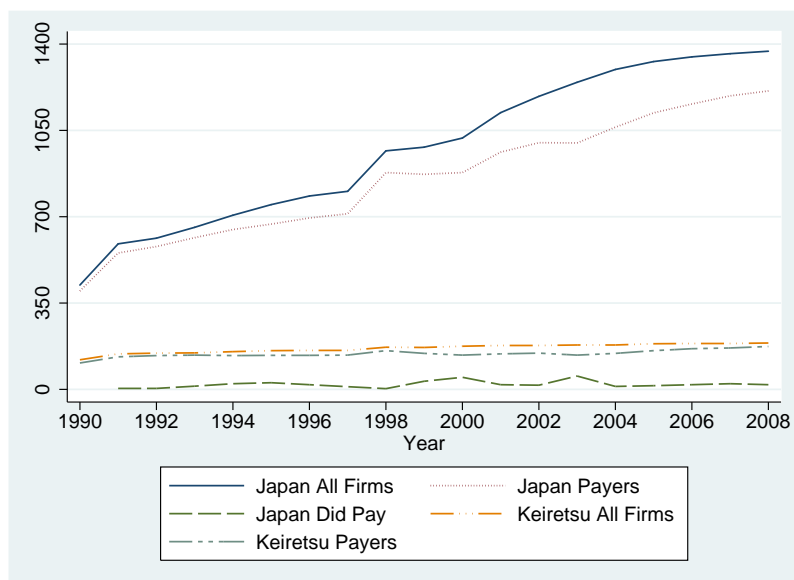
Figure 1b: Share repurchases
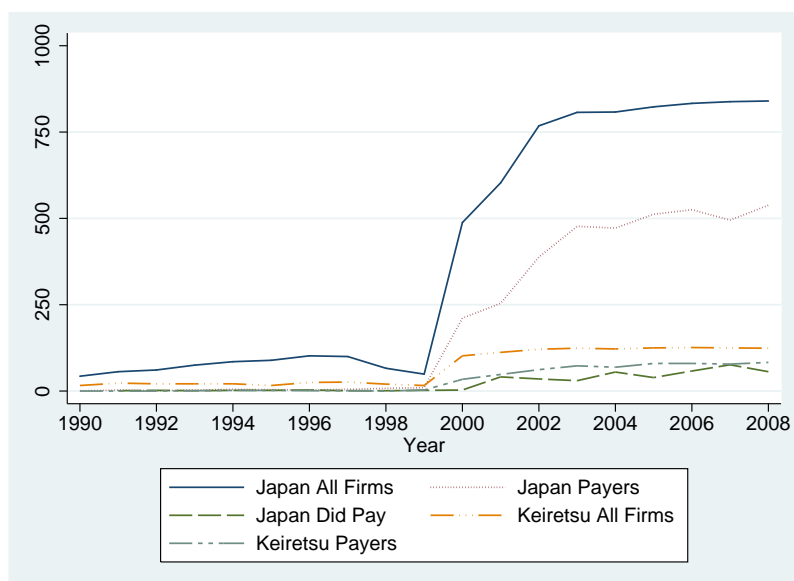
Notes. The figure's key is explained as follows. The reference Japan All Firms refers to the total number of firms observed in Japan, disclosing their payout policies, in a particular year. Of these, firms which pay cash dividends or repurchase shares in a particular year are referred to as Japan Payers. The firms which choose to discontinue payout in a specific year, although they were involved in payout in the previous year, are referred to with the reference Japan Did Pay . The reference Keiretsu All Firms refers to the total number of Keiretsu firms observed in Japan, disclosing their payout policies, in a particular year. Of these, firms which pay cash dividends or repurchase shares in a particular year are referred to as Keiretsu Payers.

Figure 2: Payout by industrial firms in Japan, in billions of real (1990 prices) Yen, 1990 to 2008

Figure 2a: Japan
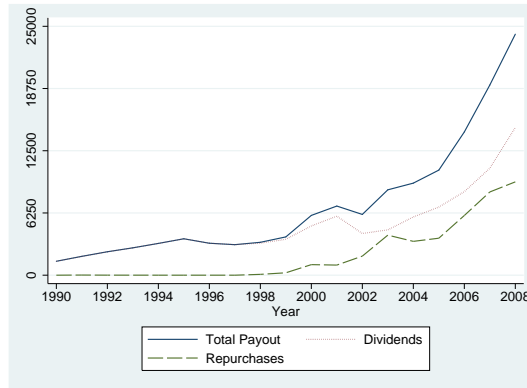
Figure 2b: Keiretsu
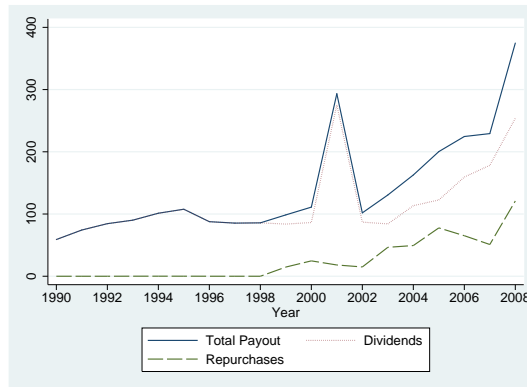
Figure 2c: Non-Keiretsu
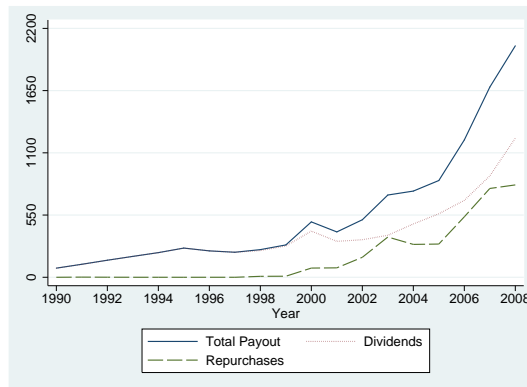
Notes. The figure's key is explained as follows. The key reference Total Payout indicates the total real payout in Yen for a specific year. The references Dividends and Repurchases indicate the real payout in Yen for a specific year, in terms of cash dividends and share repurchases, respectively.

Table 1: **Description of the variables used in the random effects panel regression models.**

Regressors	Description
Cash Dividends (DIV)	The logarithm of the total real value of common cash dividends distributed by the firm, in Japanese Yen 1990 prices. The logistic random effects panel regression models are specified to include a dummy variable =1 if cash dividends are paid, otherwise zero.
Share Repurchases (SR)	The logarithm of the total real value of open market share repurchases undertaken by the firm, in Japanese Yen 1990 prices. The logistic random effects panel regression models are specified to include a dummy variable =1, if share repurchases occur, otherwise zero.

Regressands	Description
Firm Ownership (OWN)	The percentage of common stock held by the ten largest shareholders.
Cash Holding (CASH)	The sum of cash and short term investments as a percentage of the total assets of the firm.
Leverage Rate (LR)	The sum of short-term and long-term debt as a percentage of total assets.
Age of the firm (AGE)	Calculated as the difference between the year of incorporation of the firm and the most recent year. *Source*: Amadeus
Retained Earnings (RETE)	The retained earnings as a percentage of the market value of firm equity.
Asset Growth (DAA)	The relative (percentage) change in the real value of total assets.
Market to Book Value (MBF)	The market to book value of the firm.
Market Value (SIZE)	Percentile ranking (annual) of a firm with respect to the criterion of market value.
Earnings Ratio (EA)	The firm earnings before interest but after tax as a percentage of total assets.
Catering Theory Proxy Variable (CCD)	A dummy variable (annual), which indicates whether the cash dividend payer (share repurchaser) has a higher median logarithmic median MBF than the cash dividend (share repurchaser) non payer. If true, dummy = 1 otherwise it's zero. A further requirement for a year specific non-zero dummy variable is a minimum of five observations for both payers and non-payers.
Earning Reporting Frequency (ERF)	The frequency (1 to 4 times) at which earnings are reported per annum. 4 = Annual and 1 = Quarterly Reporting.
Cash-Flow Uncertainty (VOL24)	The standard deviation of stock returns over the most recent three year period
Operating Profitability Volatility (INCV)	The standard deviation of the operating rate of return (*i.e.*, operating income as a percentage of total assets) during the most recent three year period, including the current fiscal year.
Income Risk (SDS)	The standard deviation of the net income during the most recent five year period divided by the most recent year-specific total sales.
Year (YEAR)	Year of Observation.
Privatized (PRIV)	A dummy variable, which indicates whether a company is privatized. If true, dummy=1, otherwise zero. Privatization means the firm was once owned by the state, but this is no longer the case.
Stock Return (DPP)	The annual percentage change in stock price measured at the end of the previous year.
Constant (CONST)	The intercept of the regression equation.

Table 2: **Cash dividend and share repurchase data for industrial firms in Japan, 1990 to 2008**

Year	Number of listed firms	Firms with cash dividend data available	Firms that pay cash dividends	Firms that do not pay cash dividends	Firms that abandon cash dividends	Firms with share repurchase data available	Firms that repurchase shares	Firms that do not repurchase shares	Firms that abandon share repurchase	Firms with data available for both dividends and repurchase	Firms that only pay cash dividends	Firms that only repurchase shares	Firms that pay both dividends and share repurchases	Amount paid in real cash dividends	Real amount paid to repurchase shares	Real value of total payout
1990	1226	423	399	24		43	1	42		43	41	0	1	139.86	0.01	139.87
1991	1346	590	553	37	4	56	3	53	1	56	52	0	3	188.04	1.36	189.41
1992	1371	613	579	34	4	61	1	60	2	61	60	0	1	234.81	0.50	235.31
1993	1381	657	615	42	13	75	3	72	1	75	71	0	3	274.60	0.22	274.83
1994	1438	706	648	58	23	85	5	80	2	85	79	0	5	319.01	0.14	319.15
1995	1505	749	670	79	27	89	4	85	2	89	84	0	4	365.74	0.10	365.84
1996	1550	784	695	89	19	102	3	99	3	102	98	0	3	321.03	0.06	321.09
1997	1603	803	712	91	11	100	5	95	1	100	94	0	5	306.70	0.02	306.72
1998	1746	967	879	88	3	66	8	58	1	66	58	0	8	321.91	8.40	330.30
1999	1804	982	872	110	33	49	10	39	2	49	37	0	10	360.37	24.13	384.50
2000	1875	1019	879	140	49	488	211	277	3	488	242	14	197	494.56	106.09	600.65
2001	1909	1122	962	160	19	603	254	349	41	602	304	17	237	592.84	101.51	694.35
2002	1971	1188	1000	188	17	768	388	380	35	767	320	19	369	418.83	191.52	610.36
2003	2034	1245	999	246	54	807	477	330	30	804	269	39	436	455.33	402.32	857.64
2004	2119	1297	1063	234	12	808	472	336	55	806	279	25	445	584.83	339.85	924.68
2005	2202	1329	1121	208	15	823	512	311	39	822	270	23	489	684.09	371.49	1055.58
2006	2304	1348	1157	191	19	833	525	308	58	832	279	32	493	839.03	599.68	1438.70
2007	2364	1361	1190	171	23	838	495	343	76	838	310	19	476	1074.16	835.96	1910.12
2008	2404	1371	1210	161	19	840	538	302	56	839	265	11	526	1483.16	937.50	2420.66
Total	34152	18554	16203	2351	364	7534	3915	3619	408	7524	3212	199	3711	9458.91	3920.86	13379.77

Notes. The table indicates an annual summary of the total number of Japanese firms observed corresponding to Figure 1. In addition, it presents an annual summary of the number of observations of firms which disclose both their cash dividend and their share repurchase policies, the observed number of firms which pay only cash dividends or conduct only share repurchases and the table presents the annual summary of the number of observations of firms which conduct both types of payout. The table also presents the real value of total payout, cash dividends and share repurchases each year in billions of Yen (1990 prices).

Table 3: **The real value (1990 prices) of payout in billions of Japanese Yen, 1990 to 2008**

	Cash Dividends			Share Repurchases			Total Payout		
Year	Japan	Keiretsu	Non-Keiretsu	Japan	Keiretsu	Non-Keiretsu	Japan	Keiretsu	Non-Keiretsu
1990	139.86 (0.35)	59.02 (0.55)	80.84 (0.28)	0.01 (0.01)	0.00 0.00	0.01 (0.01)	139.87 (0.35)	59.02 (0.55)	80.85 (0.28)
1991	188.04 (0.34)	74.31 (0.56)	113.73 (0.27)	1.36 (0.45)	0.00 0.00	1.36 (0.45)	189.41 (0.34)	74.31 (0.56)	115.10 (0.27)
1992	234.81 (0.41)	84.50 (0.62)	150.31 (0.34)	0.50 (0.50)	0.00 0.00	0.50 (0.50)	235.31 (0.41)	84.50 (0.62)	150.81 (0.34)
1993	274.60 (0.45)	90.06 (0.65)	184.55 (0.39)	0.22 (0.07)	0.08 (0.08)	0.14 (0.07)	274.83 (0.45)	90.14 (0.65)	184.69 (0.39)
1994	319.01 (0.49)	101.18 (0.74)	217.83 (0.43)	0.14 (0.03)	0.11 (0.06)	0.03 (0.01)	319.15 (0.49)	101.30 (0.74)	217.86 (0.43)
1995	365.74 (0.55)	107.64 (0.78)	258.10 (0.49)	0.10 (0.03)	0.08 (0.04)	0.02 (0.01)	365.84 (0.55)	107.72 (0.78)	258.13 (0.49)
1996	321.03 (0.46)	87.70 (0.64)	233.33 (0.42)	0.06 (0.02)	0.02 (0.02)	0.03 (0.02)	321.09 (0.46)	87.72 (0.64)	233.37 (0.42)
1997	306.70 (0.43)	85.41 (0.61)	221.30 (0.39)	0.02 (0.00)	0.01 (0.01)	0.02 (0.00)	306.72 (0.43)	85.41 (0.61)	221.31 (0.39)
1998	321.91 (0.37)	85.79 (0.55)	236.12 (0.33)	8.40 (1.05)	0.00 0.00	8.40 (1.05)	330.30 (0.38)	85.79 (0.55)	244.52 (0.34)
1999	360.37 (0.41)	83.83 (0.57)	276.54 (0.38)	24.13 (2.41)	14.78 (4.93)	9.35 (1.34)	384.50 (0.44)	98.62 (0.68)	285.89 (0.39)
2000	494.56 (0.56)	86.35 (0.62)	408.20 (0.55)	106.09 (0.50)	24.72 (0.73)	81.37 (0.46)	600.65 (0.67)	111.07 (0.78)	489.58 (0.65)
2001	592.84 (0.62)	275.23 (1.91)	317.62 (0.39)	101.51 (0.40)	18.12 (0.38)	83.39 (0.40)	694.35 (0.71)	293.34 (1.98)	401.01 (0.48)
2002	418.83 (0.42)	86.96 (0.59)	331.87 (0.39)	191.52 (0.49)	14.93 (0.24)	176.59 (0.54)	610.36 (0.60)	101.89 (0.67)	508.46 (0.59)
2003	455.33 (0.46)	84.10 (0.61)	371.23 (0.43)	402.32 (0.84)	46.49 (0.64)	355.83 (0.88)	857.64 (0.83)	130.58 (0.87)	727.06 (0.82)
2004	584.83 (0.55)	113.41 (0.78)	471.42 (0.51)	339.85 (0.72)	49.34 (0.72)	290.51 (0.72)	924.68 (0.85)	162.75 (1.07)	761.93 (0.81)
2005	684.09 (0.61)	122.63 (0.78)	561.46 (0.58)	371.49 (0.73)	77.70 (0.97)	293.79 (0.68)	1055.58 (0.92)	200.33 (1.24)	855.25 (0.87)
2006	839.03 (0.73)	159.42 (0.97)	679.60 (0.69)	599.68 (1.14)	65.16 (0.81)	534.52 (1.20)	1438.70 (1.21)	224.58 (1.31)	1214.12 (1.19)
2007	1074.16 (0.90)	178.24 (1.06)	895.93 (0.88)	835.96 (1.69)	51.02 (0.65)	784.93 (1.88)	1910.12 (1.58)	229.26 (1.35)	1680.86 (1.62)
2008	1483.16 (1.23)	253.79 (1.46)	1229.37 (1.19)	937.50 (1.74)	120.96 (1.46)	816.54 (1.79)	2420.66 (1.98)	374.75 (2.13)	2045.91 (1.96)
Total	9458.91 (0.58)	2219.55 (0.81)	7239.36 (0.54)	3920.86 (1.00)	483.52 (0.78)	3437.35 (1.04)	13379.77 (0.82)	2703.07 (0.97)	10676.70 (0.78)

Notes. The table indicates the payout amounts in relation to either cash dividends or repurchases in billions of Japanese Yen (1990 prices) by the industrial firms in Japan, both *keiretsu* and non-*keiretsu* firms. Figures presented in brackets correspond to the 'per-capita' or average payout per firm in billions of Japanese Yen (1990 prices).

Table 4: **The decile distribution of real cash dividends and share repurchases for the Japanese, Keiretsu and Non - Keiretsu industrial firms for the years 1990, 1999 and 2008**

| | Japan | | | | | | Keiretsu | | | | | | | | Non - Keiretsu | | | | | |
| | Cash Dividends | | | Share Repurchases | | | Cash Dividends | | | | Share Repurchases | | | | Cash Dividends | | | Share Repurchases | | |
	1990	1999	2008	1990	1999	2008	1990	1998	1999	2008	1990	1998	1999	2008	1990	1999	2008	1990	1999	2008
10th	0.35	0.00	0.00	0.00	0.00	0.02	0.00	0.09	0.00	0.04	0.00	0.00	0.00	0.02	0.76	0.00	0.00	0.00	0.00	0.02
20th	1.48	0.76	0.33	0.00	0.13	0.04	0.62	0.90	0.49	0.63	0.00	0.00	0.00	0.09	2.00	0.85	0.28	0.00	0.00	0.03
30th	2.23	1.73	0.97	0.00	0.65	0.11	1.29	1.58	1.32	1.10	0.00	0.00	0.00	0.03	2.94	1.85	0.93	0.00	0.00	0.13
40th	2.95	2.51	1.52	0.00	1.78	0.26	1.76	2.09	1.92	1.50	0.00	0.00	0.20	0.20	3.82	2.69	1.52	0.00	6.27	0.27
50th	3.65	3.35	2.24	100.00	0.00	0.86	2.24	2.69	2.67	2.29	0.00	0.00	0.00	0.25	4.65	3.56	2.25	0.00	0.00	0.95
60th	4.84	4.45	3.20	0.00	4.06	0.77	3.18	3.79	4.03	3.16	0.00	0.00	0.00	0.48	6.03	4.64	3.20	100.00	0.00	0.87
70th	6.33	5.95	4.47	0.00	11.20	2.11	4.33	4.98	5.39	4.73	0.00	0.00	9.79	1.64	7.78	6.18	4.47	0.00	10.47	2.08
80th	8.51	8.59	7.18	0.00	4.67	3.57	5.47	8.28	8.33	6.92	0.00	0.00	0.00	2.90	10.74	8.75	7.38	0.00	13.43	3.85
90th	12.15	13.75	12.90	0.00	22.31	11.22	8.48	12.73	13.94	17.62	0.00	0.00	0.00	16.97	14.84	13.96	12.86	0.00	12.05	8.86
100th	57.50	58.92	67.20	0.00	55.21	81.04	72.62	62.87	61.89	62.01	0.00	0.00	90.00	77.42	46.45	57.51	67.11	0.00	57.77	82.94
Total	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	0.00	0.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Amt. B. JPY	139.86	360.37	1483.16	0.01	24.13	937.50	59.02	857.88	83.83	253.79	0.00	0.00	14.78	120.96	80.84	276.54	1229.37	0.01	9.35	816.54
Observation	423	982	1371	43	49	840	120	171	170	188	16	20	16	124	303	812	1183	27	33	716
Herfindahl	0.362	0.381	0.477	1.000	0.371	0.671	0.542	0.424	0.415	0.424	0.000	0.000	0.820	0.629	0.264	0.366	0.476	1.000	0.381	0.698

Notes. Obs. indicates the number of observations used in the calculation. Amt. presents the amounts, in billions of Japanese Yen (1990 prices), disbursed with regard to either cash dividends or share repurchases. Herf. is the value of the Herfindahl index, which represents an equal distribution over the deciles if its value is 0.10, while the highest possible concentration is indicated by a Herfindahl value of 1.00.

Table 5: **Accounting for changing firm characteristics, is there a declining propensity to pay cash dividends by the industrial firms in Japan?**

	Japan					Keiretsu					Non - Keiretsu				
Year	Total firms (no.)	Actual payers (no.)	Actual payers (%)	Expected payers (%)	Expected (%) - Actual (%)	Total firms (no.)	Actual payers (no.)	Actual payers (%)	Expected payers (%)	Expected (%) - Actual (%)	Total firms (no.)	Actual payers (no.)	Actual payers (%)	Expected payers (%)	Expected (%) - Actual (%)
1990 -															
1999	727	662	91.06%			165	147	89.09%			563	516	91.65%		
2000	1019	879	86.26%	92.57%	6.31%	190	151	79.47%	96.02%	16.55%	829	728	87.82%	90.22%	2.40%
2001	1122	962	85.74%	89.95%	4.21%	194	157	80.93%	90.16%	9.24%	928	805	86.75%	87.19%	0.44%
2002	1188	1000	84.18%	90.44%	6.27%	194	160	82.47%	91.54%	9.07%	994	840	84.51%	87.34%	2.83%
2003	1245	999	80.24%	93.59%	13.35%	196	150	76.53%	96.37%	19.84%	1049	849	80.93%	91.67%	10.73%
2004	1297	1063	81.96%	94.40%	12.44%	196	159	81.12%	96.57%	15.44%	1101	904	82.11%	93.58%	11.48%
2005	1329	1121	84.35%	92.59%	8.24%	201	169	84.08%	94.30%	10.22%	1128	952	84.40%	91.62%	7.22%
2006	1348	1157	85.83%	91.33%	5.50%	202	176	87.13%	92.56%	5.43%	1146	981	85.60%	89.75%	4.15%
2007	1361	1190	87.44%	93.15%	5.71%	201	180	89.55%	98.08%	8.53%	1160	1010	87.07%	91.21%	4.15%
2008	1371	1210	88.26%	93.56%	5.30%	204	186	91.18%	98.37%	7.20%	1167	1024	87.75%	91.24%	3.50%

Notes. Our base period extends from 1990-1999 and comprises of all firms observed during this period. The number of firms per year, or the average per period, is detailed in the column 'Total firms (no.)'. The explanatory variables, specified in our logit regressions, are the earnings ratio (EA), the asset growth rate (DAA), the market value (SIZE) and the market-to-book value of the firm (MBF). The 'Actual payers (%)' figures reflects the observed ratio of payers to total firms times 100. The 'Expected payers (%)' figures are computed by adopting the arithmetic mean of the yearly regression coefficients during the base period, 1990-1999, and using updated data on the observed explanatory variables period-by-period to estimate the probability that each firm would pay in each subsequent period, averaging that probability across firms for each year, and multiplying the result times 100. The 'Expected (%) - Actual (%)' is the propensity to pay *i.e.* it reflects the percent differential between anticipated and realized payout.

Table 6: Random effects panel regression for the likelihood to pay and the real amounts paid by listed industrial cash dividend payers and by share repurchasers in Japan, 1990 to 2008 and two subperiods (for cash dividends only).

	Likelihood to pay								Amount paid							
	Cash dividends						Share repurchases		Cash dividends						Share repurchases	
	1990 - 2008		1990 - 1999		2000 - 2008		1990 - 2008		1990 - 2008		1990 - 1999		2000 - 2008		1990 - 2008	
	C	**P**	**C**	**P**	**C**	**P**	**C**	**P**	**C**	**P**	**C**	**P**	**C**	**P**	**C**	**P**
AGE_t	0.00	0.89	0.00	0.57	0.00	0.79	0.01^a	0.00	0.00	0.01	0.00^c	0.33	0.00	0.25	0.00	0.12
$SIZE_{t-1}$	0.07	0.00	0.08	0.00	0.09	0.00	0.01^a	0.00	0.02^a	0.00	0.02^c	0.00	$0.03^{b,d}$	0.00	0.04^a	0.00
$RETE_{t-1}$	0.00	0.86	0.00^c	0.67	0.00^b	0.75	0.00	0.88	0.00	0.09	0.00	0.29	0.00^b	0.22	0.00	0.11
OWN_{t-1}	0.00	0.81	0.02^c	0.18	0.00	0.73	-0.02^a	0.00	-0.01	0.00	-0.01	0.00	-0.01	0.00	-0.01	0.00
$CASH_{t-1}$	0.00^a	0.54	0.03	0.02	-0.01^b	0.24	0.00	0.48	0.00	0.01	0.00	0.00	0.00	0.16	0.01	0.01
LR_{t-1}	-0.10	0.00	-0.12	0.00	-0.12^b	0.00	-0.02	0.00	0.00	0.00	0.00	0.85	0.00^d	0.07	0.00	0.38
EA_{t-1}	0.15^a	0.00	0.27^c	0.00	$0.11^{b,d}$	0.00	-0.01	0.40	0.03	0.00	0.02	0.00	0.03^d	0.00	0.00	0.87
DAA_{t-1}	0.00	0.25	0.01	0.27	0.00	0.65	0.00	0.69	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.51
MBF_{t-1}	0.00^a	0.84	-0.01	0.76	0.00^b	0.94	0.00	0.44	-0.02	0.07	-0.12	0.00	-0.03	0.01	0.00	0.51
$Vol24_{t-1}$	0.00	0.73	-0.01	0.09	0.00	0.82	0.00	0.46	0.00^a	0.40	0.00	0.00	$0.00^{b,d}$	0.36	0.00	0.49
$INCV_{t-1}$	-0.07	0.00	-0.09	0.00	-0.10	0.00	0.02	0.18	0.00	0.73	0.01	0.00	-0.01	0.21	0.01	0.18
SDS_{t-1}	-0.23^a	0.00	-0.31	0.00	-0.22^d	0.00	-0.03	0.02	-0.02	0.00	-0.01	0.30	-0.02	0.00	-0.01	0.56
ERF_{t-1}	0.24	0.02	0.04	0.80	0.12	0.52	-0.12	0.08	0.05	0.00	0.05	0.00	-0.03^d	0.02	-0.11	0.11
CCD_{t-1}	-0.53	0.00	N/A		-0.92	0.01	-0.31	0.04	-0.13	0.00	N/A		0.08^d	0.00	0.21	0.20
DPP_{t-1}	0.00	0.02	-0.01	0.02	0.00	0.10	0.00	0.89	0.00^a	0.00	0.00^c	0.12	0.00	0.00	0.00	0.00
$PRIV$	22.03	0.00	21.84	0.00	21.74	0.00	-0.64	0.47	1.32^a	0.00	1.20^c	0.10	1.22^b	0.00	1.14^a	0.15
$YEAR_t$	-0.05	0.07	-0.07	0.26	-0.01	0.90	0.35	0.00	0.02^a	0.00	-0.03	0.00	0.10^d	0.00	0.03	0.32
$CONST$	106.58	0.05	151.66	0.24	30.34	0.86	-702.14	0.00	-45.03^a	0.00	62.05^c	0.00	$-209.44^{b,d}$	0.00	-64.49	0.30
Obser.	10806		4508		6298		6358		9784		4000		5784		3572	
Group	1091		750		1077		841		1053		721		981		676	
Wald	439.80		188.25		152.86		644.48		2682.38		N/A		2241.64		258.87	
Prob.	0.000		0.000		0.000		0.000		0.000		N/A		0.000		0.000	
R^2 wit.									34.78%		17.79%		36.82%		0.68%	
R^2 bet.									70.74%		78.59%		66.04%		25.70%	
R^2 ove.									63.42%		73.95%		60.90%		16.50%	

Notes. Table 1 provides a description of the specified explanatory variables. The dependent variable for the likelihood to pay applies here to cash dividends (share repurchases) is a dummy that takes the value of 1 if a company pays dividends (repurchases shares), and zero if its payout is zero. The dependent variable for the amount paid is the natural logarithm of the amount of cash dividends (share repurchases) paid by cash dividend (share repurchases) payers in 100 million Japanese Yen in 1990 prices. The symbol C corresponds to the regression coefficient of each explanatory variable and P corresponds to the the level of significance of the z-value calculated using a bootstrap technique 500 times (for likelihood to pay) and a robust estimation technique at firm level (for the amount paid). Except for the explanatory variables YEAR, PRIV and AGE, all variables are specified with a one year lag. The term 'Observation' corresponds to the total number of observations for which information was available. Group is the number of groups for which observations were available. Wald is the Wald chi-square statistics of the equation for seventeen independent variables and Probability indicates the significance of the equation Wald chi-square statistic. R^2 wit. is the within group R-square statistic, R^2 bet. is the between groups R-square statistic and R^2 ove. is the overall R-square statistic. Coefficient superscripts 'a', 'b' and 'c' correspond to a statistically significant difference across the corresponding time-period specific coefficients for *keiretsu* and non-*keiretsu* firms. Coefficient superscript 'd' indicates a statistically significant change in the corresponding coefficient over time.

Table 7: **Logistic random effects panel regression for the likelihood to pay cash dividends and make share repurchases by the Keiretsu and Non - Keiretsu industrial firms, 1990 to 2008 and two subperiods (for cash dividends only).**

	Keiretsu								Non - Keiretsu							
	Cash dividends						Share repurchases		Cash dividends						Share repurchases	
	1990 - 2008		1990 - 1999		2000 - 2008		1990 - 2008		1990 - 2008		1990 - 1999		2000 - 2008		1990 - 2008	
	C	**P**	**C**	**P**	**C**	**P**	**C**	**P**	**C**	**P**	**C**	**P**	**C**	**P**	**C**	**P**
AGE_t	0.00	0.80	-0.01	0.54	0.01	0.54	-0.02	0.03	0.00	0.83	0.00	0.91	0.00	0.92	0.02	0.00
$SIZE_{t-1}$	0.06	0.00	0.08	0.00	0.06	0.00	0.00	0.91	0.08	0.00	0.08	0.00	0.09	0.00	0.02	0.00
$RETE_{t-1}$	0.00	0.12	-0.01	0.06	0.01^d	0.07	0.00	0.63	0.00	0.91	0.00	0.40	0.00	0.29	0.00	0.71
OWN_{t-1}	-0.02	0.20	-0.04	0.24	-0.01	0.63	-0.04	0.00	0.01	0.36	0.05	0.02	0.01	0.43	-0.02	0.00
$CASH_{t-1}$	0.02	0.11	0.02	0.33	0.02	0.31	0.01	0.33	-0.02	0.03	0.02	0.16	-0.02^d	0.03	0.00	0.64
LR_{t-1}	-0.11	0.00	-0.14	0.00	-0.18	0.00	0.00	0.85	-0.09	0.00	-0.11	0.00	-0.10	0.00	-0.02	0.00
EA_{t-1}	0.26	0.00	0.58	0.00	0.24^d	0.00	-0.04	0.32	0.13	0.00	0.22	0.00	0.10^d	0.00	-0.01	0.48
DAA_{t-1}	0.00	0.58	-0.01	0.40	0.00	0.86	0.00	0.63	0.01	0.30	0.02	0.08	0.00	0.67	0.00	0.88
MBF_{t-1}	-0.18	0.10	-0.37	0.13	0.37^d	0.07	-0.03	0.68	0.01	0.54	0.01	0.87	0.01	0.57	0.01	0.38
$Vol24_{t-1}$	0.00	0.99	-0.03	0.02	0.00	0.85	0.00	0.36	0.00	0.71	-0.01	0.46	0.00	0.85	0.00	0.45
$INCV_{t-1}$	-0.06	0.09	0.02	0.73	-0.17	0.06	0.01	0.82	-0.08	0.00	-0.15	0.00	-0.10	0.00	0.02	0.16
SDS_{t-1}	-0.32	0.00	-0.32	0.00	-0.31	0.01	-0.06	0.31	-0.21	0.00	-0.31	0.00	-0.21^d	0.00	-0.02	0.07
ERF_{t-1}	0.14	0.39	0.06	0.87	0.02	0.97	-0.03	0.88	0.31	0.01	0.06	0.77	0.27	0.22	-0.13	0.09
CCD_{t-1}	-0.86	0.01	N/A		-1.60	0.02	0.08	0.83	-0.33	0.14	N/A		-0.62	0.13	-0.39	0.02
DPP_{t-1}	0.00	0.54	-0.02	0.05	0.00	0.89	0.00	0.29	0.00	0.03	0.00	0.23	0.00	0.03	0.00	0.53
$PRIV$	18.51	0.00	404.58	N/A	17.59	0.00	0.31	0.93	19.92	0.99	18.99	1.00	22.03	0.00	-0.62	0.48
$YEAR_t$	-0.01	0.90	-0.23	0.10	-0.06	0.78	0.48	0.00	-0.08	0.02	-0.05	0.49	-0.06	0.53	0.32	0.00
$CONST$	20.62	0.84	465.67	0.09	120.34	0.76	-955.88	0.00	165.31	0.01	110.67	0.48	132.67	0.51	-647.88	0.00
Obser.	2308		1148		1160		1244		8498		3360		5138		5114	
Group	190		168		187		136		901		582		890		705	
Wald	140.61		N/A		49.10		152.66		317.72		145.12		141.90		495.15	
Prob.	0.000		N/A		0.000		0.000		0.000		0.000		0.000		0.000	

Notes. Table 1 provides a description of the specified explanatory variables. The dependent variable for the likelihood to pay applies here to cash dividends (share repurchases) is a dummy that takes the value of 1 if a company pays dividends (repurchases shares), and zero if its payout is zero. The symbol C corresponds to the regression coefficient of each explanatory variable and P corresponds to the the level of significance of the z-value calculated using bootstrap technique 500 times. Except for the explanatory variables YEAR, PRIV and AGE, all variables are specified with a one year lag. The term 'Observation' corresponds to the total number of observations for which information was available. Group is the number of groups for which observations were available. Wald is the Wald chi-square statistics of the equation for seventeen independent variables and Probability indicates the significance of the equation Wald chi-square statistic.

Table 8: **Random effects panel regressions for the real amounts paid by listed industrial Keiretsu and Non - Keiretsu cash dividend payers and share repurchasers, 1990 to 2008 and two sub-periods (for cash dividends only).**

	Keiretsu								Non - Keiretsu							
	Cash dividends						Share repurchases		Cash dividends						Share repurchases	
	1990 - 2008		1990 - 1999		2000 - 2008		1990 - 2008		1990 - 2008		1990 - 1999		2000 - 2008		1990 - 2008	
	C	P	C	P	C	P	C	P	C	P	C	P	C	P	C	P
AGE_t	0.00	0.52	0.00	0.11	0.00	0.75	0.00	0.41	0.00	0.05	0.00	0.60	0.00	0.30	0.00	0.15
$SIZE_{t-1}$	0.03	0.00	0.03	0.00	0.03	0.00	0.05	0.00	0.02	0.00	0.02	0.00	0.03^d	0.00	0.03	0.00
$RETE_{t-1}$	0.00	0.21	0.00	0.00	0.01^d	0.00	0.00	0.94	0.00	0.14	0.00	0.66	0.00^d	0.32	0.00	0.02
OWN_{t-1}	-0.01	0.03	-0.01	0.05	-0.01	0.05	0.00	0.85	-0.01	0.00	-0.01	0.00	-0.01	0.00	-0.02	0.00
$CASH_{t-1}$	0.01	0.01	0.00	0.05	0.00	0.12	0.00	0.72	0.00	0.05	0.00	0.01	0.00	0.27	0.01	0.01
LR_{t-1}	0.00	0.37	0.00	0.78	0.00^d	0.55	-0.01	0.38	0.00	0.01	0.00	0.96	0.00^d	0.06	0.00	0.56
EA_{t-1}	0.03	0.00	0.03	0.01	0.03^d	0.01	-0.04	0.09	0.03	0.00	0.01	0.00	0.03^d	0.00	0.00	0.80
DAA_{t-1}	0.00	0.00	0.00	0.00	0.00	0.07	0.01	0.35	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.59
MBF_{t-1}	-0.04	0.12	-0.15	0.00	-0.05^d	0.10	0.00	0.99	-0.01	0.17	-0.11	0.00	-0.03	0.03	0.00	0.59
$Vol24_{t-1}$	0.00	0.00	0.00	0.01	0.00	0.07	-0.01	0.02	0.00	0.45	0.00	0.01	0.00	0.40	0.00	0.19
$INCV_{t-1}$	0.00	0.84	0.01	0.00	-0.01	0.49	0.02	0.77	0.00	0.85	0.01	0.00	-0.01	0.31	0.01	0.28
SDS_{t-1}	-0.03	0.14	-0.01	0.52	-0.01	0.47	0.02	0.54	-0.02	0.00	0.00	0.51	-0.02	0.00	-0.01	0.59
ERF_{t-1}	0.07	0.00	0.08	0.00	-0.05^d	0.16	-0.04	0.83	0.04	0.00	0.04	0.00	-0.03^d	0.04	-0.13	0.10
CCD_{t-1}	-0.09	0.05	N/A		0.07	0.38	0.60	0.13	-0.14	0.00	N/A		0.08^d	0.00	0.11	0.54
DPP_{t-1}	0.00	0.07	0.00	0.00	0.00^d	0.17	0.00	0.29	0.00	0.00	0.00	0.84	0.00	0.00	0.00	0.00
$PRIV$	0.04	0.75	-0.14	0.24	0.12^d	0.34	1.43	0.00	1.52	0.00	1.55	0.07	1.40	0.00	1.17	0.21
$YEAR_t$	0.01	0.08	-0.04	0.00	0.10^d	0.00	0.00	0.98	0.03	0.00	-0.03	0.00	0.11^d	0.00	0.04	0.21
$CONST$	-22.50	0.07	74.48	0.00	-191.55^d	0.00	1.46	0.99	-57.43	0.00	56.17	0.00	-218.39^d	0.00	-84.89	0.19
Obser.	2024		1008		1016		627		7760		2992		4768		2945	
Group	183		160		167		104		870		561		814		572	
Wald	1303.63		N/A		775.59		457.54		2194.46		N/A		2020.76		210.79	
Prob.	0.000		N/A		0.000		0.000		0.000		N/A		0.000		0.000	
R^2 wit.	28.23%		24.88%		27.71%		3.10%		39.00%		16.52%		42.18%		0.85%	
R^2 bet.	78.94%		82.54%		71.56%		41.33%		68.70%		78.15%		65.02%		23.55%	
R^2 ove.	66.06%		77.96%		61.50%		27.87%		63.35%		73.14%		61.79%		14.99%	

Notes. Table 1 provides a description of the specified explanatory variables. The dependent variable for the amount paid is the natural logarithm of the amount of cash dividends (share repurchases) paid by cash dividend (share repurchases) payers in 100 million Japanese Yen in 1990 prices. The symbol C corresponds to the regression coefficient of each explanatory variable and P corresponds to the the level of significance of the z-value calculated using a robust estimation technique at firm level. Except for the explanatory variables YEAR, PRIV and AGE, all variables are specified with a one year lag. The term 'Observation' corresponds to the total number of observations for which information was available. Group is the number of groups for which observations were available. Wald is the Wald chi-square statistics of the equation for seventeen independent variables and Probability indicates the significance of the equation Wald chi-square statistic. R^2 wit. is the within group R-square statistic, R^2 bet. is the between groups R-square statistic and R^2 ove. is the overall R-square statistic.

Table 9: **Estimates of the Lintner (1956) model for industrial firms in Japan, Keiretsu and Non - Keiretsu**

	Japan				Keiretsu				Non-Keiretsu			
	1990 - 1999		2000 - 2008		1990 - 1999		2000 - 2008		1990 - 1999		2000 - 2008	
	C	P	C	P	C	P	C	P	C	P	C	P
Panel A: Cash dividends												
$EBIAT_t$	0.01	0.04	0.08^b	0.00	0.00	0.00	0.05^b	0.04	0.02	0.01	0.05^b	0.06
$Div._{t-1}$	-0.12	0.10	$-0.73^{a;b}$	0.00	-0.07	0.02	-0.92^b	0.00	-0.20	0.14	-0.31^b	0.30
Intercept	0.49	0.01	$2.81^{a;b}$	0.00	0.43	0.00	6.96^b	0.00	0.61	0.07	1.01^b	0.27
N	6055		9809		1300		1541		4755		8268	
$Adj.R^2$ (PoR)	8.74%	0.08	33.53%	0.11	6.10%	0.06	45.75%	0.05	15.25%	0.09	14.55%	0.17
Panel B: Share repurchases												
$EBIAT_t$	0.00	0.07	0.03^b	0.04	0.00	0.35	0.01	0.15	0.00	0.05	0.03^b	0.09
SR_{t-1}	-0.95	0.00	$-0.48^{a;b}$	0.00	-3.25	0.25	-0.92	0.00	-0.94	0.00	-0.45^b	0.00
Intercept	0.85^a	0.04	$3.02^{a;b}$	0.00	1.64	0.32	5.65^b	0.00	0.63	0.01	2.76^b	0.00
N	457		4223		115		645		342		3578	
$Adj.R^2$ (PoR)	6.64%	0.00	19.21%	0.05	0.25%	0.00	38.59%	0.01	23.45%	0.00	18.07%	0.07
Panel C: Total payout												
$EBIAT_t$	0.01	0.01	0.11^b	0.00	0.00	0.05	0.06	0.03	0.02	0.00	0.12^b	0.00
$Tot.Pay._{t-1}$	-0.13	0.07	-0.63^b	0.00	-0.03	0.47	-0.89^b	0.00	-0.25	0.03	-0.57^b	0.01
Intercept	0.57	0.00	$3.87^{a;b}$	0.00	0.38	0.00	9.12^b	0.00	0.71	0.01	2.94^b	0.03
N	6710		10208		1360				5350		8626	
$Adj.R^2$ (PoR)	8.68%	0.09	26.43%	0.18	0.86%	0.09	42.84%	0.06	20.95%	0.09	23.04%	0.21

Notes. The table presents annual estimates and adjusted R square statistics for a stylized (1956) Lintner model for the industrial firms in Japan with at least five cash dividend observations and atleast three share repurchase observation for two time periods; 1990 to 1999 and 2000 to 2008. We use pooled regression analysis with robust standard errors clustered at the firm level for our study. $\Delta D_t = \alpha_0 + \alpha_1 EBIAT_t - \alpha_2 D_{t-1} + \epsilon_t$. ΔD_t corresponds to a contemporary change in payout, $EBIAT$ corresponds to contemporary earnings before interest and after tax, D_{t-1} corresponds to lagged payout by one year. N corresponds to the number of observations and (PoR) to the target payout ratio (α_1/α_2). Coefficient superscript 'a' indicates a statistically significant difference between the corresponding coefficients on *keiretsu* and non-*keiretsu* firms. Coefficient superscript 'b' indicates a statistically significant difference with respect to the corresponding coefficient over time.