

Agency Problems, Product Market Competition and Dividend Policy in Japan

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Abstract

This study investigates whether product market competition reduces agency problems between controlling shareholders and minority shareholders in Japan. We study Japan because of its salient weakness in investor protection and the severity of agency conflicts. In a large sample of Japanese firms we find that Japanese firms in more competitive industries pay more dividends than firms in less competitive industries. Furthermore, the impact of firm-level agency problems on dividend payouts is weaker in highly competitive industries. The results suggest that product market competition is an effective industry-level governance mechanism that can force managers to disgorge cash to outside investors in Japan. The findings have implications for investors in markets with weak investor protection and severe agency problems.

Key words: agency problems; dividends; corporate governance; Japan; product market competition

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1. Introduction

Recent studies find that the agency problems appear to be an important determinant of corporate dividend policy. In general, dividends received by investors, particularly minority shareholders, depend on whether a country's legal system or a company's corporate governance can effectively constrain agency problems and force corporate insiders or controlling shareholders to disgorge cash. For example, La Porta, Lopes-De-Silanes, Shleifer and Vishny (2000, thereafter LLSV) document that dividends are low in countries where legal systems do not provide strong protection to minority shareholders from insider expropriation. Bartram et al. (2008) and Mitton (2004) show that companies with severe agency problems or weak corporate governance pay fewer dividends. These findings suggest that minority investors tend to be the victims of agency conflicts, and that any market mechanism that can force insiders to disgorge cash would be of great interest to these investors. In this study, we explore whether product market competition, an easily identifiable market mechanism, can force companies to make dividend payouts in countries with weak legal protection or in companies with poor corporate governance.

In particular, we examine the impact of product market competition on dividend policy in Japan, the second largest economy in the world. We choose to study the Japanese market primarily because of its salient weaknesses in protecting investor rights and in restraining agency conflicts, the weaknesses that disadvantage Japanese investors in receiving corporate dividends. Japan has a civil law system which provides weaker protection to minority shareholders and is associated with low dividend payments (LLSV 2000). Through a pyramid ownership structure, a few large shareholders in Japan can gain control rights in a company that exceed their ownership rights.¹ The divergence between control rights and ownership rights exacerbates the risk of controlling shareholders

¹ For example, an investor who owns 50% of shares of company X effectively controls the company and its voting rights in all the companies it owns. If company X owns 40% of company Y, the investor would have an ownership in company Y of 20% (= 50% x 40%), but his control rights in company Y would be 40%.

expropriating outside shareholders by not paying any dividends (Faccio, Lang and Young 2001).² These institutional features make Japan a representative of markets with weak investor protection and severe agency problems between controlling shareholders and minority shareholders.³ Therefore, studying dividend policies in Japan should provide insights into how investors in other markets with similar problems can extract dividends from companies. Another advantage to studying Japan is that we are able to obtain reliable data on Japanese firms for a long time period (30 years in our sample), which improves the power of the empirical tests and allows us to examine dividend policy in different economic states.

We focus on product market competition because prior research has shown that competition among firms can be an effective corporate governance mechanism for mitigating agency problems between managers and shareholders (Allen and Gale 2000). Probably because the disciplinary force of market competition can quickly remove incompetent managers, managers in highly competitive industries tend to exert more effort, and their incentives are more likely to be aligned with those of shareholders (see, for example, Hart 1983, Scharfstein 1988, and Raith 2003). In particular, Grullon and Michaely (2007) argue that intense product market competition will force managers to disgorge cash because it increases the risk and the cost of overinvesting for two reasons. First, in a highly competitive industry overinvesting in projects of negative net present value will make the firm less competitive and more likely to be driven out of the market. Second, intense competition makes it easier for outside investors to benchmark managers' performance to the performance of their competitors, increasing the risk of overinvesting being discovered by investors. Consequently, to avoid bankruptcy and the loss of their jobs, managers in more competitive industries will tend to avoid

² In fact, Faccio, Lang and Young (2001, Panel A, Table 4) report that among a group of Asian and European markets, Japan has the lowest ratio of ownership rights to control rights, suggesting that the risk of expropriation by controlling shareholders may be higher in Japan.

³ Dewenter and Warther (1998) argue that Japanese firms may face less information asymmetry and fewer agency conflicts because of the close relation between firms through cross holdings in each other. Their argument is largely focused on the conflicts between managers and shareholders, which are typical in markets with widely dispersed ownership such as in the US and UK. However, they do not consider the agency conflicts between large controlling shareholders and minority shareholders, which are typical in markets with concentrated ownership and control such as in Japan. It is likely that the cross-equity holdings may actually concentrate control rights in a group of controlling shareholders, and intensify agency conflicts between the controlling shareholders and minority shareholders.

overinvesting and are more likely to distribute excess cash to shareholders as dividends. Their empirical evidence is consistent with this argument.

Though Grullon and Michaely (2007) focus exclusively on agency conflicts between managers and shareholders, it is possible that their arguments are applicable to agency problems between controlling shareholders and minority shareholders as well. Faccio, Lang and Young (2001) point out that in Japan and other East Asia markets, the predominant form of ownership is control by a family, which often supplies a top manager. As a result, Japanese managers are more likely to represent the interests of the controlling shareholder, and to some extent, the conflicts between managers and shareholders may take similar forms to those between controlling shareholders and minority shareholders. For example, both managers and controlling shareholders can divert corporate assets to themselves through outright theft or transfer pricing with the entities that are under their control. Managers and controlling shareholders can also use corporate assets to build “corporate empires” and seek private benefits of control without benefiting outside investors. Therefore it seems reasonable to expect that a corporate governance mechanism that mitigates agency conflicts between managers and shareholders can also have some effect on agency problems between controlling shareholders and minority shareholders. If intense product market competition increases the risk and the cost of overinvesting, controlling shareholders will also bear the increased risk and cost if they take negative NPV projects. So the argument in Grullon and Michaely (2007) can apply to agency conflicts between controlling and minority shareholders in Japan. Consequently, we can expect to find that Japanese firms in more competitive industries have fewer agency conflicts and pay more dividends to outside investors.

Using a comprehensive sample of 35,462 observations of listed Japanese firms from 1977 to 2004, we find that Japanese firms in more competitive industries have significantly higher payout ratios than firms in less competitive industries. This result holds after controlling for other factors that can affect dividend policy, such as firm size, profitability, growth opportunities, leverage, life cycle, and stock return volatility. These results consistent with that intense product market competition effectively forcing corporate insiders to disgorge cash to outside shareholders.

To provide more direct evidence on the governance role of product market competition, we next examine whether the impact of firm level agency problems on dividends is weaker in more competitive industries. Following Bartram et al. (2008), we use the percentage of closely-held shares as a measure of firm-level agency problems. Shares are classified by Worldscope database as closely held if they are held by owners of more than 5% ownership, by corporate officers and directors (and their families), or by another corporation. A high fraction of closely-held shares indicates that insiders and large owners gain much of the control of the company, which potentially leads to more severe agency conflicts between controlling shareholders and minority shareholders. Our results show that, first of all, the fraction of closely-held shares is negatively associated with dividend payments in Japan, implying that firms with more severe agency conflicts pay fewer dividends. More importantly, we find that the negative association between closely-held shares and dividend rates is much weaker in industries with intense competition, suggesting that product market competition can effectively mitigate the firm-level agency problems between controlling shareholders and minority shareholders in Japan.

One feature of the Japanese economy is the prolonged recession in the 1990s, following the boom in the 1980s and the market crash in 1990. We argue that agency conflicts over the use of excess free cash flow may be less severe during economic recessions, when firms have much less free cash flows to abuse or expropriate. The recession itself increases the risk of bankruptcy and makes it less likely for firms to overinvest free cash flows. As a result, the impact of product market competition on dividend policies may be less significant in recessions than in booms. The long time-series data in our sample allow us to test this prediction. The results show that the impact of product market competition is concentrated in the period of economic boom, and becomes much weaker during the recession. This finding is consistent with our prediction and suggests that agency conflicts may change over time.

This study contributes to the growing literature on the corporate governance role of product market competition (Allen and Gale 2000). In particular, it extends Grullon and Michaely (2007) and supports the argument that intense competition among firms can effectively curb agency conflicts between controlling shareholders and minority shareholders. Apart from documenting a negative association between market concentration dividends, it provides direct evidence that product market

competition alleviates the impact of firm-level agency conflicts on dividends. It supplements prior research on dividends by showing that, besides country-level legal systems and firm-level corporate governance, the disciplinary force of competition at industry level also has a significant impact on dividend policies. Our results have important implication for investors in markets with weak investor protection and severe agency conflicts. In these markets, minority investors who are concerned about expropriation by controlling shareholders may want to invest in industries with more competition among firms.⁴

The paper proceeds as follows. In section 2, we review the prior studies on agency conflicts and dividends, and discuss the theoretical link between product market competition and dividends policies. Section 3 describes the sample and data used in this study. In section 4, we present empirical results on the association between product market competition and dividend policy in Japan. We conclude the paper in Section 6.

2. Prior Research

2.1. Agency Problems and Dividends Payouts

Miller and Modigliani (1961) demonstrate that in a frictionless market dividends are not related to firm value and thus irrelevant to shareholders. Since then, there have been a large number of studies trying to explain why firms pay dividends (see Allen and Michaely 2003 for an excellent survey on this literature). Traditional theories explain that firms pay dividends in order to signal managers' information to the markets or to meet the demand for payouts from some dividend clienteles. These theories received supportive evidence in the early years, but recent studies have cast doubt on the signaling and clientele effects as the first-order determinants of dividends policies (see, e.g., DeAngelo, DeAngelo and Skinner 2004, Denis and Osobov 2008). By contrast, agency problems seem to become one of the most important determinants of dividends in both US and international markets.

In an important study, LLSV explain in detail how dividends can be used to address agency problems between corporate insiders and outside shareholders. Following the agency theory as in

⁴ Investors surely need to consider expected returns and risks associated with their investments in the highly competitive industries, as well as the risk of being expropriated by controlling shareholders.

Jensen and Meckling (1976), LLSV argue that corporate insiders, such as managers and controlling shareholders, can use the assets under their control for a range of purposes that damage the interests of outside investors. For example, insiders may simply divert corporate assets to themselves, or use corporate assets to pursue investment strategies that give them personal benefits. So unless distributed to outside shareholders as dividends, corporate assets, particularly free cash flows, are subject to potential expropriation by insiders. LLSV further develop and test two models: the outcome model and the substitute model. According to the outcome model, firms pay dividends because minority shareholders use legal rights to pressure corporate insiders or controlling shareholders to disgorge cash. This model predicts that dividends will be higher in countries where legal systems provide strong protection to minority shareholders. According to the substitute model, insiders pay dividends because they want to establish a good reputation for decent treatment of minority shareholders, a reputation that can help reduce the cost of raising capital in the financial market. This model predicts that dividends will be higher in markets with weak investor protection because a good reputation is most valuable in these markets. Using a sample of 33 countries, LLSV document that firms in common law countries, where investor protection is better, make higher dividend payouts than firms in civil law countries. Their evidence supports the outcome model of dividends. Extending LLSV with a more recent and larger sample, Bartram et al. (2008) confirm the dividends are higher in countries with better investor protection.

Besides country-level legal systems, firm-level governance mechanisms could also affect corporate dividend payouts. Mitton (2004) show that, in a sample of 365 firms from 19 countries, firms with better corporate governance pay more dividends, suggesting that strong corporate governance restrains agency problems and provides better protection to outside investors. Bartram et al. (2008) find dividend payouts are negatively related to various measures of firm-level agency problems, implying that agency problems exacerbate the risk of expropriation by insiders and prevent minority shareholders from extracting dividends from the firm.

Though evidence from cross-country studies generally supports the outcome model, several recent papers find supportive evidence for the substitute model in the US market. Officer (2006) find that dividends are higher in firms with large boards and CEO/Chairman duality, suggesting firms with

poor governance seem to pay more dividends. John and Knyazeva (2006) use the Gompers, Ishii and Metrick (2003) index of corporate governance as a proxy for external governance, and find a negative association between the governance index and dividends. These results are consistent with the substitute model that predicts that firms pay dividends to reduce agency costs and to substitute for good corporate governance.

To reconcile the evidence from US studies and from international studies, it is important to recognize that the US market provides strong protection for investors. In such a market, firms that are concerned about potential shareholder lawsuits may find it desirable to distribute dividends and reduce agency costs. So the substitute model may work well in markets with strong legal protection to minority investors' rights. In fact, Bartram et al. (2008) find a "pecking order" in the ability of investor to extract cash from corporate insiders. In this pecking order, country level legal protection tends to be of first-order importance. Without this country level protection, investors' ability to force firms to disgorge cash is limited, regardless of how well the firm's governance is structured. However, we acknowledge that a full reconciliation of the evidence requires further research on the topic.

A recent study by DeAngelo and DeAngelo (2006) proposes a life cycle theory of dividends, which combines the agency models and the evolution of the opportunities set of the firm. The theory posits that a firm's dividend policy depends on whether its internally generated cash flows can cover its growth opportunities and whether agency problems are a real concern. In the early stage of a firm, it has abundant growth opportunities and its internal funds may not be sufficient to finance its investments. The optimal dividend policy for the firm is to pay less or no dividends. For a mature firm with internal funds exceeding growth opportunities, agency problems arising from its free cash flows become a real concern. To address such agency problems, the firm may find it optimal to use its excess cash to pay dividends. To test the theory, DeAngelo, DeAngelo and Stulz (2006) use retained earnings-to-equity ratio as a measure of a firm's life cycle, and find the ratio is positively associated with dividends in a large sample of US firms. Denis and Osobov (2008) extend the test to six developed markets including Japan, and find a positive association between the retained earnings-to-equity ratio and dividends in all six markets. The empirical evidence seems to be consistent with the life cycle theory of dividends.

2.2. Product Market Competition and Dividends

Prior research seems to establish that product market competition can be an effective corporate governance mechanism to reduce agency problems. Theoretical papers focus on how competition among firms affects managerial incentives (see, e.g., Hart 1983, Schmidt 1997, and Raith 2003). Empirical studies provide some evidence that competition intensity is positively associated with productivity (Nickell 1996, Griffith 2001) and cost efficiency in the banking industry (Berger and Hannan 1998). Guadalupe and Pérez-González (2005) find that intense product market competition reduces the private benefits of managerial control, a proxy for agency conflicts between managers and shareholders. Recently, Allen and Gale (2000) argue that product market competition can be a more effective corporate governance mechanism than either institutional monitoring or the market for corporate control.

Building on the work of LLSV, Grullon and Michaely (2007) explain two possible links between dividends and product market competition. In the first link, dividends may be the outcome of product market competition that forces managers to distribute cash, because intense competition increases the risk and the cost of overinvesting for managers. The higher cost of overinvesting is probably due to the fact that, in highly competitive industries, overinvesting in negative NPV projects would make the firm less competitive and more likely to be driven out of the market. Furthermore, competition among firms provides greater opportunities for outside investors to benchmark the firm's performance to the performance of its competitors, reducing the cost of monitoring. Consequently, overinvesting and other agency problems are more likely to be identified by investors who may question and replace managers who destroy firm value. Therefore, managers in highly competitive industries may be forced to avoid negative NPV projects and to make more dividends payments. This link predicts that firms in more competitive industries will pay more dividends.

The second link suggests that dividends may be a substitute for product market competition. This link is based on the assumption that firms in less competitive industries may face higher agency costs related with free cash flows. In industries with weak competition, firms are more likely to generate extraordinary rents, which allow managers to access more free cash flows. Managers in less competitive industries are more likely to overinvest because of the lower risk and cost, due to the lack

of the disciplinary force of product market competition. In these industries, managers may want to make dividend payments in order to mitigate agency costs and to establish a good reputation that can help reduce the cost of raising new capital in the future. This link predicts a negative association between product market competition and dividends.

Using data on US manufacturing firms, Grullon and Michaely document a positive association between dividends and product market competition measured by the Herfindahl-Hirschman Index of sales. Their evidence is consistent with the prediction of the outcome model, suggesting intense product market competition forces firms to pay more dividends.

Although Grullon and Michaely (2007) focus on agency conflicts between managers and shareholders, it is possible to extend their argument to the agency conflicts between controlling shareholders and minority shareholders that are typical in Japan. One reason is that in Japan and other East Asia markets the predominant form of ownership is control by a family, which often supplies a top manager (Faccio, Lang and Young 2001). As a result, Japanese managers represent the interests of controlling shareholders and, to some extent, conflicts between managers and shareholders may overlap with conflicts between controlling shareholders and minority shareholders. For example, both managers and controlling shareholders have incentives to divert corporate assets to themselves, through outright theft, dilution of outside investors by issuing shares to insiders, excessive salaries, or transfer pricing with other entities they control (see Shleifer and Vishny 1997 for a discussion). They can also use corporate assets to seek private benefits of control through inefficient diversification or growth without benefiting outside investors (Jensen 1986). Therefore, it seems reasonable to expect that a corporate governance mechanism that mitigates agency conflicts between managers and shareholders can also have some effect on agency problems between controlling shareholders and minority shareholders. For example, if intense product market competition constrains managers from overinvesting by increasing the risk and the cost of taking negative NPV projects, it can probably also restrain controlling shareholders from overinvesting, because controlling shareholders will have to bear the increased risk and cost of overinvesting. Based on this argument, we expect to extend the US evidence to the Japanese firms, and to find that Japanese firms in more competitive industries have fewer agency conflicts and pay more dividends to outside investors. However, we acknowledge that

agency conflicts between controlling and minority shareholders may differ fundamentally from the conflicts between managers and shareholders, and consequently, product market competition may not have an impact on agency problems and dividend policies in Japan. Nevertheless, the finding on whether intense product market competition can force firms to disgorge cash will be of great interest to investors in Japan and other markets with weak investor protection and severe agency problems.

3. Data and Sample

3.1. Definitions of Variables

3.1.1. Product market competition.

Studies on industry competition in US generally use the Herfindahl-Hirschman Index (HHI) calculated by the Census of Manufacturers as a proxy for product market competition. The index is basically the sum of the squares of the individual company's market share for the 50 largest firms in the manufacturing industries (or all the firms if the industry has less than 50 firms). Since there is no comparable measure readily available in Japan, we attempt to follow a similar methodology to construct the measure, using all the firms having non-missing sales data in the PACAP (Pacific-Basin Capital Markets) database. Specifically, we compute the HHI for each industry and every year as follows:

$$HHI = \sum_{i=1}^{N_j} (SALES_{i,j} / \sum_{i=1}^{N_j} SALES_{i,j})^2$$

where $SALES_{i,j}$ is the total sales for firm i in industry j . We define an industry based on the 3-digit industry classification code in PACAP. To have a meaningful measure of product market competition, we require each industry to have at least 10 firms. Note that HHI actually measures the industry concentration, with a larger HHI indicating more concentration and less competition in the industry.

Since PACAP only covers public firms, our measure of HHI could underestimate industry competition because it does not take into account private firms. In US, HHI based on public firms covered by Compustat is problematic, because Ali, Klasa and Yeung (2006) find that industries with high HHI tend to be populated by smaller firms, which is inconsistent with the notion that concentrated industries should have fewer and larger firms. In untabulated results, we find that HHI computed using Japanese public firms seems free from such a problem. The correlation between our

HHI and the number of firms in the industry is -0.72, suggesting that more concentrated industries in Japan have fewer firms. The correlation between HHI and average total assets is 0.44, implying that firms in more concentrated industries tend to have larger size. Both correlation coefficients are statistically significant, indicating that our HHI does capture the concentration in Japanese industries.

3.1.2. Measures of Dividends Payouts

The focus of this study is on cash dividends that have an important role to play in agency conflicts between controlling shareholders and minority shareholders. Following the literature, we construct three measures of dividend payouts in Japan: cash dividends scaled by net income (DIV/E), cash dividends scaled by lagged total sales (DIV/LTS), and cash dividends scaled by lagged total assets (DIV/LTA). We expect a negative association between HHI and the measures of dividend payouts if product market competition does force controlling shareholders in Japan to disgorge cash.

Some Japanese firms also pay stock dividends. In sensitivity tests we include the value of stock dividends⁵ as part of total dividend payments, and find similar results. Following LLSV, we do not consider share repurchases, which have been regarded as an alternative to paying dividends. LLSV note that share repurchases are less common or rare in countries with weak investor protection. Bartram et al. (2008) show that only a small number of Japanese firms repurchased their own shares before 2000. For example, 1.78% of Japanese corporations had some shares repurchased in 1994. We expect that share repurchases should have an insignificant impact on our results.

3.1.3. Control Variables

Prior studies on dividends have identified a number of factors that may impact a firm's dividend payouts. Some of these factors are closely related to the competition in the industry. For example, industries with intense competition may have low profitability which is a key determinant of dividends payouts. In our empirical tests, we control for these factors and try to single out the effect of product market competition on dividends in Japan.

It has been well documented that large, profitable firms with few investment opportunities and low risk are more likely to pay dividends. For example, Denis and Osobov (2008) show that, in six

⁵ We use the closing share price at the fiscal year end to find the value of the stock dividends, assuming these stock dividends are distributed at the end of the fiscal year.

markets including Japan, the likelihood of paying dividends is positively associated with firm size and profitability, but negatively associated with growth opportunities. Gul (1999) also finds similar results using 5-year data for a sample of Japanese firms. Accordingly, we include these firm characteristics in our regression analyses. We use the market value of equity as a measure of firm size (MV). Our proxy for growth opportunities is the three-year growth rate in total sales (GROWTH). We use return on assets (ROA) to measure profitability, and compute ROA as the operating income divided by total assets. Following Grullon and Michaely (2007) we use the volatility of stock returns (VOLT) as a proxy for risk, and calculate VOLT as the standard deviation of monthly stock returns in the previous year. Given the findings in the literature, we expect to find that dividend payouts in Japan are positively associated with MV and ROA, but negatively associated with GROWTH and VOLT.

Prior research seems to show that leverage can have some conflicting impact on the dividend policies. On the one hand, high leverage may increase interest expenses and reduce cash available to pay dividends. High leverage is also more likely to trigger loan covenants that restrict firms in paying dividends to shareholders. On the other hand, high leverage may mitigate agency problems within the firm and increase dividend payouts. Therefore, the effect of leverage on dividends is not entirely clear. However, Xu (2007) show the industry competition is negatively associated with leverage, consistent with firms in highly competitive industries reducing leverage to avoid bankruptcy. To rule out the possibility that the effect of HHI on dividends is actually due to the leverage effect, we include leverage (LEV) in our tests. We calculate LEV as total debt divided by total assets.

In a recent study, DeAngelo, DeAngelo and Stulz (2006) find that the propensity to pay dividends is positively associated with the ratio of retained earnings to total equity, a proxy for the firms' life cycle. This evidence is consistent with the life-cycle theory of dividends, in which firms optimally change dividends over time in response to the evolution of their investment opportunity set. According to this theory, younger firms pay few dividends because their internal funds are not sufficient to cover their investment opportunities. Mature firms, on the other hand, have more internal funds than investment opportunities, so they choose to pay more dividends in order to mitigate the agency problems arising from excess free cash flows. Denis and Osobov (2008) also find a positive association between the retained earnings-to-equity ratio and the likelihood of dividend payouts in

Japan. Following these studies, we include the ratio of retained earnings to total equity (RE) in our empirical tests.

Fama and French (2002) note that, because of the improved coverage of databases, some variables such as firm size may change their distribution and are not comparable over time. They address this issue by transforming firm size into percentage rankings. We also note that the relation between dividend payouts and product market competition may not be linear. For these reasons, we rank all the continuous variables each year, and use their rankings in the regression analyses. Using the rankings also eliminates the impact of extreme values in the raw data. However, the disadvantage of using rankings is that it is difficult to interpret the economic significance of the results.

3.2. Sample Selection and Description

We collect data on dividends, accounting information and firm characteristics from PACAP over the period from 1975 to 2004. Our tests require non-missing values for dividends and control variables. Because we need three-year data to compute sales growth rates, our final sample starts in 1977 and ends in 2004, covering 28 years. This selection process results in a sample of 35,462 firm-year observations and 2,008 unique firms in Japan. To our best knowledge, this study is the first one to use such a long time-series and large sample to investigate dividend policies in Japan.

Table 1 presents the descriptive statistics for the sample firms in the full sample period in Panel A. The average payout ratio (DIV/E) is 37.6% and the median is 32.5%. The average dividends are less than 1% of total sales or total assets. These payout ratios are similar to those reported in Gul (1999) and Faccio, Lang and Young (2001), whose samples cover only five years from 1988 to 1992 and from 1992 to 1996, respectively. The average sample firm has a market value of equity of 131 billion Japanese yen, a ratio of retained earnings to equity of 66.5%, a return on assets of 1.7%, a debt-to-assets ratio of 25.6%, and a 3-year sales growth rate of 9.2%. Interestingly, these ratios are similar to those for US firms as reported in DeAngelo, DeAngelo and Stulz (2006) and Grullon and Michaely (2007).

1990 witnessed a market crash and the start of a prolonged economic recession in Japan. The long time series in our sample allows us to examine the dividends and firm characteristics during the economic boom and the recession. We partition the sample into two periods using 1990 as the dividing

year. Panel B and Panel C in Table 1 report the summary statistics for the sample firms in the periods before and during the recessions, respectively. Comparing the firm characteristics, we note that the economic recession had a significant impact on firm performance. During the recessions, Japanese firms had lower profitability, slower growth in sales, and higher volatility in stock returns, and they reduced their leverage to avoid bankruptcy. In particular, the average three-year sales growth rate was 15.8% before the recession, but it decreased to merely 3% during the recession. However, we find that dividend ratios appeared very stable over the two periods. This seems to suggest that Japanese firms were reluctant to change their dividend policy even during the economic recession.⁶

4. Empirical Results

This section reports the results from our empirical tests. We start with the simple correlation analysis followed by regressions analyses on the association between dividend policies and product market competition in Japan. To provide further evidence of the governance role of product market competition, we then examine whether intense competition among firms alleviates the impact of firm level agency problems on dividends. Finally we report some additional tests to rule out an alternative explanation.

4.1. Correlation Analysis

Table 2 reports the Spearman correlation coefficients between the variables. We first note that HHI, a measure of market concentration, is negatively related with all the three measures of dividend payouts, suggesting that dividends are smaller in industries with more concentration and less competition. The correlation coefficients are all statistically significant. This lends some preliminary support to the hypothesis that intense product market competition reduces agency conflicts and forces firms to disgorge cash. HHI is also positively related to firm size and leverage ratio, consistent with the notion that firms in concentrated industries tend to be larger and can afford to have higher leverage.

Dividend payout ratios are positively related to firm size, retained earnings-to-equity ratio, and return on assets, but negatively associated with leverage and stock return volatility. This is consistent with prior findings that dividends are higher in larger, profitable and mature firms with lower leverage

⁶ Denis and Osobov (2008) also find that over the period from 1989 to 2002 the percentage of Japanese firms that paid dividends remained quite stable, and the number of dividends payers actually increased significantly.

and lower risk. The correlation between GROWTH and dividend payouts is mixed, with GROWTH negatively related with DIV/E, but positively correlated with the other two measures of dividends payouts. However, these simple correlation coefficients do not control the other factors that also affect dividend payouts. We move to regression analyses which should provide more insight into the determinants of dividend payouts in Japan.

4.2. Relationship between Product Market Competition and Dividends in Japan

To single out the effect of product market competition on dividend policies in Japan, we run multivariate regressions. Specifically we regress measures of dividends payout on HHI, the measure of product market concentration, and control variables including firm size (MV), retained earnings-to-equity ratio (RE), return on assets (ROA), three-year sales growth rate (GROWTH), debt-to-assets ratio (LEV), and stock return volatility (VOLT). We run the regression in two ways to control for possible changes in the distribution of the sample over time. First, we follow Fama and MacBeth (1973) to run the regressions by year, and obtain the time series of the estimated coefficients. We then report the time-series mean of the coefficients and t-statistics for the mean coefficients after adjusting for the serial correlation in the estimates. Second, we pool the time-series and cross-sectional data and run regressions with dummy variables indicating each year. We believe that the Fama-MacBeth approach and year-fixed effect regressions help to establish the robustness of the results.

Table 3 reports the results from the Fama-MacBeth regressions. We find HHI is negatively associated with dividend payouts, suggesting that firms in more concentrated industries pay fewer dividends. The coefficients of HHI are consistently negative and statistically significant in all three specifications. This finding is consistent with the results from the simple correlation analysis, suggesting the effect of product market competition on dividends in Japan is robust to controls of other factors that also affect dividends.

The coefficients of control variables in general have the expected signs. Dividend payouts are positively associated with MV, RE, ROA, but negatively associated with GROWTH, and VOLT,⁷ consistent with prior findings that large, mature, profitable firms with few growth opportunities and

⁷ The negative coefficient for ROA in the model with DIV/E as dependent variable is probably due to the mechanical link between these two variables. Note that earnings or incomes are numerator in ROA but denominator in DIV/E.

low risk pay more dividends. The coefficient of LEV is negative, suggesting that firms with high leverage actually pay fewer dividends, probably because of higher interest payments.

In Table 4, we present the results from year-fixed effect regressions. Consistent with results from annual regressions, we find that HHI has negative and statistically significant coefficients in all three specifications after we control for other factors and year-fixed effect. Interestingly, the coefficients of HHI have similar magnitudes and t-statistics in Table 3 and 4, implying that the effect of HHI on dividends is robust to alternative estimation methods. Control variables have the expected signs, as in Table 3.

In general, the consistent results in Table 3 and 4 reinforce the evidence from the simple correlation analysis that HHI is negatively associated with dividend payouts in Japan. The results collectively suggest that Japanese firms in more competitive industries pay more dividends. Given the weak investor protection and severe agency conflicts in Japan, our results seem to show that product market competition can effectively force controlling shareholders in Japanese firms to disgorge cash and pay cash dividends to minority shareholders.

Since the market crash in 1990, Japan has entered a prolonged period of economic recession. As we show in Table 1, the economic recession seems to have a significant impact on firm performance, particularly on profitability and sales growth rates. It is possible that agency conflicts may become less severe during the recession, for three reasons. First, there may be less free cash flow available because of lower profitability in the recession, reducing the possibility that managers or controlling shareholders abuse the cash. Second, the bankruptcy risk is higher in the economic downturn, so managers and controlling shareholders may find it too risky to overinvest. Third, firms may need to issue new equity given that economic recession weakens their financial position. In order to reduce the cost of equity, firms may want to pay dividends to establish a good reputation of treating investors decently. In other words, the “substitute model” may work during recessions even though it receives little support in LLSV and Bartram et al. (2008).⁸ Given these possibilities, we expect that the governance role of product market competition may become weaker during the recession period.

⁸ A careful test of this hypothesis, however, is beyond the scope of this paper.

To examine the impact of economic recession on the relation between product competition and dividend policies in Japan, we redo the regression analyses for the two sub-sample periods divided by the year 1990. Panel A and B in Table 5 reports the Fama-MacBeth regression results for the two periods. Comparing the coefficients of HHI in the two periods, we find that the coefficients are negative and statistically significant in all three specifications in the first period. But in the second period, the coefficients become smaller and lose much of the statistical significance when DIV/E and DIV/LTA are the dependent variables. For example, HHI is negatively and significantly associated with DIV/E before the economic recession (coefficient = -0.024, t-statistics = -3.19), but this association disappears in the recession period (coefficient = -0.004, t-statistics = -0.84). The association between HHI and DIV/LTS seems to remain intact during the recession period. We note that the second sample period of 15 years is actually longer than the first one (13 years), so it is unlikely that the insignificant coefficients of HHI in the second sample are due to the shorter time series.

As an alternative way to examine the impact of the economic recession, we run regressions using pooled time series and cross-sectional data. We construct a dummy variable, POST, to indicate the economic recession period after 1990. We interact POST with all the explanatory variables to recognize the possibility that the association between dividend policies and explanatory variables may change in the economic recession. Table 6 reports the results from pooled regressions. Consistent with previous results, HHI has negative and statistically significant coefficients. Furthermore, the coefficients of the interaction terms between HHI and POST are positive in all three specifications, suggesting that the impact of product market competition on the dividend payouts in Japan is much weaker during the economic recession. For example, in the model where DIV/E is the dependent variable, the sum of the coefficients of HHI and HHI*POST is 0, implying that HHI is unrelated to DIV/E during the recession.⁹ In general, the results in Table 5 and 6 seem to be consistent with our expectation that the governance role of product market competition may be weaker during the prolonged economic recession in Japan.

4.3. Firm-Level Agency Problems and Product Market Competition in Japan

⁹ F-test cannot reject that the sum of the coefficients of HHI and HHI*POST equals 0 in this specification.

The hypothesis in this study is that product market competition reduces agency problems between controlling shareholders and minority shareholders in Japan, and thus forces firms to pay more dividends. The results described above in general support the hypothesis that firms operating in more competitive industries pay more dividends. In this subsection, we provide more direct evidence by investigating whether intense product market competition can reduce the impact of firm-level agency problems on dividends in Japan. Following Bartram et al. (2008), we measure firm-level agency problems by the percentage of shares that are held by corporate officers and directors (and their families), by large shareholders who have more than 5% ownership, and by another corporation. A high fraction of closely-held shares indicates more a concentrated ownership structure and possibly intensified agency problems between controlling shareholders and minority shareholders. Shleifer and Vishny (1997) point out that when “ownership gets beyond a certain point, large owners gain nearly full control of the company and are wealthy enough to prefer to use firms to generate private benefits that are not shared by minority shareholders.” Consistent with the idea that agency problems destroy firm value, Claessens, Djankow and Lang (2000) find that firms with more concentrated ownership in East Asian markets tend to have lower Tobins’ Q. Bartram et al. (2008) document that in a sample of 43 nations, firms with a higher percentage of closely held shares pay fewer dividends, implying that concentrated ownership exacerbates the risk of controlling shareholders expropriating minority shareholders. Building on these studies, we expect to find a negative association between dividends and closely held shares in Japan. More importantly, if product market competition reduces agency problems between controlling and minority shareholders, we expect to find that this negative association should be weaker in industries with intense competition among firms.

Following Bartram et al. (2008), we collect data on closely held shares from the Worldscope database. We are able to find the percentage of closely held shares (CLOSE) for 13,893 firm-year observations in our sample over the period from 1997 to 2004.¹⁰ We construct a dummy variable, HIGH, to indicate highly competitive industries. Industries with HHI lower than median HHI in a year are classified as highly competitive industries. We interact HIGH with CLOSE and control variables

¹⁰ We note this sample size is quite large relative to comparable studies. For example, the sample in Bartram et al (2008) has 16,171 firm-year observations from 43 nations over the period from 2001 to 2006.

to single out the effect of product market competition on the association between dividends and closely held shares. We run the regression using pooled time-series and cross-sectional data with year-fixed effect.

Table 7 presents the results from the regressions. First of all, we find that HHI is negatively related to dividends, suggesting our previous results are robust to controlling for closely held shares in this smaller sample.¹¹ Consistent with Bartram et al. (2008), dividends are negatively associated with the percentage of closely held shares, suggesting that firms with concentrated ownership may have more agency problems and pay fewer dividends. More importantly, the coefficients of the interaction term between HIGH and CLOSE are positive and significant coefficient in all three specifications, suggesting that the negative association between dividends and closely held shares is weaker in highly competitive industries. This result is consistent with firms in highly competitive industries having fewer firm-level agency problems. It supports our hypothesis that intense product market competition reduces firm-level agency problems between controlling shareholders and minority shareholders.

Regarding control variables, dividends are positively related to MV, RE, ROA, and negatively related to LEV and VOLT, consistent with the results from the larger sample in previous tests. In highly competitive industries, the association between dividends and MV, LEV and VOLT seems to be stronger, while the association between dividends and RE is weaker.

4.4. Additional Tests

In the above subsections we document a negative association between HHI and dividend payouts in Japan. We interpret the results as suggesting that intense product market competition reduces agency problems and forces controlling shareholders to disgorge cash to minority shareholders. One alternative explanation for the evidence is that firms in concentrated industries (with high HHI) may want to hoard cash to defend possible hostile takeovers. Although the market for corporate control is barely existent in Japan, we distinguish these two explanations by examining the dividend policy of dominant firms. The takeover hypothesis predicts that the negative association between HHI and dividends will be weaker for dominant firms because these firms are less concerned about the

¹¹ This does not necessarily contradict our findings that the effect of product market competition on dividends is weaker during the recession period. We also note that the sample in this subsection is much smaller, and the sample firms possibly have more severe agency problems since we require them to have closely held shares.

hostile takeovers. In contrast, the agency model predicts that the negative association will be stronger for the dominant firms since these firms are more likely to be subject to potential agency problems.

Following Grullon and Michaely (2007), we define dominant firms as those having the largest market value of equity in each industry. To differentiate the takeover hypothesis from the agency model, we add into regressions an interaction term between HHI and a dummy variable to indicate dominant firms. The dummy variable, DOM, equals 1 if the firm is a dominant firm in its industry, and 0 otherwise. The takeover hypothesis predicts a positive coefficient for the interaction term, while the agency model predicts a negative coefficient. Table 8 reports the results from the year-fixed effect regressions using pooled time series and cross-sectional data.¹² We find that the coefficients for the interaction term are negative and statistically significant in all three specifications. The results suggest that the association between HHI and dividends is stronger for dominant firms, supporting the agency model.

5. Conclusion

In this study, we investigate whether product market competition can play an important governance role in reducing agency problems between controlling shareholders and minority shareholders in Japan. We choose to study Japan because its legal systems provide weak protection to minority shareholders there and because the concentrated ownership structure in Japanese firms exacerbates the risk of controlling shareholders expropriating minority shareholders. We hypothesize that intense product market competition reduces agency conflicts and forces firms to pay dividends. Our results support this hypothesis. Specifically, we find that Japanese firms in highly competitive industries pay more dividends, particularly during the economic boom. We further show that intense competition among firms weakens the impact of firm-level agency problems on dividends, suggesting that product market competition does constrain agency problems between controlling shareholders and minority shareholders. We also rule out an alternative explanation that firms in concentrated industries pay fewer dividends because of the high risk of takeover. We find evidence inconsistent with this alternative explanation but supportive of our hypothesis.

¹² The results from Fama-MacBeth regressions are very similar.

We believe that the results from the Japanese market have implications for other markets that have similar weaknesses in investor protection and severe agency conflicts. LLSV show that a number of markets have civil law systems which provide weak protection to minority shareholders. In European and Asian markets corporate ownership is highly concentrated, which exacerbates agency conflicts between controlling and minority shareholders (Faccio, Lang and Young 2001). In these markets, minority investors tend to be victims of agency problems and have little protection for their investments. Our results suggest that intense product market competition can mitigate agency conflicts between controlling and minority shareholders, and can force companies to pay dividends. In markets where investor protection is weak and agency problems are severe, minority shareholders who are concerned about the risk of insider expropriation may want to invest in highly competitive industries with intense competition among firms. To some extent this strategy can protect minority investors from expropriation by controlling shareholders.

There are limitations in this study. First, we measure product market competition by the Herfindahl-Hirschman Index based on market shares of publically listed companies in Japan. The index does not take into account the market shares of private firms, which introduces a measurement error to the proxy of market competition. Although we do not expect our results to be biased by this problem, we acknowledge that the results will be more convincing if we have a better measure of product market competition. Second, we focus only on the Japanese market for which we can obtain a large sample for a long time period. Though the rich data in Japan allow us to do deeper analyses, a cross-country study would provide more insight into the governance role of product market competition in the other markets. We leave this for future research.

Reference

- Ali, A., S. Klasa, and E. Yeung, 2006, 'The implications of using compustat data to examine product market effects: Evidence from the relation between industry concentration and stock returns', Working Paper, University of Texas at Dallas.
- Allen, F., and D. Gale, 2000, 'Corporate governance and competition', in Vives, X., eds, *Corporate Governance: Theoretical and empirical perspectives*, Cambridge University Press: 23 – 94.
- Allen, F., and R. Michaely, 2003, 'Dividend policy', In: Constantinides, G., M. Harris, and R. Stulz Eds, *Handbook of the Economics of Finance*, North-Holland, Amsterdam.
- Bartram, S., P. Brown, J. How, and P. Verhoeven, 2008, 'Agency conflicts and corporate payout policies: A global study', working paper, University of Auckland.
- Berger, A., and T. Hannan, 1998, 'The efficiency cost of market power in the banking industry: A test of the "quite life" and related hypotheses', *The Review of Economics and Statistics* 80, 454 – 465.
- Claessens, S., S. Djankow and L. Lang, 2000, 'The separation of ownership and control in East Asian corporations', *Journal of Financial Economics* 58, 81 – 112.
- DeAngelo, H., and L. DeAngelo, 2006, 'The irrelevance of the MM dividend irrelevance theorem', *Journal of Financial Economics* 79, 293 – 316.
- DeAngelo, H., L. DeAngelo, and D. Skinner, 2004, 'Are dividends disappearing? Dividend concentration and the consolidation of earnings growth', *Journal of Financial Economics* 72, 425 – 456.
- DeAngelo, H., and L. DeAngelo, and R. Stulz, 2006, 'Dividend policy and the earned/contributed capital mix: A test of the lifecycle theory', *Journal of Financial Economics* 81(2): 227-254.
- Denis, D., and I. Osobov, 2008, 'Why do firms pay dividends? International evidence on the determinants of dividend policy', *Journal of Financial Economics* 89, 62 – 82.
- Dewenter, K., and V. Warther, 1998, 'Dividends, asymmetric information, and agency conflicts: Evidence from a comparison of the dividend policies of Japanese and U.S. Firms', *Journal of Finance* 53, 879 – 904.
- Faccio, M., L. Lang, and L. Young, 2001, 'Dividends and expropriation'. *American Economic Review* 91 (1): 54 – 78.
- Fama, E., and K. French, 2001, 'Disappearing dividends: Changing firm characteristics or lower propensity to pay?' *Journal of Financial Economics* 60: 3 – 43.
- Fama, E., and J. MacBeth, 1973, 'Risk, return and equilibrium: Empirical tests', *Journal of Political Economy* 81, 607 – 636.
- Gompers, P., J. Ishii, and A. Metrik, 2003, 'Corporate governance and equity prices', *Quarterly Journal of Economics* 118 107 – 155.
- Griffith, R., 2001, 'Product market competition, efficiency and agency cost: An empirical analysis', working paper, Institute for Fiscal Studies.

- Grullon, G., and R. Michaely, 2007, 'Corporate payout policy and product market competition', working paper, Cornell University.
- Guadalupe, M., and F. Pérez-González, 2005, 'The impact of product market competition on private benefits of control', working paper, Columbia University.
- Gul, F., 1999, 'Growth opportunities, capital structure and dividend policy in Japan', *Journal of Corporate Finance* 5: 141 – 168.
- Hart, O., 1983, 'The market as an incentive mechanism', *Bell Journal of Economics* 14, 336 – 382.
- Jensen, M., 1986, 'Agency costs of free cash flow, corporate finance and takeover', *American Economic Review* 76, 323 -329.
- Jensen, M, and W. Meckling, 1976, 'Theory of the firms: Managerial behavior, agency costs, and capital structure', *Journal of Financial Economics* 3, 305 – 360.
- John, K., and A. Knyazeva, 2006, 'Payout policy, agency conflicts and corporate governance', working paper, New York University.
- La Porta, R., F. Lopez-De-Silanes, A. Shleifer, and R. Vishny, 2000, 'Agency problems and dividend policies around the world', *Journal of Finance* 55 (1): 1 – 33.
- Miller, M., and F. Modigliani, 1961, 'Dividend policy, growth, and the valuation of shares', *The Journal of Business* 34, 411 – 433.
- Mitton, T., 2004, 'Corporate governance and dividend policy in emerging markets', *Emerging Markets Review* 5 (2004): 409 – 426.
- Nickell, S., 1996, 'Competition and corporate performance', *Journal of Political Economy* 104, 724 – 746.
- Officer M., 2006, 'Dividend policy, dividend initiations, and governance', working paper, University of Southern California.
- Raith, M., 2003, 'Competition risk and managerial incentives', *American Economic Review* 93, 1425 – 1436.
- Scharfstein, D., 1988, 'Product market competition and managerial slack', *RAND Journal of Economics* 19, 147 – 155.
- Shleifer, A., and R. Vishny, 1997, 'A survey of corporate governance', *Journal of Finance* 52, 737 – 783.
- Xu, J., 2007, 'The impact of product market competition on capital structure: Evidence from import penetration', working paper, Purdue University.

Table 1
Summary Statistics

This table reports descriptive statistics for the sample that consists of 35,462 firm-year observations for listed Japanese firms over the period from 1977 – 2004. DIV is the cash dividends for common shares. LTA is the lagged total assets. LTS is lagged total sales. E is net income. MV is market value of equity, measured in billions of Japanese yen. RE is the retained earnings divided by total shareholders' equity. ROA is return on assets, computed as operating income divided by total assets. GROWTH is the growth rate in sales in the past three years. LEV is debt-to-assets ratio. VOLT is the standard deviation of monthly stock returns in the past year.

Variable	Mean	Std Dev	Q1	Median	Q3
Panel A: Full Sample (N = 35,462)					
DIV/LTS	0.009	0.022	0.003	0.007	0.011
DIV/LTA	0.008	0.006	0.004	0.007	0.011
DIV/E	0.376	0.363	0.161	0.325	0.551
MV	131.610	413.710	12.495	33.456	98.094
GROWTH	0.092	0.772	-0.046	0.061	0.186
RE	0.665	0.232	0.600	0.716	0.808
ROA	0.017	0.041	0.007	0.016	0.031
LEV	0.256	0.178	0.112	0.243	0.381
VOLT	0.101	0.056	0.065	0.090	0.123
Panel B: Sample Period 1977 – 1989 (N = 14,331)					
DIV/LTS	0.009	0.009	0.003	0.007	0.011
DIV/LTA	0.009	0.007	0.005	0.008	0.012
DIV/E	0.378	0.301	0.197	0.338	0.527
MV	107.032	298.005	10.263	29.062	83.507
GROWTH	0.158	0.242	0.026	0.133	0.259
RE	0.657	0.236	0.580	0.712	0.808
ROA	0.024	0.033	0.010	0.021	0.036
LEV	0.273	0.174	0.139	0.258	0.395
VOLT	0.091	0.054	0.058	0.080	0.110
Panel C: Sample Period 1990 – 2004 (N = 21,131)					
DIV/LTS	0.009	0.029	0.003	0.007	0.011
DIV/LTA	0.007	0.006	0.003	0.006	0.010
DIV/E	0.377	0.413	0.096	0.317	0.585
MV	146.797	487.462	13.495	34.659	104.593
GROWTH	0.030	1.028	-0.089	0.002	0.099
RE	0.670	0.234	0.612	0.720	0.810
ROA	0.010	0.047	0.004	0.013	0.026
LEV	0.243	0.181	0.089	0.227	0.372
VOLT	0.106	0.055	0.071	0.096	0.128

Table 2
Spearman Correlation Coefficients

This table reports Spearman correlation coefficients for the variables. DIV is the cash dividends for common shares. LTA is the lagged total assets. LTS is lagged total sales. E is net income. HHI is the Herfindahl-Hirschman Index based on market shares of companies in a particular industry. MV is market value of equity, measured in billion of Japanese yen. GROWTH is the growth rate in sales in the past three years. RE is the retained earnings as a percentage of total shareholders' equity. ROA is return on assets, measured as operating income divided by total assets. LEV is debt-to-assets ratio. VOLT is the standard deviation of monthly stock returns over one year period. All the correlation coefficients are significant at 1% level.

	HHI	DIV/LTS	DIV/LTA	DIV/E	MV	GROWTH	RE	ROA	LEV
DIV/LTS	-0.094								
DIV/LTA	-0.068	0.844							
DIV/E	-0.013	0.345	0.330						
MV	0.054	0.303	0.235	0.067					
GROWTH	0.021	0.184	0.255	-0.055	0.123				
RE	-0.077	0.357	0.411	0.052	0.272	0.068			
ROA	-0.051	0.542	0.671	-0.110	0.238	0.421	0.434		
LEV	0.115	-0.362	-0.475	0.018	-0.094	-0.086	-0.511	-0.488	
VOLT	0.017	-0.132	-0.183	-0.136	0.013	-0.082	-0.210	-0.117	0.095

Table 3
Fama-MacBeth Regressions of Dividend Policy in Japan

This table reports the mean and t-stats of coefficients estimated annually from OLS regressions of dividends on proxy for market competition and control variables. DIV is the cash dividends for common shares. LTA is the lagged total assets. LTS is lagged total sales. E is net income. HHI is the Herfindahl-Hirschman Index based on market shares of companies in a particular industry. MV is market value of equity, measured in billion of Japanese yen. GROWTH is the growth rate in sales in the past three years. RE is the retained earnings as a percentage of total shareholders' equity. ROA is return on assets, measured as operating income divided by total assets. LEV is debt-to-assets ratio. VOLT is the standard deviation of monthly stock returns over one year period. All the variables are ranked on annual basis. Intercept is not reported for brevity. t-statistic is based on standard errors adjusted for serial correlation. N is the average number of observations in annual regressions. *, ** and *** indicate 10%, 5% and 1% significance level, respectively.

Variable	DIV/E		DIV/LTS		DIV/LTA	
	Coefficient	t-stat	Coefficient	t-stat	Coefficient	t-stat
HHI	-0.013***	-2.85	-0.035***	-8.09	-0.015***	-3.66
MV	0.107***	9.89	0.209***	26.56	0.146***	18.15
RE	0.0478***	3.43	0.109***	10.50	0.096***	11.53
ROA	-0.098***	-3.27	0.314***	27.33	0.373***	48.43
GROWTH	-0.019**	-1.98	-0.021**	-1.97	-0.035***	-3.06
LEV	-0.015	-1.51	-0.182***	-20.83	-0.309***	-37.55
VOLT	-0.120***	-8.38	-0.075***	-9.64	-0.093***	-11.80
Adj R ²	9.21%		37.54%		49.65%	
N	1,266		1,266		1,266	

Table 4
Year-Fixed Effect Regressions of Dividend Policy in Japan

This table reports results from year-fixed effect regressions of dividends on proxy for market competition and control variables. DIV is the cash dividends for common shares. LTA is the lagged total assets. LTS is lagged total sales. E is net income. HHI is the Herfindahl-Hirschman Index based on market shares of companies in a particular industry. COMP is a dummy variable, equals 1 if the firm is in one of the most competition industries, and 0 otherwise. An industry is classified as one of the most competitive industries if the industry's HHI is below the first quartile of annual HHI distribution. MV is market value of equity, measured in billion of Japanese yen. GROWTH is the growth rate in sales in the past three years. RE is the retained earnings as a percentage of total shareholders' equity. ROA is return on assets, measured as operating income divided by total assets. LEV is debt-to-assets ratio. VOLT is the standard deviation of monthly stock returns over one year period. All the variables are ranked on annual basis. *, ** and *** indicate 10%, 5% and 1% significance level, respectively.

Variable	DIV/E		DIV/LTS		DIV/LTA	
	Coefficient	t-stat	Coefficient	t-stat	Coefficient	t-stat
HHI	-0.015***	-2.92	-0.032***	-7.43	-0.012***	-3.07
MV	0.110***	19.22	0.218***	47.55	0.152***	36.32
RE	0.066***	9.60	0.110***	19.12	0.104***	19.85
ROA	-0.100***	-15.1	0.299***	54.86	0.367***	72.26
GROWTH	-0.010	-1.73	-0.021***	-4.18	-0.032***	-7.18
LEV	-0.018***	-2.73	-0.191***	-34.53	-0.304***	-61.72
VOLT	-0.125***	-22.86	-0.072***	-15.84	-0.086***	-21.11
YEAR	Yes		Yes		Yes	
Adj R ²	7.41%		37.74%		49.57%	
N	35,462		35,462		35,462	

Table 5
Sub-Sample Analysis: Annual Regressions of Dividend Policy in Japan

This table reports the mean and t-stats of coefficients estimated annually from OLS regressions of dividends on proxy for market competition and control variables in two sub-sample periods. DIV is the cash dividends for common shares. LTA is the lagged total assets. LTS is lagged total sales. E is net income. HHI is the Herfindahl-Hirschman Index based on market shares of companies in a particular industry. MV is market value of equity, measured in billion of Japanese yen. GROWTH is the growth rate in sales in the past three years. RE is the retained earnings as a percentage of total shareholders' equity. ROA is return on assets, measured as operating income divided by total assets. LEV is debt-to-assets ratio. VOLT is the standard deviation of monthly stock returns over one year period. All the variables are ranked on annual basis. Intercept is not reported for brevity. t-statistic is based on standard errors adjusted for serial correlation. N is the average number of observations in annual regressions. *, ** and *** indicate 10%, 5% and 1% significance level, respectively.

	DIV/E		DIV/LTS		DIV/LTA	
Panel A: Sub-Sample Period 1977 – 1989						
Variable	Mean	t Value	Mean	t Value	Mean	t Value
HHI	-0.024***	-3.19	-0.035***	-5.48	-0.021***	-3.54
MV	0.144***	10.01	0.197***	17.85	0.133***	11.09
RE	0.016	0.94	0.116***	11.60	0.089***	10.72
ROA	-0.174***	-5.75	0.356***	20.93	0.394***	34.63
GROWTH	-0.013	-1.41	-0.005	-0.60	-0.032***	-3.11
LEV	-0.017	-1.13	-0.165***	-11.72	-0.331***	-24.36
VOLT	-0.157***	-8.38	-0.078***	-9.62	-0.105***	-14.24
Adj R ²	9.41%		38.69%		51.37%	
N	1,135		1,135		1,135	
Panel B: Sub-Sample Period 1990 – 2004						
Variable	Mean	t Value	Mean	t Value	Mean	t Value
HHI	-0.004	-0.84	-0.035***	-5.75	-0.010*	-1.80
MV	0.075***	7.07	0.219***	20.29	0.157***	15.18
RE	0.074***	3.96	0.102***	5.85	0.103***	7.38
ROA	-0.032	-0.74	0.279***	33.86	0.355***	43.42
GROWTH	-0.024	-1.50	-0.034*	-1.92	-0.038*	-1.90
LEV	-0.012	-0.96	-0.197***	-20.30	-0.290***	-40.34
VOLT	-0.088***	-4.90	-0.072***	-5.58	-0.083***	-6.40
Adj R ²	9.05%		36.54%		48.08%	
N	1,365		1,365		1,365	

Table 6
Effect of Recession on the Relation between Product Market Competition and Dividends Policy in Japan

This table reports results from OLS regressions of dividends on proxy for market competition and control variables. DIV is the cash dividends for common shares. LTA is the lagged total assets. LTS is lagged total sales. E is net income. HHI is the Herfindahl-Hirschman Index based on market shares of companies in a particular industry. POST is a dummy variable, equals 1 for observations after 1989, and 0 otherwise. MV is market value of equity, measured in billion of Japanese yen. GROWTH is the growth rate in sales in the past three years. RE is the retained earnings as a percentage of total shareholders' equity. ROA is return on assets, measured as operating income divided by total assets. LEV is debt-to-assets ratio. VOLT is the standard deviation of monthly stock returns over one year period. All the continuous variables are ranked on annual basis. *, ** and *** indicate 10%, 5% and 1% significance level, respectively.

Variable	Payout Ratio: DIV/E		DIV/LTS		DIV/LTA	
	coefficient	t Value	coefficient	t Value	coefficient	t Value
HHI	-0.019**	-2.15	-0.046***	-6.35	-0.020***	-3.12
MV	0.153***	15.78	0.198***	24.85	0.138***	19.13
RE	0.043***	4.06	0.090***	10.43	0.092***	11.82
ROA	-0.185***	-17.77	0.337***	39.23	0.389***	50.23
GROWTH	-0.003	-0.33	-0.012	-1.48	-0.032***	-4.45
LEV	-0.005	-0.54	-0.198***	-25.22	-0.331***	-46.77
VOLT	-0.138***	-15.74	-0.093***	-12.83	-0.102***	-15.64
POST * HHI	0.019*	1.78	0.025***	2.85	0.018**	2.28
POST * MV	0.059***	5.07	0.032***	3.31	0.023***	2.63
POST * RE	0.056***	4.74	0.040***	4.08	0.027***	3.13
POST * ROA	0.140***	11.04	-0.052***	-4.96	-0.027***	-2.88
POST * GROWTH	-0.006	-0.51	-0.010	-0.98	0.003	0.34
POST * LEV	0.001	0.04	0.023***	2.63	0.053***	6.83
POST * VOLT	0.042***	4.10	0.038***	4.44	0.030***	3.92
YEAR	Yes		Yes		Yes	
Adj R ²	7.01%		37.05%		48.82%	
N	35,462		35,462		35,462	

Table 7
Impact of Closely Held Shares and Product Market Competition on Dividend Policy in Japan

This table reports results from OLS regressions of dividends on proxy for market competition and agency problems, and control variables. DIV is the cash dividends for common shares. LTA is the lagged total assets. LTS is lagged total sales. E is net income. HHI is the Herfindahl-Hirschman Index based on market shares of companies in a particular industry. HIGH is a dummy variable, equals 1 for firms in highly competitive industries, and 0 otherwise. An industry is classified as highly competitive if its HHI is below the median HHI in the year. CLOSE is the percentage of a company's shares that are held by owners of more than 5% ownership, by corporate officers and directors (and their families), or by another corporation. MV is the market value of equity, measured in billion of Japanese yen. GROWTH is the growth rate in sales in the past three years. RE is the retained earnings as a percentage of total shareholders' equity. ROA is return on assets, measured as operating income divided by total assets. LEV is debt-to-assets ratio. VOLT is the standard deviation of monthly stock returns over one year period. All the continuous variables are ranked on annual basis. *, ** and *** indicate 10%, 5% and 1% significance level, respectively.

Variable	DIV/E		DIV/SALES		DIV/TA	
	Coefficient	t-stat	Coefficient	t-stat	Coefficient	t-stat
HHI	-0.046***	-2.97	-0.082***	-6.67	-0.069***	-6.18
CLOSE	-0.060***	-6.61	-0.087***	-11.36	-0.046**	-7.06
MV	0.028**	2.12	0.149***	13.71	0.116***	12.26
RE	0.115***	7.94	0.228***	17.58	0.229***	19.84
ROA	0.003	0.22	0.256***	21.27	0.311***	28.45
GROWTH	0.024*	1.82	-0.017	-1.53	-0.004	-0.39
LEV	-0.015	-1.11	-0.180***	-15.37	-0.269***	-26.14
VOLT	-0.150***	-12.52	-0.072***	-7.12	-0.084***	-9.32
HIGH * CLOSE	0.027**	2.14	0.028***	2.71	0.004**	2.50
HIGH * MV	0.041**	2.23	0.082***	5.42	0.040***	2.93
HIGH * RE	-0.011	-0.56	-0.111***	-6.68	-0.102***	-6.95
HIGH * ROA	-0.074***	-3.40	-0.021	-1.25	0.001	0.08
HIGH * GROWTH	-0.041**	-2.17	0.058***	3.8	0.050***	3.67
HIGH * LEV	-0.016	-0.94	-0.066***	-4.53	-0.029**	-2.33
HIGH * VOLT	0.022	1.40	-0.049***	-3.70	-0.039***	-3.21
YEAR	Yes		Yes		Yes	
Adj R ²	7.33%		43.49%		54.66%	
N	13,893		13,893		13,893	

Table 8
The Effect of Being Dominant Firms on the Relation between Product Market Competition and Dividends

This table presents OLS regression results to examine the effect of being dominant firms on the relation between product market competition and dividends in Japan. DOM is a dummy variable indicating dominant firms in each industry. Dominant firms are defined as those with the largest market value of equity in their particular industry. DIV is the cash dividends for common shares. LTA is the lagged total assets. LTS is lagged total sales. E is net income. HHI is the Herfindahl-Hirschman Index based on market shares of companies in a particular industry. MV is market value of equity, measured in billion of Japanese yen. GROWTH is the growth rate in sales in the past three years. RE is the retained earnings as a percentage of total shareholders' equity. ROA is return on assets, measured as operating income divided by total assets. LEV is debt-to-assets ratio. VOLT is the standard deviation of monthly stock returns over one year period. *, ** and *** indicate 10%, 5% and 1% significance level, respectively.

Variable	DIV/E		DIV/LTS		DIV/LTA	
	Coefficient	t-stat	Coefficient	t-stat	Coefficient	t-stat
HHI	-0.019***	-3.47	-0.032***	-7.12	-0.011***	-2.63
HHI x DOM	-0.028***	-1.56	-0.063***	-4.25	-0.070***	-5.25
MV	0.110***	19.23	0.221***	46.48	0.152***	35.51
RE	0.012*	1.82	0.076***	14.04	0.071***	14.56
ROA	-0.129***	-19.92	0.328***	60.96	0.397***	82.14
GROWTH	-0.022***	-3.72	-0.031***	-6.2	-0.043***	-9.81
LEV	-0.006	-0.93	-0.186***	-35.23	-0.312***	-65.74
VOLT	-0.124***	-22.42	-0.065***	-14.12	-0.084***	-20.32
YEAR	Yes		Yes		Yes	
Adj R ²	7.78%		39.74%		50.57%	
N	35,462		35,462		35,462	