The Japanese Corporate Governance System and Firm Performance: toward sustainable growth

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Abstract

Productivity growth has been slow in Japan over the last decade, especially in comparison with the United States. It has been argued that the lack of product market competition and poor corporate governance are two of the main reasons for this phenomenon. Internal monitoring works well under the adequate corporate governance, where the incentives for management efficiency are given, and thus prevent the dogmatic decision making of inside stakeholders. Japan's main bank and financial keiretsu systems were quite prevalent as components of Japanese type of corporate governance. The webs of equity cross-holdings among main bank and keiretsu firms make Japanese banks influential in the governance. This governance system worked well before the Bubble economy, but it has not been working well after the collapse of the bubble economy. Establishing the adequate corporate governance system is the necessary condition to enable the sustainable growth of firms and Japanese economy. New corporate governance is needed in Japan.

This paper especially puts an attention to the sustainable growth of firms and Japanese economy, and considers the economic welfare of stakeholder society. Section 2 clarifies the characteristics of Japanese type of corporate governance. Section 3 reviews the preceding researches on corporate governance. In Section 4, we explain our datasets. We present our models in Section 5, and discuss our empirical results on Section 6. Section 7 concludes.
1. Introduction

Productivity growth has been slow in Japan over the last decade, especially in comparison with the United States. It has been argued that the lack of product market competition and poor corporate governance are two of the main reasons for this phenomenon. Internal monitoring works well under the adequate corporate governance, where the incentives for management efficiency are given, and thus prevent the dogmatic decision making of inside stakeholders.

Japan’s main bank and financial keiretsu systems were quite prevalent as components of Japanese type of corporate governance. The webs of equity cross-holdings among main bank and keiretsu firms make Japanese banks influential in the governance. This governance system worked well before the Bubble economy, but it has not been working well after the collapse of the bubble economy. Establishing the adequate corporate governance system is the necessary condition to enable the sustainable growth of firms and Japanese economy. New corporate governance is needed in Japan.

This paper especially puts an attention to the sustainable growth of firms and Japanese economy, and considers the economic welfare of stakeholder society. Section 2 clarifies the characteristics of Japanese type of corporate governance. Section 3 reviews the preceding researches on corporate governance. In Section 4, we explain our datasets. We present our models in Section 5, and discuss our empirical results on Section 6. Section 7 concludes.

2. Corporate Governance System in Japan

(1) Definition of Corporate Governance

Corporate governance deals with the agency problem: the separation of management and finance. This basic agency problem suggests a possible definition of corporate governance as addressing both an adverse selection and a moral hazard problem.

The traditional definition of corporate governance was such a narrow view as Shleifer and Vishny (1997) mentioned that the ways in which the suppliers of finance to corporations assure themselves of getting a return on their investment. Recent trend, however, express doubts on the definition that solely focuses on shareholder value.

EPA (1998) shows the constituents of corporate governance as follows:
Table 1: Constituents of corporate governance

<table>
<thead>
<tr>
<th>Stakeholders</th>
<th>Interest</th>
<th>Desired management</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shareholders</td>
<td>Maximize profits</td>
<td>Profitable management</td>
</tr>
<tr>
<td></td>
<td>Asset protection</td>
<td>Sound management</td>
</tr>
<tr>
<td>Investors</td>
<td>Efficient investment</td>
<td>Exploitation of profitable investment</td>
</tr>
<tr>
<td>Creditors</td>
<td>Protection of receivables</td>
<td>Sound management</td>
</tr>
<tr>
<td>Main bank</td>
<td>Corporate growth</td>
<td>Profitable management</td>
</tr>
<tr>
<td>Employees</td>
<td>Pay raise</td>
<td>Sound management</td>
</tr>
<tr>
<td></td>
<td>Secure employment relationship</td>
<td>Sustainable corporate growth</td>
</tr>
<tr>
<td></td>
<td>Promotion</td>
<td></td>
</tr>
<tr>
<td>Consumers</td>
<td>High quality goods and services</td>
<td>Pursuit of productivity growth</td>
</tr>
<tr>
<td>Suppliers</td>
<td>Business stability</td>
<td>Profitable management</td>
</tr>
<tr>
<td></td>
<td>Expansion of business</td>
<td>Sound management</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Sustainable corporate growth</td>
</tr>
</tbody>
</table>

Source: EPA (1998), Mitsubishi Research Institute, Inc.

Aoki and Okuno (1996) consider the profit of both shareholders and employees, and advocates the governance structure so called “dual control” that both shareholders and employees have control rights, and “contingent governance” where the control rights moves between inside stakeholders and outside stakeholders according to the business conditions. Tirole (2001) shows that shareholder value approach is too narrow a view for an economic analysis of corporate governance, once incentive considerations have been made. It emphasizes the need for any design of governance structures that depart from shareholder value to be in accordance with the lessons of the new economics of incentives and control. And one possibility is the concept of the “stakeholder society” value approach.

Managerial decisions affect not only shareholders, but they also exert externalities on a various kinds of stakeholders who have an innate relationship with the firm. Therefore, many have advocated moving from traditional view that solely focuses on the shareholder value to the broader concept of putting the attention of the various stakeholders.¹

(2) The Characteristics of Corporate Governance System in Japan

Managerial decisions do impact not only shareholders, but they also exert externalities on a number of stakeholders. In this sense, the structure of corporate governance can serve in a way comparable to public goods. Then, what kinds of corporate governance exist?

Corporate governance system is mainly divided into two systems, insider type governance and open type governance. It is often pointed out that typical Japanese firms have

¹ The popularity of the shareholder value concept is much higher in Anglo-Saxon countries than in other developed countries. In Japan, corporations should aim to promote growth, longevity and a secure employment relationship, with profitability being more an instrument than the ultimate goal (Tirole (2001)).
been taking the insider type corporate governance, while Anglo-American firms are taking open type governance. The following table shows the characteristics of both types of governance.

### Table 2: Insider type governance and open type governance

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Insider Type Corporate Governance System</th>
<th>Open Type Corporate Governance System</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Characteristics</strong></td>
<td>* Based on a long-term relation and mutual reliance.</td>
<td>* Based on law, contracts, and self-responsibility.</td>
</tr>
<tr>
<td></td>
<td>* Not taking opportunity principle mutually.</td>
<td>* A lot of bearers of corporate governance.</td>
</tr>
<tr>
<td></td>
<td>* The bearer of corporate governance is limited.</td>
<td>* Various kinds of monitors.</td>
</tr>
<tr>
<td></td>
<td>* Monitoring is taken on by a main bank.</td>
<td>* Assuming the existence of the market, with free entry and free withdrawal.</td>
</tr>
<tr>
<td></td>
<td>* Insufficient disclosure.</td>
<td>* Sufficient disclosure.</td>
</tr>
<tr>
<td></td>
<td>* Price mechanism works.</td>
<td></td>
</tr>
<tr>
<td><strong>Strengths</strong></td>
<td>* Stable management and stable employment.</td>
<td>* Incentive mechanism works for managers.</td>
</tr>
<tr>
<td></td>
<td>* Internalize adjustment cost.</td>
<td></td>
</tr>
<tr>
<td><strong>Limitations</strong></td>
<td>* Uncertain management system.</td>
<td>* Burgeoning monitoring cost.</td>
</tr>
<tr>
<td></td>
<td>* The system becomes invalid when the management is unstable.</td>
<td>* Generate free riders of monitoring.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>* Promote rent-seeking activities.</td>
</tr>
</tbody>
</table>

Source: EPA (1998), Mitsubishi Research Institute, Inc.

Insider type corporate governance\(^2\) is characterized that the bearer of corporate governance is limited to such firms as having long-term transaction relationship and mutual reliance, while open type is characterized by having diversified unstable shareholders and monitors.

Insider type corporate governance that is based on long-term relationships between principal and agents, main bank is an appropriate monitor of firms. There are institutional complementarities between the main bank system and long-term employment, such as lifetime employment system. While the open type corporate governance system assumes rather short-term competitive labor market, and uses various participants of stock market effectively as monitors. Open type governance emphasizes shareholders, while insider type governance tends to stress on various kinds of stakeholders.

For example, Kester (1991) shows that Japanese firms attach importance on the wealth of their numerous stakeholders rather than to that of shareholders. According to Gibson

\(^2\) Japan’s main bank and financial keiretsu systems are quite popular as components of insider type corporate governance.
the Japanese corporate governance system gives primacy to insider stakeholders, not outside shareholders. Morck and Nakamura (1999) also argue that Japan’s main bank and financial keiretsu system left corporate governance largely in the hands of creditors rather than shareholders. Creditor-controlled firms might excessively direct their capital investment towards the expansion of existing facilities, increased market shares in existing products, minor variations in product design, and other low risk, low return ventures. Along with the weak institutional investors and no market for corporate control, Gibson (1998) pointed out that these are the main reasons that Japanese firms produce low returns for shareholders.

Main strengths of Japanese corporate governance lie in internalizing the main outside stakeholders such as shareholders and creditors, by generating transaction relationships, and thus retrench the agency cost that arises from the separation of ownership and control, and ensure stable financing. Hoshi, Kashyap, Scharfstein (1991) argue that the Japan’s main bank system contributes to reduce the agency cost between the lenders and borrowers in 1980s. Because the system emphasizes rather long-term continuance of the firms than short-term profit, management and employment become stable. Main bank system, that represents this type of corporate governance, has institutional complementarities with life long employment system and seniority promotion system. On the other hand, there are some demerits in this type of governance such that closed information-sharing, lack of management transparency, disregarding the profit of such stakeholders as small shareholders and customers.

Japan’s past outstanding economic performance proved that Japan’s economic structure, including the corporate governance system, had worked well. Berglof and Perotti (1994) show that the keiretsu system of corporate groups can prevent managers from shirking. However, Morck and Nakamura (1999) argue that Japanese corporate governance practices may also have played a critical role, both in pulling Japan’s economy into its current muddle and in keeping it there. Despite the progress of deregulation and market mechanism, Japan is facing ongoing recessions after the bubble economy. One of the reasons is the malfunctioning corporate governance, the demerits of insider type governance as represented by main bank system and cross-shareholding, brought to light. Lingering bad debt problems also mean that main bank system could not discipline the management any more.

Then, why insider type governance does not work well in current Japan? The reasons might be as follows:

1) Indirect finance to direct finance by financial deregulation

With the recent deregulation of Japanese financial markets, alternatives to bank debt

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3 The strengths of open type corporate governance lie in that it motivates managers and promotes the smooth realignment of businesses. The limitation of open type governance are such that high monitoring cost, a lot of free riders, and promoting rent-seeking activities.
have become available to large Japanese firms. Many large firms have replaced bank loans with direct borrowing from capital markets, such as bonds and commercial paper. Diversifying the means of financing weaken the function of main banks. In this case, it is thought that not an insider type, but open type governance comes to function.

2) Dynamics have changed between main bank and firm

High net worth Japanese firms appear to have freed themselves from the corporate governance of banks. Banks are becoming less powerful in corporate governance matters in many firms, and at the same time are growing more interested in high share values. As a result, the ability of the Japanese corporate governance system to use bank monitoring to reduce the agency costs of debt have fallen and can be expected to continue falling.

Recently, firms stress external evaluation and management transparency, and typical Japanese corporate governance system has to be reexamined. Japan needs a new system. Reforming corporate governance presents a promising opportunity for Japan to improve its future economic performance. In this case, we should note that the institutional complementarities exist among the Japanese corporate governance system, including main bank system and cross share-holding, labor system, business transaction system, financial system, and legal system. Because of the institutional complementarities among the systems, changing the corporate governance system alone would likely to yield an undesired outcome. So, it requires careful judgment in changing the insider type governance system to open type governance system.

In addition, we should note that open type governance system is not a prerequisite to improve the competitiveness of firms. It needs several conditions for the system to be effective. The system might be effective in the economy where new technologies, deregulations, and globalization open up the possibilities for bringing benefits. If the economy is in a bad condition and is hard to get the profit, the system would not be effective. Furthermore, Kawamura and Hirota (2002) argue that the governance by shareholders is not necessary because the autonomous governance, which employees implicitly discipline employers, works effectively in Japan. Lifetime employment system, illiquid labor market, and employer-employee information sharing are the reasons why autonomous governance mechanism works. However, those firms that do not have the above characteristics are not expected to improve the performance by adopting autonomous governance mechanism. In addition, the governance mechanism will prevent effective management if it is applied to depressed industries that need restructuring. Those industries need outsider’s governance such
as by shareholders.

Generally speaking, Japanese corporate governance system is to change from insider type governance to open type governance. But, we have to admit the fact that firms are varied, and adequate corporate governance system will change according to the characteristics of firms and the business conditions that surround firms.

3. Preceding Researches on Corporate Governance and Firm Performance

(1) Corporate Governance in the United States and Europe

Profitability or productivity growth?

Greater attention has been paid to profitability than efficiency and productivity growth in the traditional studies of corporate governance in the United States and Europe. For example, classical study on corporate governance of Demsetz and Lehn (1985) cast doubt on the Berle-Means thesis, as they found no significant relationship between ownership concentration and accounting profit rates for 511 U.S. firms.

It is more natural, however, to put an emphasis on productivity, since it is productivity growth that is the cause of the wealth of nations. Recent studies on corporate governance put more emphasis on productivity growth. Then, we should ask what type of governance system could contribute to the productivity growth. The best corporate governance system varies according to the characteristics of firms.

Effectiveness of shareholder control is uncertain

The evidence on the effect of shareholder control on productivity is mixed. Leech and Leahy (1991) find that better ownership control improves firm performance in the U.S, while Himmelberg, Hubbard, and Palia (1999) extend the cross-sectional results of Demsetz and Lehn (1985) on U.S. firms, and find no evidence for the notion that changes in managerial ownership affect firm performance. McConnell and Servaes (1990) find positive significant relationship between the institutional investors’ shareholding ratio and Tobin’s q on U.S. listed firms, but it does not necessarily mean that the institutional investors, as shareholders, pump up the performance of the firms. Rather, it might be that institutional investors choose those firms with high Tobin’s q and high-growth firms. Allen and Gale (2000) show that there are a lot of U.S. firms that have achieved excellent business result with little shareholder control. The effect of shareholder control of U.S. firms is uncertain.

Nickell, Nicolitsas, and Dryden (1997) estimate the effect of product market competition, shareholder control, and debt levels on firm-level productivity growth in the U.K. firms, and show a positive influence of ownership control, along with market competition and
financial pressure, on productivity growth.

Whether shareholder control is effective or not depends also on the economic systems, economic conditions, legal systems, and so on.

**Competition can be effective for the productivity growth**

Nickell (1996) finds, based on an analysis of around 670 U.K. firms, that competition is associated with higher rates of total factor productivity growth, while market power, as captured by market share, generates reduced levels of productivity. The result, however, suggests that competition will lower the productivity growth in Japan because the typical form of competition of Japanese firms tends to go after bigger market share. Competition can be effective, but the form of competition has to be considered. Januszewski, Koke, and Winter (1999) show that firms operating in industries which are characterized by more intensive product market competition experience higher rates of productivity growth, based on 400 manufacturing firms in Germany over the 1986-94 periods. They also find that weak evidence for the notion that Germany’s bank-based system of internal control, ownership concentration, and cross shareholdings are harmful for productivity growth.

**Financial pressure and productivity growth**

In addition, although not robust across specifications, Januszewski, Koke, and Winter (1999) find a significant negative impact on financial pressure on productivity growth for Germany. While Nickell, Nicolitsas, and Dryden (1997) and Nickell and Nicolitsas (1999) obtained a small positive effect on financial pressure on productivity growth by using U.K. data. The difference might be related to the dominance of banks in firm finance in Germany. The result is quite interesting because the typical corporate governance system, bank-based system of internal control, is similar in Germany and Japan.

**The best corporate governance system applicable for all the nations will not exist**

Shleifer and Vishny (1997) show that successful corporate governance systems, such as U.S., Germany, and Japan, combine significant legal protection of at least some investors with an important role for large investors. At the same time, they do not believe that the

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4 Nickell (1996) measured “competition” by increased numbers of competitors or by lower levels of rents.
5 Kitamura (2001) finds that among market share variables, especially sales share play a very important role in Japanese firms.
6 On the other hand, Hoshi, McMillan, and Schaeede (1997) find that the effect of market concentration and market share on Tobin’s q is positive based on the data of large Japanese firms. This result, however, does not suggest the absence of a disciplinary role of a market competition; it just shows the disciplinary effect is dominated by the monopoly rent effect.
7 Nickell and Nicolitsas (1999) find that an increase in financial pressure has a large negative effect on employment while it has a small positive effect on productivity.
available evidence tells them which one of the successful governance system is the best.

Holmstrom and Kaplan (2001) insist that the characteristic of corporate governance in U.S. firms is not constant over time, but changed substantially in the last 20 years. Corporate governance in the 1980s was dominated by intense merger activity distinguished by the prevalence of leveraged buyouts (LBOs) and hostility, and promotes managers to improve the management efficiency. After a brief decline in the early 1990s, substantial merger activity resumed in the second half of the decade, while LBOs and hostility did not. Instead, the new corporate governance mechanisms, such as introducing stock option plan and EVA, appear to have played a larger role in the 1990s. In addition, institutional investors, such as pension funds, come to be large shareholders, and thus are likely to serve as monitors. The paper concluded that the U.S. style of corporate governance has reinvented itself, and the rest of the world, including France, Germany, and Japan, seems to be following the same path.

Some of recent papers try to make comparative studies and determine relative merits of various kinds of corporate governance system as we have mentioned above. But the best corporate governance system that is applicable for all the nations will not exist. The best governance will change according to the legal system, economic structures, economic conditions, and so forth. We also have to pay an attention to the institutional complementarities of various systems in considering the appropriate corporate governance.
<table>
<thead>
<tr>
<th>Author(s)</th>
<th>Sample and Period</th>
<th>Dependent variable</th>
<th>Independent Variable</th>
<th>Statistical methods</th>
<th>Main results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Demsetz and Lehn</td>
<td>511 large US firms, including financials, 1976-80.</td>
<td>1) Return on equity. 2) Standard error of market model regressing firm return on market return.</td>
<td>1) Firm size 2) Standard deviation of stock return. 3) Standard deviation of accounting return on equity. 4) Industry dummies for utilities, financials and media. 5) Capital expenditure / total sales. 6) Advertising / total sales. 7) Research &amp; development / total sales.</td>
<td>OLS</td>
<td>Performance by accounting return is insignificantly decreasing with ownership by large shareholders. Ownership by large shareholders increases significantly by standard error of market return.</td>
</tr>
<tr>
<td>McConnell and Servaes (1990)</td>
<td>1.173 firms in 1976 and 1.093 firms in 1986. US firms listed on NYSE or AMEX, 1976 &amp; 1986.</td>
<td>1) Tobin’s Q 2) Return on assets.</td>
<td>1) Size by replacement cost of assets. 2) R&amp;D costs to size. 3) Advertising to size. 4) Long-term debt to size.</td>
<td>OLS</td>
<td>Profitability is significantly increasing with ownership by managers and directors. Performance increases significantly with institutional ownership.</td>
</tr>
<tr>
<td>Leach and Leahy</td>
<td>470 large industrial, UK firms, 1983-85.</td>
<td>1) Market value / Share capital 2) Return on sales 3) Return on equity.</td>
<td>1) Size by log of sales. 2) Product diversification 3) Export intensity of sales. 4) Capital / labor 5) Age of firm. 6) Beta risk. 7) Standard deviation of return. 8) Industry.</td>
<td>Multivariate regression</td>
<td>Ownership control firms are significantly more profitable than management control firms with regard to return on equity, return on sales, growth of sales and growth of net assets.</td>
</tr>
<tr>
<td>Nickell (1996)</td>
<td>Panel data from EXSTAT. 670 UK firms, 1972-86.</td>
<td>Productivity growth derived from the firms’ production function.</td>
<td>1) Market share 2) Competition dummy 3) Rents normalized on value-added</td>
<td>Fixed effects, GMM estimation using the Arellano and Bond method</td>
<td>Market power generates reduced levels of productivity. Competition is associated with higher rates of TFP growth.</td>
</tr>
</tbody>
</table>
Corporate Governance in Japan

The difference between firms in the U.S. and Japan

The corporate governance system in Japan is generally believed to differ significantly from its U.S. counterpart. The Japanese system, also German system, is usually characterized as bank and relationship oriented insider type governance, while the U.S. system as stock market oriented open type governance. According to Abegglen and Stalk (1985), Japanese managers rated market share the most important and stock price the least important of corporate objectives. One of the reasons is that Japanese shareholders are unable to discipline managers effectively. Milgrom and Roberts (1992) conclude that Japanese firms are not run in the interests of their shareholders.

On the other hand, Kaplan and Minton (1994) argue that the traditional view that managers and employees can manage Japanese firms at the expense of shareholders is not to the point.

Then, what are the strengths of Japanese type of corporate governance? Grundfest (1990) points out that the close financial ties and relationships in Japan reduce agency costs and allow investors to monitor managers more effectively in the U.S. Hoshi, Kashyap, and Scharfstein (1991) are also sympathetic to this view. Because of this, Japanese firms are better able than U.S. firms to invest in projects with long-term payoffs.

Two distinct corporate governance systems in Japan

In more detail, there exist two distinct corporate governance systems in Japan, one among independent firms and the other among firms that are members of keiretsu. Prowse (1992) uses data on share ownership for a sample of 734 firms and finds that ownership concentration in independent Japanese firms is positively related to the returns from exerting greater control over management, but it is not the case in firms that are members of keiretsu. Among independent firms, management appears to be disciplined in part by large shareholders taking larger equity positions in those firms where increased control brings the largest benefits. Among keiretsu firms, a different governance system appears to operate, where management is disciplined through a complex interaction of monitoring and control conducted by suppliers, customers, and financiers who typically have long-term commercial relationships with the firm in addition to being major creditors and shareholders. And neither system has had an overwhelming advantage over the other. However, as Kester (1991) points out, the dramatic changes such as improved access to global capital markets and the deregulation of domestic capital markets may have weakened the governance mechanism in the keiretsu groups.
The function and the role of corporate governance system in Japan

Main bank system has played a role of strengthening discipline. Kaplan (1994) compared the top executive rewards and firm performance between Japan and the United States, and found that the fortunes of Japanese top executives are positively correlated with stock performance and current cash flows as that of U.S. It is often said that Japanese managers are more interested in amount of sales than profit and stock performance, but it is not true. In general, the relations for the Japanese executives are economically and statistically similar to those for their U.S. counterparts. However, turnover of the top managers of the large Japanese firms was sensitive to the firm’s stock price, earnings, and sales growth, and the sensitivities were similar in magnitude to those of the top managers of the large U.S. firms. It also found that turnover of Japanese executives was more sensitive to poor earnings performance and less sensitive to stock returns than was turnover of U.S. executives. This result suggests that main bank will intervene when firms face bankruptcy in Japan.

Kaplan and Minton (1994) investigate the determinants of appointments of outsiders\(^8\) to the boards of large non-financial Japanese corporations, which increase with poor stock performance and earning losses. It finds that the frequency of external monitoring by main bank, in the form of sending a director to sit on the firm’s board, is higher in Japan. The frequency of takeover is higher in the U.S. And the conclusion is that banks and corporate shareholders play an important monitoring and disciplinary role in Japan.

Kang and Shivdasani (1995) find increased top management turnover among firms with main bank relationships when they make poor earning performance. It also finds the significant positive relationship between poor stock performance and top management turnover with a presence of large shareholders in a firm, and shows that the performance improves after the turnover of top management. It suggests that these shareholders provide a monitoring function. Kang and Shivdasani (1997) show that financial performance has only a small effect on downsizing and layoffs by using a sample of Japanese manufacturing firms. Those firms with strong relationship with main bank, however, have high frequency of downsizing and layoffs. And new bank representatives are appointed to the boards of Japanese companies when their financial performance lags, and argue that Japanese banks may exercise a corporate governance role that, in some respects, substitutes for shareholder pressure.

Hoshi, McMillan, and Schaeade (1997) find that main-bank monitoring tends to improve corporate performance, and bank monitoring and market competition are complementary to each other in Japan\(^9\).

These studies somewhat agree with the effectiveness of main bank system, but they

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\(^8\) Directors previously employed by banks or by other non-financial firms.

\(^9\) The paper also finds that market competition and debt-based discipline are substitutes.
are only covering before the collapse of the bubble economy. The results might change by using the data after the bubble economy.

Kitamura (2001) uses the data after the bubble economy, and confirms the traditional view that the Japanese corporate governance is mainly conducted through the main bank system, and not through the pressure of shareholders and corporate bondholders. However, it also points out that borrowing from the bank has been declining sharply in the 1990s, and the external monitoring does not seem to be functioning.

Inefficiency caused by Japanese governance system

Mainstream opinion of Japanese governance system is pointing out the inefficiency of main bank system. Weinstein and Yafeh (1998) get the result that the close bank-firm ties increase the availability of capital to borrowing firms, but do not lead to higher profitability or growth, by econometric analysis based on listed manufacturing firms in Japan. The paper suggests that the monitoring activities of insider stakeholders, main banks, are not aimed at forcing managers to pursue high returns for outside shareholders. And the slow growth rates of bank clients suggest that banks discourage firms from investigating in risky, profitable projects. Sasaki and Yonezawa (2000) find that those firms with typical Japanese governance system, such as low foreigners’ shareholding ratio, close relationships with main bank, tend to have low Tobin’s q, high level of labor share, and low shareholder value. Osano and Hori (2002) make it clear that those firms with low growth potential and unfavorable financial standings choose indirect financing and have high shareholding ratio by main bank, based on the financial data of Japanese firms in late 1990’s. And it also finds that main bank system has played a large role especially in relatively small firms. Miyajima, Arakawa, and Saito (2001) pay an attention to the overinvestment problems of bubble economy, that was late 1980s, in Japan, and get the result that those firms that relied too much on main bank tend to face the overinvestment problem, and thus the management of the firms is inefficient.\footnote{Yonezawa and Sasaki (2001) also analyze the overinvestment problem of firms with low Tobin’s q. That is, the level of investment might be optimal from a value-added perspective, but it is not optimal from the shareholder perspective. Welfare of employees is counted at the cost of shareholders’ value.}

These results show that the main bank system in Japan causes inefficiency and low growth rate of firms.

New governance system is needed for the sustainable growth

Traditional Japanese corporate governance system is now getting dysfunctional. Then, what kinds of conditions are necessary for the governance to work properly? Some recent studies show solutions. For example, Masuko (2001) insists that direct financing, dissolution
of cross share-holdings, and accessible stock market for foreign investors are the necessary conditions for Japanese firms to help corporate governance function and to discipline the management. In that case, institutional investors should play a starring role. Nishizaki and Kurasawa (2002) have made an econometric analysis based on the panel data of 823 listed and over-the-counter firms of 1990s. It finds the positive significant impact of outside major shareholders, while significant negative impact of cross share-holdings, on corporate value. It is inferred from the results that outside major shareholders play an ever-greater role in corporate governance after the 1990s. Oomura, Suto, and Masuko (2001) analyze that there are some conditions for Japanese institutional investors to play a function of corporate governance instead of main bank based on a survey in the form of a questionnaire: Promoting disclosures, dissolution of main bank system and cross-shareholdings relationship are the necessary conditions. Suzuki (2001) confirmed that share-holdings by executives served as an incentive by the late 1990s. The incentive effect of stock option is statistically significant, while the effect of the system of outside board members and operating officers is insignificant in disciplining the management at the year 2001.

Table 3: Preceding Researches on Corporate Governance (Japan)

<table>
<thead>
<tr>
<th>Author(s)</th>
<th>Sample and Period</th>
<th>Dependent variable</th>
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</tr>
</thead>
<tbody>
<tr>
<td>Prowse (1992)</td>
<td>Original sample: 734 Japanese firms. Smaller sample: 143 firms; 85 keiretsu and 58 independent firms. 1979-1984.</td>
<td>Ownership concentration</td>
<td>1) Firm size 2) Instability of the firm's profit rate 3) Capital expenditure/Total sales 4) Ratio of advertising expenditures 5) Ratio of R&amp;D expenditures 6) Total assets 7) Concentration of debt ownership</td>
<td>OLS</td>
<td>Ownership concentration in independent Japanese firms is positively related to the returns from exerting greater control over management, but it is not the case in firms that are members of keiretsu. Among independent firms, management appears to be disciplined in part by large shareholders. Among keiretsu firms, a different governance system appears to operate, where management is disciplined through a complex interaction of monitoring and control conducted by suppliers, customers, and financiers.</td>
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</table>

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11 Pension fund is more interested in the corporate governance as the fund becomes larger. At this moment, however, following mechanism is not proved that institutional investors that take a proactive stance in corporate governance improve the performance of pension fund management.
Table 3: Preceding Researches on Corporate Governance (Japan) continued.

<table>
<thead>
<tr>
<th>Author(s)</th>
<th>Sample and Period</th>
<th>Dependent variable</th>
<th>Independent Variable</th>
<th>Statistical methods</th>
<th>Main results</th>
</tr>
</thead>
</table>
2) Market share  
3) Main bank dependence  
4) Shareholders concentration  
5) Debt-asset ratio  
6) Asset | OLS | Main-bank monitoring tends to improve corporate performance, and bank monitoring and market competition are complementary. Market competition and debt-based discipline are substitutes. |
2) Debt/sales  
3) Debt/equity  
4) Real sales growth  
5) Capital/sales and its squared  
6) log (sales)  
7) Std. dev. of operating income/sales  
8) Shareholders’ share  
9) Industry dummy  
10) Year dummy | OLS | Close bank-firm ties increase the availability of capital to borrowing firms, but do not lead to higher profitability or growth. The monitoring activities by main banks are not aimed at forcing managers to pursue high returns for outside shareholders. The slow growth rates of bank clients suggest that banks discourage firms from investigating in risky, profitable projects. |
2) Main bank dummy  
3) Labor share | OLS | Low foreigners’ shareholding ratio, close relationships with main bank, tend to have low Tobin’s q, high level of labor share, and low shareholder value. |
2) Labor  
3) Capital  
4) Debt-asset ratio and its squared  
5) Own capital ratio  
6) Liquidity ratio  
7) Debt equity ratio | Fixed Effect model  
Random effect model | Japanese corporate governance is mainly conducted through the main bank system, and not through the pressure of shareholders and corporate bondholders. Sales share play a very important role in Japanese firms. |
2) Stock option dummy  
3) Operating officer dummy  
4) Outside director dummy  
5) ROE  
6) Shareholding by banks  
7) Lifelong employment dummy | IV regression, Probit | Share-holdings by executives served as an incentive by the late 1990s. The incentive effect of stock option is statistically significant, while the effect of the system of outside board members and operating officers is insignificant in disciplining the management at the year 2001. |
| Masuko (2001) | 1194 Japanese firms, that respond to the questionnaire on governance. 1999. | Tobin’s Q | 1) Shareholder’s equity ratio  
2) Bond ratio  
3) Governance factors from PCA  
4) Shareholding by foreigners | Principal component analysis. OLS | Direct financing, dissolution of cross share-holdings, and accessible stock market for foreign investors are the necessary conditions for Japanese firms to help corporate governance function and to discipline the management |
2) Current income / total asset  
3) Issue standards dummy  
4) Main bank loans/ total asset | Fixed Effect model  
Random effect model | Firms that relied much on main bank tend to face the overinvestment problem, and thus the management of the firms is inefficient. |
2) Probability of underwriting by main bank  
3) Main bank shareholding ratio | Double hurdle model | Low foreigners’ shareholding ratio and close relationships with main bank tend to have low Tobin’s q, high level of labor share, and low shareholder value. |
2) Time dummy  
3) Shareholding ratio by financial, non-financial, foreign, and individuals. | Fixed Effect model  
Random effect model | Finds the positive significant impact of outside major shareholders, while significant negative impact of cross share-holdings, on corporate value. Outside major shareholders play an ever-greater role in corporate governance after the 1990s. |
4. Data

From now on, we will investigate the relationship between corporate governance and firm performance in Japan, using firm-level data ranging from 1979 to 2001.

We use the sample of Japanese private firms from “Kigyo Keiei no Bunseki (Analysis of Corporate Management)” compiled and published yearly by Mitsubishi Research Institute, Inc. This database contains data from balance sheets and from profit and loss statements of selected Japanese firms. That is, most of the series originally come from firms’ official financial statements, but some of the series, for example, value added and its components data, are obtained by sending questionnaires to firms directly. Balance sheet data appear in unconsolidated forms. In this paper, we excluded firms that went bankrupt and that were merged before 2001, realizing that we would have a survival bias. We excluded highly “public” firms, i.e., electric power firms and airline firms. Also, we excluded firms that cannot match with external data needed for our estimation, and that changed their accounting period after fiscal 1990. Eventually, our dataset becomes an unbalanced panel data with 9651 observations of 468 firms for the fiscal 1979 - 2001.

The ownership structure data for 130 listed firms of machinery industry, wholesale and retail industry are taken from “Nikkei NEEDS-Financial Quest”. We obtained data on total number of shareholdings and number of those by financial institutions (banks), securities companies, non-financial business corporations, foreigners, and individuals, so as to obtain ratios of shareholdings for the end of fiscal 1980-2001.

The variables we use in panel data analysis are constructed in the following way.

Value added

Value added is a sum of the following items: (i) personnel cost (employees compensation, welfare expense and allowance for employee retirement benefits), (ii) rental cost, (iii) financial cost, tax and public charge (excluding the following taxes), (iv) corporate tax, residence tax, and enterprise tax, (v) current net profit, (vi) depreciation allowance. Thus, this item is in line with the concept of value added in SNA.

Capital stock

According to Nakayama (1999) that also used the same dataset in the analysis, we
estimated each firm’s capital stock as following. For each firm, we calculated annual increments of tangible fixed asset, and defined it as net fixed investments. Then, adding depreciation allowances to net fixed investments, we obtained gross fixed investments. Deflating gross fixed investments by private fixed investment deflator from SNA, we found real gross fixed investments. In order to obtain depreciation rate, we divided depreciation allowances by tangible fixed asset at the beginning of each fiscal year. Taking real tangible fixed asset at the initial year (for most firms, fiscal 1979) as an initial value of real capital stock, capital stock evolves according to: \( K_{it} = I_{it} + (1 - \delta_{it})K_{i,t-1} \), where \( K_{it} \) denotes firm \( i \)'s real capital stock at time \( t \), \( I_{it} \) denotes real gross fixed investment, and \( \delta_{it} \) denotes depreciation rate.

**Labor input**

Each firm’s labor input denoted by \( L_{it} \) is the product of a total number of full-time employees of the firm and hours worked by industry. “Full-time employees” here are the sum of the number of full-time employees and that of board members. “Hours worked by industry” is taken from “Monthly Labour Survey” by Ministry of Health, Labour and Welfare.

**Measures of corporate governance**

Kitamura (2001) used the following measures as variables representing the firm’s corporate governance or financial discipline: debt-asset ratio, square of debt-asset ratio, shareholder’s equity-asset ratio, liquidity asset-liquidity debt ratio, debt-equity ratio. Hoshi, McMillan and Schaede (1997) used debt-asset ratio, shareholders concentration, bank-debt concentration. Nishizaki and Kurasawa (2002) used shareholding ratios of: i) financial institutions, ii) non-financial institutions, iii) foreigners, and iv) individuals. Also they used a shareholding ratio of block shareholders that is a sum of the above i), ii) and iii).

In this paper, since we are mainly interested in the effects of ownership structure on firm performance, we will use shareholding ratios as explanatory variables of TFP growth. Also, we include debt-asset ratio as an explanatory variable representing financial discipline, to see whether debt-asset ratio improves firm performance or not. That is, as Hoshi, McMillan and Schaede (1997) suggested, we will check if a large amount of debt obligation reduces the amount of free cash flow that the manager can put to unprofitable uses.

**Measures of market competition**
To see whether there is the disciplinary effect of market competition among Japanese firms, we will use the market share as a proxy of the degree of market competition, following preceding literatures about the relationship between market competition and firm performance. The market share is defined as the share of the firm’s sales in total sales in industry. We used total sales by industry in Ministry of Finance’s “Houjin Kigyo Tokei (Financial Statements Statistics of Corporations by Industry)”.

5. Model

The basic empirical model we use here is basically based on Januszewski, Koke, and Winter (1997), and thus on Nickell (1996). We start with the following constant-returns-to-scale Cobb-Douglas production function:

\[ Y_{it} = A_{it} K_{it}^{\beta_k} L_{it}^{\beta_L} \]

where \( Y \) is value added, \( A \) is total factor productivity (TFP), \( K \) is capital stock, \( L \) is labor input, \( i \) is the firm subscript, and \( t \) is the time subscript. Constant returns to scale assumption yields: \( \beta_L = (1 - \beta_K) \equiv \beta_b \). Following Januszewski, Koke and Winter (1997) and thus Nickell (1996), we add lagged value added as a dependent variable to allow for endogenous persistence with a weight \( \lambda \), and we include unobserved firm-specific effects \( \alpha_i \), and include an error term \( \epsilon_{it} \), which is assumed to be serially uncorrelated over time. By taking logarithms the equation (1) we obtain the following:

\[ y_{it} = \lambda y_{it-1} + (1-\lambda)(1-\beta_b)k_{it} + (1-\lambda)\beta_b l_{it} + a_{it} + \alpha_i + \epsilon_{it} \]

To eliminate the firm-specific effects \( \alpha_i \), we take first differences of (2). Then we parametrize productivity growth (i.e., first difference of \( a_{it} \)), as a linear function of a set of explanatory variables representing characteristics of market competition and corporate governance as following:

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12 Estimating a simple Cobb-Douglas production function without using lagged value added and any restrictions on coefficients yield 0.996 for the sum of labor share and capital share, implying that our CRS assumption is reasonable.
\(\Delta a_u = a_u - a_{u-1} = \Delta \alpha_i + \beta_1 MSHARE_{u-1} + \beta_2 DAR_u + \beta_3 \Delta SHARE_{u-1}\)

\(MSHARE_{u-1}\) is a lagged market share of firm \(i\) in industry \(j\), and \(DAR_u\) is a debt-asset ratio of firm \(i\), and \(\Delta SHARE_{u-1}\) is a first-difference in a ratio of blockholders’ shareholdings of firm \(i\). To reflect annual changes in shareholding ratios on TFP growth, we will use the first difference of them. Using the equation (3), and setting \(\beta = (1 - \lambda)\beta_0\) yield the following equation:

\[\Delta y_u = \lambda \Delta y_{u-1} + (1 - \lambda - \beta_k) \Delta k_u + \beta_1 \Delta l_u + \Delta \alpha_i + \beta_2 MSHARE_{u-1} + \beta_3 DAR_{u-1} + \beta_4 \Delta SHARE_{u-1} + \Delta \epsilon_u\]

As Nickell (1996) pointed out, the error term \(\epsilon_u\) contains productivity shocks related to labor input or capital intensity, so we regard both \(k_u\) and \(l_u\) as endogenous. Also, in the equation (4), \(\Delta y_{u-1}\) is correlated with \(\Delta \epsilon_u\), according to the equation (2). But, given that \(\epsilon_u\) is serially uncorrelated over time, all lags on \(y, k\) and \(l\) beyond \(t-1\) can be valid instruments. Here we can apply of the generalized method of moments (GMM) estimators by Arellano and Bond (1991), while testing for serial correlation in the first difference residuals. In the following estimations, we also examine instrument validity using Sargan test of over identifying restrictions.

6. Empirical results

As described before, we use an unbalanced panel of 468 Japanese firms for the fiscal 1979-2001. There is a subset of 130 firms for which we have ownership information (machinery industry).

The first result (Table 4) is estimated using the full sample of 468 Japanese firms in order to see the effect of financial discipline and market competition, not including ownership structure variables (1st column of Table 4). We also estimated the productivity growth equation without any explanatory variables for TFP growth (2nd column of Table 4). For both cases, we include interacted time and industry dummies. We see that the sum of coefficients on \(\Delta y_{u-1}\), \(\Delta k_u\) and \(\Delta l_u\) is reasonably close to one in either column (1st column=1.032, 2nd
column] = 1.033), implying that the specification of productivity growth equation is robust as a whole. But, a coefficient on $\Delta k_{it}$ is found to be relatively small, possibly resulting from measurement problems with capital stocks that are not controlled by operating ratios. A coefficient on the lagged market share is significantly negative, that is, market power measured by market share reduces productivity, which suggests the presence of a disciplinary role of market competition among Japanese firms. This result is in line with Nickell (1996) that used U.K. manufacturing sector companies. On the other hand, Hoshi, McMillan and Schaede (1997) that used the sample of large Japanese firms found it positive. In fact, we found statistical significance of this coefficient relatively weak. A coefficient on debt-asset ratio is found to be significantly positive, suggesting that a high amount of debt improves firm performance. We also tried to include an interaction term of $MSHARE_{it-1}$ and $DAR_{it}$, i.e., the -product of them, but found it statistically insignificant (we do not report it). At least, its coefficient is found to be negative, which is in line with Hoshi, McMillan and Schaede (1997) that found an evidence that debt-based discipline is a substitute for the market discipline.

The second result (Table 5-1 and 5-2) is estimated using the reduced sample of 130 Japanese firms in machinery industry with ownership structure variables. In the 1st column of Table 5-1, we include $\Delta SHARE_{it-1}$, i.e., the first difference of blockholders’ shareholdings ratio, along with $MSHARE_{it-1}$ and $DAR_{it}$. Here blockholders’ shareholdings ratio is the sum of financial institutions’, non-financial institutions’ and foreigners’ shareholdings ratios. First, we find that coefficients on $\Delta y_{it-1}$, $\Delta k_{it}$ and $\Delta l_{it}$ is close to one. Coefficient on $MSHARE_{it-1}$ is found to be positive (Note that if we do not include $\Delta SHARE_{it-1}$, then sign of $MSHARE_{it-1}$ is significantly negative as shown in the 3rd column of Table 5-1). But debt-asset ratio is still positive and $\Delta SHARE_{it-1}$ is also positive at the 6% significance level. This suggests that the monitoring by the blockholders have actually improved firm performance, as the precedence literatures about Japanese firms (that used measured firm performance by Tobin’s Q) showed.

Table 5-2 is the result using ratios of shareholdings by foreigners, individuals, and financial institutions ($\Delta SHARE_{fore, it-1}$, $\Delta SHARE_{indi, it-1}$, and $\Delta SHARE_{fina, it-1}$, respectively). When we use the ratio of shareholdings by foreigners (1st and 2nd columns of Table 5-2), coefficient on $\Delta SHARE_{fore, it-1}$ is positive at the 1.5% significance level, showing even higher significance than that of blockholders. This implies that foreign shareholders’ monitoring have
improved firm performance in Japan. This can be attributed to the fact that we are now using firms in machinery industry that have been constantly exposed themselves to international competition. Next, according to the estimation using the ratio of individuals’ shareholdings (3rd and 4th columns of Table 5-2), the impact of small shareholder is negative on firm performance at around 10% significance level. This result is in line with Nishizaki and Kurasawa (2002) that used Tobin’s Q as Japanese firm performance. As they or other preceding literatures about the relationship between corporate governance and firm performance suggested, this implies the presence of free rider problem associated with small shareholders. Finally, when we use the shareholding ratios of financial institutions that is said to have been playing important roles in Japanese corporate governance system, coefficient on $\DeltaSHARE_{fina_{t-1}}$ is negative but insignificant. This might suggest that monitoring by financial institutions have not quite worked to improve Japanese firm performance (we have to be careful about this result, since “financial institutions” here includes institutional investors such as trust banks). Also, when we use the ratios of non-financial institutions shareholdings, coefficient shows insignificant. That is, among large shareholders, only foreign shareholders have positively affected Japanese firm performance. In other words, large but stable shareholders such as financial institutions have not quite improved Japanese firm performance.
Table 4: Estimation of the Production Function (Eq. (4) without \( \Delta SHARE_{it-1} \))

<table>
<thead>
<tr>
<th></th>
<th>Full sample (fiscal 1979-2001)</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Coefficient (t-statistic) [p-value]</td>
<td>Coefficient (t-statistic) [p-value]</td>
</tr>
<tr>
<td>Constant (( \Delta \alpha_t ))</td>
<td>0.004 (0.84) [0.00]</td>
<td>1.104 (2.03) [0.04]</td>
</tr>
<tr>
<td>( *\Delta y_{it-1} )</td>
<td>0.369 (16.45) [0.00]</td>
<td>0.381 (17.01) [0.00]</td>
</tr>
<tr>
<td>( *\Delta k_{it} )</td>
<td>0.083 (4.26) [0.00]</td>
<td>0.089 (4.50) [0.00]</td>
</tr>
<tr>
<td>( *\Delta l_{it} )</td>
<td>0.580 (17.91) [0.00]</td>
<td>0.563 (17.28) [0.00]</td>
</tr>
<tr>
<td>( MSHARE_{it-1} )</td>
<td>-0.075 (-2.53) [0.01]</td>
<td></td>
</tr>
<tr>
<td>( DAR_{it} )</td>
<td>0.0002 (5.16) [0.00]</td>
<td></td>
</tr>
</tbody>
</table>

Arellano-Bond test for first-order correlation of residuals:
-35.29 \( p=0.00 \)

Arellano-Bond test for second-order correlation of residuals:
4.96 \( p=0.00 \)

Sargan test of over-identifying restrictions:
\( \chi^2 \) (230)=1564.12 \( p=0.00 \)

Source: Authors’ calculations by Stata Ver. 7.0.

Notes: GMM estimation making use of the Arellano and Bond (1991) method executed by Stata Ver.7.0. Coefficients are one-step estimators. Regressions include 25 interacted time and industry dummies. “*” denotes variables that are treated as endogenous.
### Table 5-1: Estimation of the Production Function (Eq. (4))

**Dependent variable:** $\Delta y_{it}$

<table>
<thead>
<tr>
<th>Reduced sample (fiscal 1983-2001)</th>
<th>Coefficient (t-statistic) [p-value]</th>
<th>Coefficient (t-statistic) [p-value]</th>
<th>Coefficient (t-statistic) [p-value]</th>
<th>Coefficient (t-statistic) [p-value]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant ($\Delta \alpha_{it}$)</td>
<td>0.0452 (4.84) [0.000]</td>
<td>0.628 (10.77) [0.000]</td>
<td>0.0067 (1.99) [0.046]</td>
<td>0.0128 (7.50) [0.000]</td>
</tr>
<tr>
<td>$\Delta y_{it-1}$</td>
<td>0.0954 (2.09) [0.036]</td>
<td>0.0916 (2.25) [0.025]</td>
<td>0.2932 (11.50) [0.000]</td>
<td>0.2926 (11.39) [0.000]</td>
</tr>
<tr>
<td>$\Delta k_{it}$</td>
<td>0.1107 (2.56) [0.011]</td>
<td>0.1177 (2.73) [0.006]</td>
<td>0.1304 (5.93) [0.000]</td>
<td>0.1327 (6.05) [0.000]</td>
</tr>
<tr>
<td>$\Delta l_{it}$</td>
<td>0.7868 (9.67) [0.000]</td>
<td>0.7707 (9.52) [0.000]</td>
<td>0.5742 (15.40) [0.000]</td>
<td>0.5702 (15.30) [0.000]</td>
</tr>
<tr>
<td>$MSHARE_{it-1}$</td>
<td>0.1497 (1.29) [0.195]</td>
<td>-0.0659 (-2.17) [0.030]</td>
<td>0.0001</td>
<td>-0.0001 (-2.17) [0.030]</td>
</tr>
<tr>
<td>$DAR_{it}$</td>
<td>0.0003 (2.23) [0.026]</td>
<td>0.0000 (2.44) [0.015]</td>
<td>0.0000 (2.44) [0.015]</td>
<td>0.0000 (2.44) [0.015]</td>
</tr>
<tr>
<td>$\Delta SHARE_{it-1}$</td>
<td>0.3518 (1.88) [0.061]</td>
<td>0.3564 (1.90) [0.058]</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Arellano-Bond test for first-order correlation of residuals:**
-12.22 (p=0.000) \(-12.25 (p=0.000)\) \(-27.77 (p=0.000)\) \(-27.55 (p=0.000)\)

**Arellano-Bond test for second-order correlation of residuals:**
-4.63 (p=0.000) \(-4.58 (p=0.000)\) \(1.16 (p=0.248)\) \(1.16 (p=0.248)\)

**Sargan test of over-identifying restrictions:**
$\chi^2 (230)=846.18$ \(p=0.000\) \(\chi^2 (230)=846.90\) \(p=0.000\) \(\chi^2 (230)=1254.52\) \(p=0.000\) \(\chi^2 (230)=1264.23\) \(p=0.000\)

**Source:** Authors’ calculations by Stata Ver. 7.0.

**Notes:** GMM estimation making use of the Arellano and Bond (1991) method executed by Stata Ver.7.0. Coefficients are one-step estimators. Regressions include 25 interacted time and industry dummies. "*" denotes variables that are treated as endogenous.
Table 5-2: Estimation of the Production Function (Eq. (4) )

<table>
<thead>
<tr>
<th>dependent variable: ( \Delta y_{it} )</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reduced sample (fiscal 1983-2001)</td>
</tr>
<tr>
<td>Coefficient (t-statistic [p-value])</td>
</tr>
<tr>
<td>------------------------------------------</td>
</tr>
<tr>
<td>Constant ( (\Delta \alpha_i) )</td>
</tr>
<tr>
<td>( ^* \Delta y_{i,t-1} )</td>
</tr>
<tr>
<td>( ^* \Delta k_{it} )</td>
</tr>
<tr>
<td>( ^* \Delta l_{it} )</td>
</tr>
<tr>
<td>( MSHARE_{i,t-1} )</td>
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<tr>
<td>( DAR_{it} )</td>
</tr>
<tr>
<td>( ^* \Delta SHAREfore_{i,t-1} )</td>
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<tr>
<td>( ^* \Delta SHAREindi_{i,t-1} )</td>
</tr>
<tr>
<td>( ^* \Delta SHAREfina_{i,t-1} )</td>
</tr>
<tr>
<td>Arellano-Bond test for first-order correlation of residuals</td>
</tr>
<tr>
<td>Arellano-Bond test for second order correlation of residuals</td>
</tr>
<tr>
<td>Sargan test of over-identifying restrictions ( \chi^2_{230} )</td>
</tr>
</tbody>
</table>

Source: Authors’ calculations by Stata Ver. 7.0.

Notes: GMM estimation making use of the Arellano and Bond (1991) method executed by Stata Ver.7.0. Coefficients are one-step estimators. Regressions include 25 interacted time and industry dummies. \( ^* \) denotes variables that are treated as endogenous.
7. Conclusions

In this paper, using a panel data set of more than 400 Japanese firms for the fiscal 1979-2001, we examined how corporate governance and market competition affect firm performance. We took total factor productivity growth derived from the production function estimation as firm performance, whereas most preceding literatures investigating the relationship between Japanese firm performance and corporate governance used Tobin’s q as firm performance. Thus, this paper will be a complement of such literatures.

In our empirical analysis, we found that the market competition improves firm performance. In other words, market discipline is effective also in Japan. But, according to our results, its positive effect upon firm performance is not strong very much. We also found that higher debt-asset ratio also improves firm performance, suggesting that debt-based discipline is effective. In particular, debt-based discipline is robust throughout our estimation. It can be inferred that Japanese type corporate governance had been effective for those decades.

Using a subset of our panel data set which contains 130 Japanese firms in machinery industry for the fiscal 1983-2001, we investigated the relationship between firm performance and ownership structure in Japan. Our analysis shows that an increase in the ratio of blockholders’ shareholdings improves firm performance, while small shareholders negatively affects firm performance probably due to well-known free rider problems associated with monitoring costs. When we divide blockholders into financial institutions, non-financial institutions, foreigners and individuals we found that only foreigners positively affect firm performance. This can be attributed to the fact that financial institutions and most of non-financial institutions have been stable and inactive shareholders (through cross-shareholdings) among large shareholders in Japan. If domestic institutional investors, such as a pension trust, become as active as foreigners, they may affect firm performance more positively.


