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TOP EXECUTIVE REWARDS AND FIRM PERFORMANCE:  
A COMPARISON OF JAPAN AND THE U.S.

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ABSTRACT

This paper compares CEO and top management turnover and its relation to firm performance in the largest companies (by sales) in Japan and the U.S. Japanese top managers are older and have shorter tenures as top managers than their U.S. counterparts. Overall, however, turnover-performance relations are economically and statistically similar: turnover is negatively related to stock, sales, and earnings performance in both countries. Turnover in Japan is particularly sensitive to low earnings. Evidence on executive compensation confirms that Japanese executives own less stock and receive lower cash compensation than U.S. executives. Cash compensation-performance relations, nevertheless, are also similar in magnitude to those found in previous work for U.S. executives.

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## 1. Introduction

The corporate governance system in Japan is generally believed to differ significantly from its U.S. counterpart. The Japanese system is usually characterized as bank and relationship oriented; the U.S. system as (stock) market oriented.<sup>1</sup> The perceived differences in governance systems are usually associated with different firm objectives in the two countries. There is some disagreement, however, about these objectives.

According to some observers, Japanese firms maximize growth or market share, rather than (short-term) profits or share price. For example, in a widely cited section, Abegglen and Stalk (1985) discuss the results of a survey in which Japanese managers rated market share the most important and stock price the least important of nine corporate objectives; U.S. managers rated stock price second.<sup>2</sup> Partially based on this type of evidence, Blinder (1991 and 1992) argues that Japanese managers maximize growth not profits; managers are able to pursue such a strategy because Japanese shareholders are unable to effectively discipline them. And Milgrom and Roberts (1992) conclude that "Japanese firms are not run in the interests of their shareholders."

In contrast, others view the Japanese governance system as one that does maximize firm value. Grundfest (1990), for example, argues that the close financial ties and relationships in Japan "reduce agency costs and allow investors to monitor managers more effectively than in the U.S."<sup>3</sup> This view is potentially consistent with Japanese managers being more sensitive to firm value than managers in the U.S. (if monitoring involves the ability to discipline managers for poor performance). The view that the Japanese governance system reduces agency and information problems costs is also often associated with claims

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<sup>1</sup> Aoki (1990) discusses this system and relates it to Japan's overall employment system. See also Prowse (1990) and Sheard (1989).

<sup>2</sup> See also Blinder (1991 and 1992) and Kester (1991).

<sup>3</sup> Aoki (1990), Drucker (1991), Hoshi et al. (1990 and 1991) and Prowse (1990) are sympathetic to this view.

that Japanese firms are better able to invest in projects with long-term payoffs -- suggesting that Japanese managers may be less concerned with or affected by short-term earnings.

In an attempt to distinguish among firm objectives and their explanations, I examine the relation of managerial rewards (and penalties) to performance in Japan and the U.S. Specifically, I compare top management turnover and its relation to stock, sales, and earnings performance in the 1980s in the two countries. I also present similar evidence on executive compensation.

The analysis compares turnover of the CEO (the president in Japan) and top executives -- representative directors in Japan, executive and inside directors in the U.S. Representative directors in Japan are those directors who have the power to legally represent the company. Typically three or four of a Japanese company's 21 directors have representative rights. This corresponds to the four operating executives who serve on the board of directors in the typical U.S. company.

In pursuing this analysis, I implicitly assume that firm objectives are manifest in reward-performance relations. This assumption is implicit (or explicit) in most empirical studies of top management incentives. As long as information and contracting problems preclude principals -- shareholders, boards of directors, employees, etc. -- from specifying managerial actions in all circumstances, contracting theories generally predict that managerial rewards will be related to managerial performance or productivity.<sup>4</sup> If performance-reward relations exist, this interpretation is plausible. However, if performance-reward relations are absent, particularly in Japan, the converse interpretation that firms and managers are not motivated by performance need not follow. Such an absence simply might indicate that agency and information problems are small or absent -- principals may be able to specify and observe the desired managerial actions.

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<sup>4</sup> See Rosen (1990) for a summary and discussion of much of this work.

The general thrust of the results is that the relations between managerial rewards and performance are surprisingly similar in Japan and the U.S. Top executive turnover is negatively related to all three types of financial performance -- stock, sales, and earnings -- in both countries.<sup>5</sup> In most cases, the sensitivities in the two countries are not statistically different and the total amount of variation explained is similar.

While Japanese executives earn lower levels of cash and stock compensation than their U.S. counterparts, the relations between executive cash compensation and performance in Japan are also similar in magnitude to those reported for U.S. executives in Murphy (1985) and Jensen and Murphy (1990). The estimates imply that a Japanese executive's salary and bonus increases by 18% to 23% when his company's stock price increases by 100%; it increases by 24% to 47% when his company's sales increase by 100%.

Although the reward-performance relations are generally similar, some differences are worth noting. First, earnings measures tend to explain the most variation in turnover and compensation in Japan, while sales measures tend to explain the most in the U.S. In some cases, the sensitivities of turnover to earnings in the two countries are statistically different. Second, turnover-performance relations appear to be stronger in Japan for the group of top executives than for just the CEO. This is arguably consistent with a less important role for the CEO in Japan than in the U.S.

How does one interpret these results in light of the issue of firm objectives raised above? First, the results suggest that Japanese managers are motivated by stock price -- or factors that affect stock price -- and that they are motivated to roughly the same extent as U.S. managers. This does not appear to be consistent with the view that shareholders in Japan are completely ignored, if at all.

Second, the results suggest that managerial rewards and punishments in Japan are

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<sup>5</sup> The turnover results focus on internal turnover and, therefore, count takeovers as missing observations. The results are qualitatively similar when a takeover is considered as turnover.

most closely tied to earnings measures -- and possibly more so than in the U.S. The earnings results do not provide strong support for the view that Japanese managers are better able to invest in projects that do not pay off in the short-run. In fact, the earnings results are consistent with top executives in Japan being penalized if their companies invest exclusively in projects with no short-term payoffs.

Third, the results are consistent with similar incentives and internal governance pressure in the two countries under the additional assumption that governance mechanisms work primarily through rewarding / disciplining managers who reveal themselves to be good / bad managers. Jensen and Murphy (1990) appear to endorse this assumption when they claim that the relations of pay and turnover to performance in the U.S. are "small for an occupation in which incentive pay is expected to play an important role." The results in this paper indicate that such incentives are approximately the same in Japan. If one accepts the Jensen and Murphy (1990) argument that U.S. incentives are too small and their assumptions on monitoring, then Japanese incentives are also too small. In contrast, one might interpret the concurrence of reward-performance relations in the two countries as evidence that top management incentives are not too small or that they do not matter much.

The interpretation of similar incentives and governance pressure, of course, would not be valid if the governance mechanisms in Japan and the U.S. differ in other ways. For example, they may differ in their ability to observe and evaluate managerial actions, not performance, or in their ability to promote better managers to the top.

There are three potential qualifications that should be raised concerning the evidence presented in this paper. First, the relatively simple data description and statistical analysis may ignore or blur important differences between Japan and the U.S. firms. For example, because Japanese top executives are both older and turn over more frequently than their U.S. counterparts -- the typical Japanese president keeps his job for 6.90 years versus 10.28 years for the typical U.S. CEO -- job turnover may have different implications and

costs in the two countries. Similarly, there is no guarantee that reported earnings and sales have the same meaning in the two countries. Second, the paper does not attempt to distinguish among potential mechanisms behind the turnover and compensation relations. In Japan, for example, these relations may be associated with variation in crossholdings of shares, main bank relationships, and corporate group or keiretsu relationships (both horizontal and vertical).<sup>6</sup> Third, the results pertain to the largest companies (as measured by sales) in the two countries. The results, therefore, may not capture vertical relationships between larger and smaller firms in Japan.

The paper proceeds as follows. Section 2 describes the sample selection, data sources, and sample companies. Section 3 discusses executive and board structures in the two countries. Section 4 presents evidence on the level of turnover in the two countries. Section 5 compares the relation of turnover and performance in Japan and the U.S. Section 6 presents the evidence on executive compensation in Japan. Section 7 concludes.

## 2. Sample and data

### 2.1 Japanese Companies

The sample of Japanese companies is taken from the 121 included in Fortune Magazine's list of the 500 largest foreign industrials in 1980. Two of these 121 are excluded from the sample because they were privately-owned. The sample companies, therefore, include the 119 Japanese industrials with the highest sales in fiscal year 1980. Because the fiscal years of most Japanese companies end in March, the Fortune list is largely based on fiscal years ended March 1980.

Financial data on the Japanese companies come from several sources. Financial

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<sup>6</sup> This is a statement regarding cross-sectional differences in sensitivities rather than one regarding a potential omitted variable problem. The sensitivities reported in the paper are qualitatively similar when I control for firm fixed effects.

statement, employment, and stock price data come from annual issues of Diamond's Kaisha Yoran Zenjojo Kaishaban (the Japanese equivalent of Moody's Industrial Manuals) and from the Daiwa Institute of Research Analysts' Guide. Data on shareholdings is obtained from editions of Kigyo Keiretsu Soran and from the Yuka Shoken Hokokusho -- the Japanese equivalent of U.S. 10-K filings -- filed by the sample companies in 1982 and 1984.

The information on corporate executives and directors is obtained from annual issues of Diamond's Kaisha Shokuin Roku which is literally Diamond's Company Personnel. The Diamond Lead Company distributes questionnaires to all Tokyo Stock Exchange companies between June and August of each year. The companies provide the name of each director, his position, his birth year, and the year he first worked for the company. The responses are published in the Kaisha Shokuin Roku issue early the following year. To synchronize with the Fortune list, I begin the sample with the 1980 edition. I then record the relevant information on all board members through the 1989 edition.

This method of tracking directors and executives may be imperfect because it relies on companies' accurately filling out the questionnaire. However, a comparison of the executive information in Diamond's to that in the Yuka Shoken Hokokusho yielded few discrepancies.<sup>7</sup>

Diamond's Shokuin Roku does not indicate if a director worked elsewhere before joining his current company. This information is reported, however, in the Yuka Shoken Hokokusho and in the Kigyo Keiretsu Soran. Accordingly, I recorded previous employers for the directors listed in these sources for 1982. Most directors who had worked for a different company or organization joined their current firm after 1970. Director shareholdings are also recorded in the Yuka Shoken Hokokusho.

Panel 1.1 of table 1 presents data on sales, market value and current or pre-tax

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<sup>7</sup> The Yuka Shoken Hokokusho are not available for fiscal years before 1982 (or after 1988). Resource constraints precluded collecting this information for all years.



income in 1980 and 1988 for the 119 Japanese firms. These accounting measures here and throughout the paper are based on unconsolidated financial reports.<sup>8</sup> The first line of panel 2 of table 1 presents evidence on the extent of external governance in Japan. It confirms that the takeover market has been relatively inactive for large Japanese companies. Only 3 of the 119 Japanese companies, or 2.5%, are taken over or merged by the end of 1989.

## 2.2 United States Companies

The sample of United States firms is taken from the 150 companies with the highest sales on Fortune's list of the 500 largest industrials in 1980. Four of these companies are excluded from the sample because they are privately-owned, leaving 146 firms. Because the fiscal years of most U.S. companies end in December, the Fortune list is largely based on fiscal years ended December 1980. Financial data on the U.S. companies come from COMPUSTAT. Stock return data are calculated using the CRSP tapes. The data on management and corporate shareholdings are taken from Morck, Shleifer, and Vishny (1988). CEO ages are obtained from Morck et al., from Standard & Poor's Directory of Directors and Officers, and from proxy statements. CEO tenures are obtained from Weisbach (1988), Forbes' Annual Compensation Surveys, and from proxy statements.

The information on the identity of corporate executives and directors is obtained from annual issues of Moody's Industrial Manuals. The management listings in Moody's are those published in the corporation's annual report, although Moody's will catch changes announced in press releases before its mid-July publication deadline. To synchronize with

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<sup>8</sup> Most previous work on Japanese companies also uses unconsolidated financial accounting data. Ballon and Tomita (1988) claim that analysts pay more attention to the parent statements. Bankers, in private conversations, claim they consider both sets of statements. It is beyond the scope of this study to determine whether consolidated data would lead to different results. One might expect similar results because firm-specific effects are controlled for by using changes in the accounting measures rather than levels. However, Ballon and Tomita also note that firms can and sometimes do use their subsidiaries to smooth parent earnings and other accounting information.

the Fortune list, I begin the sample with the 1981 edition. I then record the relevant information on all board members through the 1990 edition.

Panel 1.1 of table 1 presents analogous financial information for the U.S. firms. The panel indicates that the 146 U.S. firms are larger in 1980 than their Japanese counterparts, with average sales of \$8.6 billion versus \$2.4 billion. The gap has narrowed by 1988 when the U.S. firms are only twice as large as the Japanese firms. The differences in equity market values narrows even further.

Panel 1.1 also indicates that pre-tax income as a fraction of assets and sales are larger for the U.S. firms. There are two potential reasons for the differences in earnings ratios. First, the Japanese financial statements are also used for tax purposes, while U.S. companies have separate tax and financial statements. As a result, Japanese companies are more likely than U.S. companies to take deductions that will reduce reported income. Second, while Japanese assets reflect the cost of corporate shareholdings, current income of the Japanese parent reflects only dividends received on those shares. In contrast, U.S. consolidated income statements reflect the undistributed income of subsidiaries and firms in which the parent control more than 20% of the shares. Corrections for these effects applied by French and Poterba (1991) (to aggregate earnings) increase earnings of Japanese companies in 1980 by 41% to 77%.

Finally, the first line of panel 2 in table 1 indicates a more active takeover market in the U.S. during the 1980s. Thirty-two of the 146 U.S. companies, or 21.9%, were taken over or merged. (Almost one-half of these transactions -- 15 -- appear to have been friendly in the sense that incumbent management either welcomed or did not resist the takeover.) Five additional U.S. companies went private in management buyouts.

### 2.3 Performance Measures

This paper follows previous work in the management turnover and compensation

literature in some respects, but differs in others. Jensen and Murphy (1990) and Weisbach (1988) for CEOs, and Warner, Watts and Wruck (1988) for chairmen and presidents, have studied the relation of turnover in the U.S. to firm performance. All three studies use turnover in a given year as the dependent variable. Performance is measured in the contemporaneous year and in the previous year. This paper focuses on turnover measured over two year periods and performance over the contemporaneous and previous two-year intervals. The two year interval is chosen because Japanese presidents and directors are typically given two year contracts.<sup>9</sup> To the extent that face-saving considerations are more important in Japan than in the U.S., turnover may be more commonly implemented in Japan through non-renewal rather than through firing. The results are generally similar for a one-year turnover interval. This specification is discussed in detail later in the paper.

Jensen and Murphy (1990) rely on agency theory to argue that shareholders should compensate managers based on a company's stock price. With this motivation, the three studies cited above all measure performance using stock returns (or returns adjusted for market or industry movements). They all find that top executive turnover is significantly related to stock performance, but that the size of the relation is small. For example, Weisbach's estimates imply that a CEO of a firm in the lowest performance decile has a 6.1% chance of resigning, compared to 3.1% for a CEO of a firm in the top decile.

As other authors have noted, it is not clear whether stock returns or earnings are more informative about executive performance.<sup>10</sup> Stock returns also reflect changes in the market discount rate whereas earnings do not. As a result, accounting earnings may provide a better measure of CEO performance. Weisbach is alone in considering any measure not

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<sup>9</sup> The data clearly indicate the existence of this pattern in Japan. In fiscal years ending in even years, president turnover averages 10.3% with a maximum of 13.6% while turnover in odd years averages 18.8% with a minimum of 15.2%. There is no such pattern in the U.S.

<sup>10</sup> Again, see Rosen (1990) for a summary.

based on stock performance, and he uses only one -- operating income (or earnings before interest and taxes).

One of the goals of this paper is to describe which performance measures boards of directors in the U.S. and Japan rely on. Accordingly, I present results for five measures of performance: (1) company stock returns; (2) sales growth; (3) change in pre-tax income as a fraction of total assets; (4) initial level of pre-tax income as a fraction of total assets; and (5) a dummy variable if pre-tax income is negative, where negative pre-tax income is intended to be a rough proxy for financial distress. It indicates that a firm has not earned (in an accounting sense) enough to meet its expenses.

I also consider, but do not report, market- and industry-adjusted stock returns,<sup>11</sup> employment growth and operating income as performance measures. Market-adjusted returns yield qualitatively similar results to raw returns. Industry-adjusted returns yield slightly weaker results than raw or market-adjusted returns. Employment growth yields results qualitatively similar to sales growth; and operating income (after depreciation), similar results to pre-tax income.

Panel 1.2 presents descriptive statistics for these performance variables over two year intervals. The panel also presents market- and industry-adjusted stock returns. One potentially puzzling result shows up here. The Japanese companies have negative stock market-adjusted returns, averaging - 9.7% per two-year period - and somewhat negative industry-adjusted returns - averaging -2.4% per two-year period. The negative industry-adjusted returns can be explained by the fact that the Japanese firm returns do not include

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<sup>11</sup> The market-adjusted returns are calculated using the own-country value-weighted return. Japanese industry-adjusted returns are calculated using industry returns in the Daiwa's Analysts' Guide. Daiwa's industry returns are an equal-weighted index of larger firms in what would be analogous to the two-digit SIC code level in the U.S. U.S. industry-adjusted returns are calculated using the median return of larger firms (\$50 million equity value or larger) at the same four-digit level. If there are fewer than four industry matches at the four-digit level, I then match at the three-digit level, and then the two-digit level.

dividends but the industry returns do. Including dividends would increase the industry-adjusted returns by approximately 2.5% per two year period. This adjustment, however, still leaves a negative market-adjusted return of approximately 7%. This suggests that firms in poorly performing industries may be somewhat over represented in this sample. Appendix 1 presents correlations of the performance variables at two year intervals for the Japanese and U.S. companies, respectively.

### 3. Internal Governance Structures

#### 3.1 Japan

Boards of directors in Japan have the statutory power to manage the corporation. Directors are technically elected at a shareholder meeting to terms of not more than (and usually equal to) two years.<sup>12</sup> The highest ranking or most powerful member of the typical board is the president (or shacho). All Japanese firms have one. Some firms also have a chairman (or kaicho), who is usually a former president. Of the 119 Japanese companies in my sample in 1980, 65 have a chairman and 54 do not. The chairman is usually considered to be less powerful than the president. For example, the Economist describes typical Japanese chairmen as being "renowned for their golf skills."<sup>13</sup> This paper, therefore, compares the Japanese president to the U.S. CEO. Because this comparison may not always be the appropriate one -- some Japanese chairmen have CEO-type powers -- I also compare the top executives in both countries.

Below the president in the hierarchy, come deputy presidents (fukushacho), then senior or executive managing directors (senmu), managing directors (jomu), and directors. Some boards of directors will also include one or two advisors to the board. Advisors to the

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<sup>12</sup> The discussion in this section is taken largely from three sources: Ballon and Tomita (1988), University of Hawaii Law Review (1983), and Gerlach (1991).

<sup>13</sup> The Economist, October 5, 1991, p. 72.

board, when present, are usually much older men, sometimes previous chairmen, sometimes outsiders.<sup>14</sup>

Japanese boards are also characterized by almost a complete absence of outside directors as we know them in the U.S. Ballon and Tomita (1988) cite a 1985 MITI study that finds that 43.5% of the manufacturing companies listed on the Tokyo stock exchange do not have any outside directors. Most directors of Japanese companies are executive managers who are long-term employees; very few directors have joined the company recently.

### 3.2 United States

Boards of directors in the U.S. are legally responsible for managing the corporation. Board members are elected by shareholders for terms ranging from one to three years, depending on the individual corporation. The highest ranking or most powerful member of the typical board is the CEO.<sup>15</sup> Both Mace (1971) and Lorsch (1990), more recently, argue that the board is dominated by the CEO. According to them, the CEO takes the lead role in setting the board's agenda, and in choosing new directors.

Other than the CEO, there is no strict hierarchy in the U.S. as there is in Japan. Instead, the typical large company corporate boards in the U.S. have a combination of inside and outside directors. Inside directors always include the chief executive officer. Insiders may also include a chairman or president (who is not the CEO), previous chairmen or CEOs, and other current top executives. Outsiders include all other directors. Lorsch

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<sup>14</sup> Japanese boards also include at least one statutory auditor. Theoretically, the statutory auditor is supposed to supervise the board and ensure that directors are acting properly. They would be recognized in the U.S. as quasi-outside directors. In practice, however, the auditors allegedly do little. They are usually company employees who were not good enough to become directors and they do not have voting power. [See Ballon and Tomita (1988), p.151.] They are not included in this analysis.

<sup>15</sup> This section relies on Mace (1971) and Lorsch (1990) who describe qualitative aspects of U.S. boards of directors and Hermalin and Weisbach (1988) who present more quantitative evidence on boards.

(1990) reports survey results that the average Fortune 1000 company in 1986 had thirteen directors. Nine on average are outsiders; four are insiders. Hermalin and Weisbach (1988) find similar results with inside directors making up 34.3% of large company boards in 1983. They also find that the insider percentage has declined over time.

### 3.3 Comparison

Panel 2 of table 1 presents summary information about Japanese and U.S. boards. The Japanese data are taken from the 1981 Shokuin Roku for the 119 sample companies. Outside director information is obtained from the 1982 Kigyō Keiretsu Soran and Yuka Shoken Hokokusho. The U.S. information is obtained from the 1981 Moody's Industrials, and supplemented, when necessary, from company 10-Ks and proxy statements.

The median Japanese firm has 21 directors, compared to 14 for the median U.S. company. Japanese boards, therefore, are significantly larger than their U.S. counterparts. Strikingly, the typical Japanese board has no outside directors compared to 10 in the median U.S. company. (An outside director is defined as a board member who is neither a current nor a former executive of the company.) Whereas all U.S. companies have at least one outside director, I could not identify even one outside director in 58.8% of the Japanese companies in the sample.

It is puzzling that the 58.8% is greater than the 43.5% reported by Ballon and Tomita. There are three potential explanations for this difference. First, the study cited by Ballon and Tomita includes statutory auditors as directors, some of whom come from outside. I do not consider statutory auditors as directors.<sup>16</sup> Japanese readers of this paper have indicated that this is the most likely explanation. Second, the sample includes only the largest companies on the Tokyo Stock Exchange, not all of them. It seems probable that

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<sup>16</sup> Statutory auditors are supposed to audit the board, but legally do not have voting rights.

smaller companies will have more outside directors sent from the larger companies. Third, I am using an earlier year.

Confirmation of the paucity of outside directors in Japan comes from information on when directors joined the company. The Shokuin Roku notes when each director joined the company. While the Shokuin Roku occasionally indicates that a director is not an employee of the firm, it does not do so consistently. It is true, however, that directors who should be considered to have come from outside the firm are directors who have not been firm employees for very long. Table 1 confirms that most Japanese directors are long-term employees of the firm. Japanese companies have a median of only 1 director (average of 2.05) who joined the firm after 1969. In other words, very few directors in the typical company are listed as having worked for the company for less than 10 years.

Given the results for outside directors, it is not surprising that Japanese companies have more inside directors -- typically 21 -- than their U.S. counterparts at 5. While inside directors in U.S. companies always include the highest ranking and most powerful executives of the company, they may also include retired executives with little or no real power. Accordingly, I also present evidence separately for inside directors who are current executives. The U.S. firms have a median of 4 (an average of 4.53) executive directors.

For comparison purposes, it would be useful to identify the Japanese counterparts of U.S. inside and executive directors. In this paper, I use Japanese representative directors as the major comparison group. The representative directors -- which always include the president -- are the most important directors of the company. They have the right to legally represent the company. Table 1 indicates that the number of representative directors (a median of 3 and 4.23 on average) is similar to the number of executive and inside directors. (The means are not significantly different.) The comparisons are not perfect because U.S. inside directors include retired executives with little real power while U.S. executive directors exclude retired executives who do have real power. Representative directors are primarily



operating executives, but sometimes those who have retired.

#### 4. Description and turnover levels of top executives

This section describes the top executives in the two countries and the length of time they typically serve in those positions. This information is relevant for interpreting the turnover-performance and compensation-performance relations that follow.

##### 4.1 The top executive

Panel 1 of table 2A describes several characteristics of Japanese presidents and U.S. CEOs for fiscal year 1980. In 1980, the typical Japanese president is significantly older at 66 than his U.S. counterpart at 59. The typical Japanese president also has a longer tenure at his firm, with the typical president having joined his company 39 years earlier. These numbers strongly confirm the long-term or lifetime nature of employment generally associated with Japanese companies. Although tenures with their companies do not approach those of the Japanese, U.S. CEOs are not short-term employees of their firms. The typical U.S. CEO has 28 years of experience at his company. While the Japanese president is older and has a longer tenure with his firm, he typically has occupied the top spot for a shorter period of time, beginning approximately one year later, than his U.S. counterpart. The panel indicates that these conclusions still hold in 1988 although the age gap has narrowed from 7 to 3 years.

Table 2B presents frequency distributions of president / CEO tenures and ages for all firm-years in the sample. These distributions confirm that Japanese executives are older and have shorter tenures. For example, CEOs in 55.7% of U.S. firm-years are 60 years old or younger compared to only 26.2% of Japanese presidents. Similarly, 35.8% of CEO tenures are eight years or more compared to only 16.9% of Japanese president tenures.

Panel 1 also indicates that the typical top executive in Japan owns less of his

company's stock than his U.S. counterpart. This is true even though the Japanese firms have smaller stock market capitalizations. The median president in 1984 owns only 0.02% (an average of 0.25%) of his company's stock. This is a much smaller fraction than the median 0.14% (average 1.79%) reported by Jensen and Murphy (1990) for CEOs of large U.S. firms. As mentioned earlier, it is possible that the true Japanese chief executive in some cases is the chairman, not the president. To account for this, I also calculated share ownership under the assumption that the chairman is the chief executive if he owns more shares than the president. Even with this assumption, the median shares owned is only 0.05% (average 0.40%).

In summary, then, the top executive in Japan is older, has a shorter tenure as the top executive, and has smaller shareholdings than his U.S. counterpart.

#### 4.1.1 Turnover level

Panel 2 of table 2A presents evidence on turnover of the top executive from fiscal year ending 1980 to 1988 in Japan and the U.S. Throughout this paper, turnover is defined as a change in the identity of the Japanese president or U.S. CEO in a given year not caused by death, illness or takeover. The level of turnover is strikingly higher at 14.49% in Japan than the 9.73% in the U.S. These turnover likelihoods imply that the average tenure as top executive in Japan is 6.90 years compared to 10.28 years in the U.S. Even when takeovers are considered turnover, the likelihood of turnover (implied tenure) is higher (shorter) for Japanese presidents than for U.S. CEOs.

Panel 3 of table 2A catalogs the position of the top executive after turnover. In Japan, when a president gives up his position, he typically remains on the board of directors as chairman. This is true in 68.5% of the cases. Throughout the paper, this will be referred to as standard turnover. I classify turnover as non-standard when the president remains on the board, but not as chairman -- 17.3% of the time; or (2) the president leaves the board --

4.8% of turnover events. In 9.6% of the turnover events, the president dies. Deaths are treated as missing observations in the regressions.<sup>17</sup> Consistent with a similar ratio of standard to total turnover, Panel 3 indicates that 68% of departing presidents retain their representative directorships, while 32% do not.

The percentages are roughly reversed in the U.S. Fewer than 16% of CEOs give up their title and remain chairman. The majority -- 60.9% -- give up their titles and remain on the board as directors, but not as executives. A larger percentage of executives relinquish their CEO position and leave the board at the same time -- 20.9%, while a smaller percentage die in office in the U.S. than in Japan.

#### 4.2 Representative, executive, and inside directors

Japanese corporate governance systems are often characterized as being more consensus oriented and less likely to be dominated by the CEO than their U.S. counterparts.<sup>18</sup> If this is true, it seems plausible that turnover and performance will be more strongly related in Japan at the level of the top group of executives, rather than the individual top executive. To account for this possibility, I also consider evidence on turnover and its relation to performance for Japanese representative directors and for U.S. executive and inside directors. This comparison should also be helpful if the true chief executive in Japan is the chairman and not the president.

Panel 1 of table 3 presents several characteristics of the groups of directors as of fiscal year 1980. As with the top executive, Japanese representative directors are older -- with a median age of 64 -- than U.S. executive directors -- with a median age of 57. The oldest and youngest such directors in the typical firm are also older in Japan.

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<sup>17</sup> Turnover events were confirmed using the NEXIS database or newspaper articles.

<sup>18</sup> See, for example, Aoki (1990), Milgrom and Roberts (1992), and Yang (1984).

Although I do not have exact measures of shareholdings, it is likely that directors of Japanese companies own smaller fractions of their companies than their U.S. counterparts. In Japanese companies in 1984, all directors -- including representative directors -- own a median 0.23% (average 0.90%) of their company's shares. In U.S. companies, in 1980, all directors -- inside and outside -- own a median 1.17% (average 5.59%).

#### 4.2.1 Turnover level

Panel 2 of table 4 presents evidence on turnover levels of representative, executive, and inside directors at two year intervals from fiscal year ending 1980 to the fiscal year ending 1988 in Japan and the U.S. Turnover of representative / inside directors is measured as the percentage of the representative / inside directors at the start of the period who are no longer representative / inside directors at the end of the period.<sup>19</sup> The turnover of executive directors is measured slightly differently. Turnover occurs if an executive directors loses his or her executive position, but not necessarily the directorship. As with the top executive, the level of turnover is higher in Japan than in the U.S. Over two years, the median turnover of representative directors in Japan is 25% compared to a median of 20% for executive directors and 16.7% for inside directors in the U.S. The median turnover of all directors in Japan of 23.8% is also higher than that of executive and inside directors in the U.S.

Several recent papers have cited anecdotal evidence that banks, group members, or large shareholders of Japanese companies intervene if a company experiences financial or operating problems.<sup>20</sup> In many cases, the intervention reportedly involves sending executives to help run the troubled firm. Table 3 indicates that this intervention is relatively

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<sup>19</sup> Hermalin and Weisbach (1989) note that percentage turnover yielded qualitatively similar results to their maximum likelihood estimates using a poisson process.

<sup>20</sup> See, for example, Hoshi et al. (1990) and Sheard (1989).

uncommon at the level of representative director. Over a two year period, only 8.2% of Japanese firms hire a new representative director directly from outside the firm; only 10.6% of Japanese firms hire a new representative director with less than five years of experience with the company. In fact, it is more common for U.S. firms to hire inside directors directly from outside the firm. Over two years, 12.2% of the U.S. companies hire inside directors from outside. At the level of director, however, Japanese firms do hire directors with fewer than 5 years of experience. Almost 41% of Japanese firms do so in any two-year period.

##### 5. Relation of turnover to performance

In this section, I present results of regressions of CEO and president turnover as a function of firm performance. The Japanese and U.S. results are presented in separate regressions, rather than in one overall regression that uses country dummies. In the separate regressions: it is easier to measure the effect of the performance measures on turnover for each country; it is possible to measure the fraction of turnover explained by performance in each country; and it is not necessary to interpret the impact of different accounting standards and market adjustment. Nevertheless, the tables also report if the slope coefficients on the performance variables differ statistically in the two countries when the observations are combined in one overall regression.

Tables 2A and 2B suggest that executive age and tenure may be important determinants of turnover. Accordingly, all the subsequent regressions include a series of dummy variables for top executive age and tenure. Table 4 presents regressions of turnover likelihood as a function of the age and tenure dummy variables only. The subsequent tables do not report these coefficients.

The results in table 4 confirm the picture presented in table 2B. For example, the larger dummy variables for tenure in Japan imply that Japanese presidents remain in office for shorter periods than U.S. CEOs. Similarly, the coefficients on age imply that U.S. CEOs

do not face a sharp increase in the likelihood of turnover until they reach the age of 63. This likelihood declines at ages 67 and 68, and becomes statistically indistinguishable at older CEO ages from CEOs who are younger than 61. In contrast, the likelihood of Japanese president turnover is almost uniform from ages 65 to 70 and increases for presidents older than 70.

This and subsequent regressions also include time period dummy variables. These variables will control for economy- or market-wide shocks that vary over time. Gibbons and Murphy (1990) find that CEO turnover policy in the U.S. appears to control for aggregate stock market movements. The results are generally qualitatively and statistically similar when the time period dummy variables are excluded.

## 5.1 Univariate regressions

### 5.1.1 The top executive

Table 5A presents the results of regressions of turnover of the top executive versus each of the five performance measures individually -- a separate regression is run for each performance measure, and, when appropriate, its lagged value. Ordinary least squares results are presented because they are easier to interpret. More appropriate logit regressions yield qualitatively and statistically similar results.<sup>21</sup>

The results for president turnover in Japan are easy to interpret. Although all but one have the expected sign, none of the performance variables have significant explanatory power (in the presence of the age and tenure dummy variables). The most positive statement one can make is that the coefficients on the two earnings levels variables -- initial pre-tax income and the negative income dummy variable -- suggest a moderate economic

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<sup>21</sup> To make sure that outliers do not drive the results, the continuous performance variables were transformed into their decile ranks. The results are qualitatively similar to those presented in what follows.

impact. Negative pre-tax income is associated with an increased turnover likelihood of 6.6%. The relatively high R-squared from the age and tenure variables suggest that Japanese presidents may typically be on something like a "conveyor belt," becoming president, serving four to eight years and then relinquishing the presidency.

In contrast, all three types of performance variables have statistically and economically significant explanatory power for U.S. CEO turnover, with sales growth adding the most explanatory power. The sales growth variables are significant at the 5% and 1% level, respectively, and increase the R-squared by 0.021.<sup>22</sup> A two standard deviation decline in sales growth is associated with an increase in CEO turnover likelihood of 6.5% in the same two-year period and 9.8% in the next two year period.

Although many of the coefficients in the U.S. regressions are statistically different from zero, only the coefficient on stock returns in the contemporaneous two-year period is statistically different (at the 5% level or better) from the analogous coefficient for Japanese president turnover. This paucity of significant differences is driven by the relatively large standard errors in the Japanese regressions.

The regressions for president turnover suggest that it is standard for Japanese presidents to resign their presidencies at regular intervals without regard to firm performance. This is, perhaps, not surprising given the result in table 2A that more than two-thirds of the time, the president becomes chairman or retains his representative rights after resigning the presidency. Standard presidential turnover, therefore, may not be disciplinary in any real sense. Instead, it seems plausible that non-standard turnover might be related to performance while standard turnover will not. Accordingly, table 5A also includes regressions of non-standard presidential turnover versus the five performance measures, where non-standard turnover is defined as presidential turnover in which the

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<sup>22</sup> The r-squareds are not always directly comparable because the number of observations is not constant in all equations.

president does not become chairman. Although non-standard, such turnover is not rare; it occurs in 7.3% of the 454 observations. Although not presented, the results are similar if non-standard turnover is defined as (1) turnover when the president does not retain his representative rights; and (2) turnover when a vice-president does not succeed the president.

Table 5A indicates that non-standard turnover in Japan is negatively and significantly related to stock performance, and, particularly, to firm earnings. For example, presidents of firms with negative pre-tax income are more than 11% more likely (significant at the 1% level) to experience non-standard turnover. This is economically meaningful, given the unconditional likelihood of 7.3%. And the coefficients for stock returns (significant at the 10% level) imply that a two standard deviation decline in market excess returns increases the likelihood of non-standard turnover by almost 5%.

As with all president turnover, the table indicates that few of the coefficients for non-standard president turnover are statistically different from the analogous coefficients for U.S. CEO turnover. Non-standard turnover is more responsive to contemporaneous earnings changes while CEO turnover is more responsive to lagged sales growth.

### 5.1.2 Representative, executive and inside directors

Table 5B presents the relations of the percentage turnover of representative, executive and inside directors against each of the five performance measures in individual regressions. Because presidents / CEOs are representative / executive and inside directors, all regressions include the same age and tenure dummy variables used in the previous top executive regressions.

Representative director turnover is significantly related -- both economically and statistically -- to each of the three types of performance measures. For example, a two standard deviation decline in stock returns is associated with a 4.0% increase in representative director turnover in the same period and a 7.2% increase in the next two year



period (significant at the 1% level). The variables that explain the most variation, however, in representative director turnover are the two measures of income levels. The regressions imply that firms which have negative pre-tax income in the contemporaneous two year period experience an additional 14.7% increase in percentage turnover.

For the U.S., the results in table 5B for executive and inside directors are qualitatively similar to those in the previous table for CEOs. As with CEO turnover, all three types of performance measures have economically significant as well as statistically significant relations to turnover (at the 5% level or better). And as in the CEO turnover results, sales growth has the greatest economic and statistical significance. A two standard deviation decline in sales growth is associated with a 9.1% increase in executive and inside director turnover.

The results for the Japanese and U.S. groups are remarkably similar, particularly for representative and executive directors. Age, tenure, and financial performance explain roughly the same fraction of (the variation in) turnover -- 0.155 in the negative income regression for representative directors and 0.159 in the sales growth regression for executive directors. The similarity is confirmed when representative and executive director turnover are combined in one regression using dummy variables for Japan. The coefficients in the stock return, the sales growth, and earning change regressions are not statistically different. Only the two regressions using the income level variables differ significantly (at the 5% level or better). Low or negative pre-tax income is more negatively related to turnover in Japan than in the U.S.

### 5.1.3 All Japanese directors.

Table 5C presents individual regression results for the turnover of all Japanese directors. In the typical company, these are the 21 most important managers and inside directors. In comparison to representative directors, the group of all directors probably has

greater operational responsibilities.

Director turnover -- like president and representative turnover -- is negatively related to all three types of performance measures. Only the relation with stock returns is not statistically significant. The regressions indicate that low income levels have a very strong relation with turnover, and explain strikingly more of the variation in turnover than the other performance variables. The regressions with the pre-tax income level and the negative pre-tax income dummy variable each have an R-squared almost double that of the regressions using the other performance variables. Negative pre-tax income or a two standard deviation decline in the initial pre-tax income level are both associated with an increase in director turnover of roughly 10%.

Once more, a measure of turnover in Japan is related to financial performance. And once more, pre-tax earnings levels have the greatest explanatory power.

Overall, the univariate results in tables 5A-5C justify two conclusions. First, the relations between turnover and performance in Japan and the U.S. are economically and statistically similar. Virtually all the coefficients on the performance variables have the same sign and most do not differ from each other in a statistical sense. These results are not consistent with Japanese managers ignoring stock price or other measures of financial performance (at least relative to U.S. managers).

Second, low earnings levels in Japan are consistently significantly related to and explain more variation in turnover than the other performance variables. This result is not consistent with Japanese firms and managers being able to ignore short-term earnings or cash flows. It is, however, consistent with Japanese governance mechanisms becoming active when companies have cash flow difficulties. Aoki (1990) describes the Japanese system as operating in this way.

## 5.2      Multivariate results

While governance forces may focus on a particular performance measure, if that measure is correlated with other measures, the univariate tests will find a relation between turnover and the correlated measure. In this section, I attempt to distinguish among performance measures by presenting multivariate estimates of the likelihood of top executive turnover.

### 5.2.1      The top executive

Consistent with the univariate results, all presidential turnover in Japan is not significantly related to any of the performance measures in the first multivariate regression in table 6A. The second regression replaces all presidential turnover with the non-standard turnover measure in which the president does not become chairman. The only variable that remains statistically significant (at the 10% level) is the dummy variable for negative pre-tax income. Negative pre-tax income increases the likelihood of non-standard turnover by a still economically significant 8.3%.

In the U.S., table 6A indicates that CEO turnover is most closely associated with sales growth. Sales growth in the prior two year period is significant at the 5% level, and its coefficient declines only slightly from the univariate regression. None of the other variables is statistically significant, although the coefficient on initial pre-tax income is virtually identical to its coefficient in the univariate regression and, therefore, still economically significant. The market excess return variables become both statistically and economically insignificant in the multivariate regressions.

The results in table 6A also confirm the univariate results in that very few of the multivariate regression coefficients differ statistically across the two countries. In fact, none of the coefficients in the president regression are statistically different (at the 5% level or better) from the analogous coefficients in the CEO regression. Non-standard president

turnover is more sensitive to earnings changes and less sensitive to lagged sales growth than CEO turnover.

### 5.2.2 Representative, executive and inside directors

Table 6B presents the multivariate regression results for turnover of the top several executives. For Japan, negative pre-tax income, again, is the most economically and statistically significant variable. The lagged market excess return also adds explanatory power (significant at the 10% level) for representative director turnover. In contrast, the coefficient on sales growth (in the same period) is insignificant and less than one-half of its value in the individual regression.

For the U.S., both executive and inside director turnover, like CEO turnover, are most closely associated with sales growth (significant at the 1% level). The level of pre-tax earnings also adds explanatory power in both regressions while the market excess return variables become both statistically and economically insignificant.

The results from combining the observations from both countries into one multivariate regression are roughly the same as in the individual regression combinations -- only the coefficient on the negative pre-tax income dummy variable is significantly different in the two countries. The overall picture, therefore, is similar in the two countries, except that low earnings plays a greater role in Japan.

### 5.2.3 All Japanese directors.

Table 6C presents individual regression results for the turnover of all Japanese directors. Consistent with the univariate regression results, the initial pre-tax income level and negative pre-tax income are associated with a significant increase in director turnover. In the presence of these variables, stock performance, sales growth and earnings growth are insignificant.

### 5.3      Alternative specifications

#### 5.3.1      Firm Fixed Effects

Firms may differ in unobserved ways that affect top executive (or director choice). For example, some Japanese firms may have a culture of choosing new top executives frequently while others will choose new top executives only when the firm performs poorly. Firm fixed effects (or, equivalently, firm dummy variables) can be used to control for these unobserved characteristics, although they come at the expense of ignoring variation across firms.

Appendix 2A presents the estimates for Japanese presidents and U.S. CEOs using firm fixed effects. The estimates for all president turnover in Japan indicate marginally stronger turnover-performance relations than the estimates without fixed effects. Negative pre-tax income is associated with a 11.9% increase in turnover likelihood (significant at the 10% level) and the coefficient on lagged market excess returns almost doubles in magnitude to -0.083. Performance, however, still fails to explain very much turnover. The fixed effects estimates of non-standard turnover are similar to the estimates without fixed effects although the significance levels differ.

While the Japanese fixed effects estimates differ only slightly from the earlier estimates, the U.S. fixed effect estimates differ more so. The turnover-stock return relations are no longer negative (let alone significant) and the coefficients on income levels decline in magnitude. This suggests that variation across firms drives the estimates without fixed effects.

As in the regressions without firm effects, many of the coefficients are not statistically different across countries. U.S. CEO turnover, again, appears more sensitive to lagged sales growth while non-standard Japanese turnover is more sensitive to income.

Appendix 2B repeats the individual regressions in table 5B for representative, executive, and inside directors using firm fixed effects; appendix 2C does the same for the

director regression in table 5C. The general impact of including fixed effects in the representative director regressions is to increase the magnitude (and also the standard errors) of the coefficients. The results, therefore, are qualitatively similar to the earlier ones.

In contrast, the use of fixed effects reduces the magnitude (and increases the standard errors) of most of the coefficients in the U.S. executive and inside director regressions. Only the sales growth variables remain unchanged and significant in the two regressions. When all observations are combined, the Japanese coefficients are significantly different from the U.S. coefficients for every variable except sales growth.

The fixed effects results for all directors in Japan do not differ a great deal qualitatively from those in table 5C. The only change worth mentioning is that the coefficient on lagged market excess stock returns becomes significant while the coefficient on initial pre-tax income declines.

Overall, the firm fixed effects results indicate that the Japanese turnover results are robust, and, perhaps, that top executive turnover in Japan is more sensitive to performance than in the U.S.

### 5.3.2 Annual periods

Although two-year turnover intervals arguably capture Japanese institutional arrangements better than annual ones, I repeated the analysis using annual turnover and up to three years of performance data. The univariate regressions are presented in appendices 3A - 3C. These regressions include the same control variables for age, tenure, and period used in the two-year regressions. In general, the one-year results are qualitatively the same as the two-year results. Some of the details, however, are different.

Appendix 3A reports that negative pre-tax income in Japan is associated with a 9.4% increase in the likelihood of turnover of the president (significant at the 5% level) at a

one-year frequency. Initial pre-tax income is also significant at the 5% level. Non-standard turnover is again economically and statistically related to stock returns, earnings changes, and negative income. Possibly because of the changed frequency, same year sales growth is negatively related to non-standard turnover, but lagged sales growth is positively related. In the U.S., the univariate results for CEO turnover are qualitatively similar for the earnings variables and for stock returns. Although all three coefficients are negative, the sales growth variables have a qualitatively smaller impact and are not significant at the 10% level. (This is, perhaps, not surprising given that two-year lagged sales has the greater explanatory power in the two-year regressions.) None of the coefficients in the Japanese regressions differ statistically from the analogous coefficients in the U.S. regressions.

Appendix 3B reports one-year regressions of representative, executive, and inside director turnover. The results are qualitatively the same as those in the two-year regressions. Earnings levels explain the most variation in the representative director regressions while sales growth explains the most variation in the executive and inside director regressions. When the representative and executive director regressions are combined, only one coefficient differs statistically (at the 5% level or better) across countries -- turnover is more sensitive to the two-year lagged change in pre-tax income in Japan. Similarly, combining the representative and inside director regressions yields only two coefficients that differ statistically (at the 5% level or better) across countries -- turnover is more sensitive to lower pre-tax income levels and to the two-year lagged change in sales in Japan.

Finally, appendix 3C reports the one-year regressions for all Japanese directors. The results are qualitatively the same as the two-year results except that the coefficient on lagged stock return is significant (at the 5% level). It is also worth noting that the coefficients for sales growth and changes in earnings are significant in the current year and at a two year lag, but are small and insignificant at a one year lag. Again, this can be interpreted as evidence that the two-year frequency is more appropriate.

6. Executive compensation and its relation to performance

Top executive turnover is one way to motivate managers; compensation is another. Rosen (1990) summarizes the large body of evidence on U.S. compensation. This work finds that the elasticity of executive salary plus bonus to sales is 0.20 to 0.25. This work finds semi-elasticities of salary and bonus to stock and accounting rates of return equal to approximately 0.15 and 1.0, respectively. (That is, a 10% increase in stock price is associated with a 1.5% increase in salary and bonus.) Current theory, according to Rosen, has nothing to say about whether these elasticities are small or large. In contrast, Jensen and Murphy (1990) argue that CEO compensation in the U.S. -- tethered by political forces, both outside and within the public corporation -- is remarkably insensitive to performance.

Although a large body of systematic evidence exists for management compensation in the U.S., almost none exists for Japan. Kato and Rockel (1991) are the one exception I am aware of. They compare the compensation of Japanese CEOs to that of U.S. CEOs. Because they have this data for only one year, however, they are not able to estimate the relation between performance and compensation.

This section presents evidence on both the level and performance-sensitivity of management cash compensation in Japan. There is both good news and bad news about the analysis that follows. The good news is that I have more than one year of data so that I can estimate a performance-compensation relation. The bad news is that the compensation measures are limited. The first measure is the total salary and bonus earned by all directors in 1981 through 1984. Most of the companies in the sample reported these figures in their 1982 and 1984 filings of the Yuka Shoken Hokokusho. Because this compensation is not broken down by individual, it is not possible to estimate a sensitivity for the president alone. The second measure is the annual bonus paid to all directors from 1981 to 1989 for most of the sample firms. Again, this compensation is not broken down by individual.

Before looking at these data, it is worth remembering that the Japanese managers



may begin with something of a "disadvantage" in the compensation-performance comparison. As previously presented in tables 2A and 3, U.S. top executives own more of their companies' stock than do Japanese top executives.

Table 7A presents some descriptive statistics for the compensation data. Consistent with most popular accounts, Japanese directors (or managers) earn far less than their U.S. counterparts. From 1981 to 1984, the board of directors of the average Japanese company earned almost \$1.5 million in salary and bonus. Spread over all board members, the salary and bonus per director averaged just below \$64,000 per director.

Murphy (1985) presents salary and bonus information for the top executives of 73 large U.S. corporations from 1964 to 1981. These executives include chairmen, presidents, vice presidents, treasurers, and general counsels. This group is arguably very close in stature and position to members of Japanese boards of directors. Table 7A reports Murphy's result that the U.S. executives earned an average of \$360,500 (in 1983 \$) in salary and bonus -- approximately five times more than their Japanese counterparts. The executives with the title of vice president in Murphy's sample earned only somewhat less -- an average of \$286,200. Table 7A also reports that the bonus component of compensation in the U.S. is much higher than that in Japan.

There are two reasons why the true differences in cash compensation are probably smaller than those reported in these comparisons. First, the Japanese companies are smaller. If cash compensation varies in a systematic way with sales (and across countries), they should earn less. The difference in cash compensation, however, seems too large to be explained by sales differences. If the compensation-sales elasticity is 0.25 and sales of U.S. firms are three times as large as Japanese firms, U.S. managers should earn roughly 50% more. Although this adjustment ignores the fact that Japanese firms probably underreport true sales in their unconsolidated financial statements, it still leaves a large gap.

The compensation comparisons are also imperfect because they refer to different

numbers of executives. The Japanese data examined here refer to the board of directors -- typically the top 21 managers. Murphy's data, in contrast, refer to an average of less than 7 executives per firm over a much longer period. It is more difficult to determine the magnitude of this difference. Nevertheless, it seems unlikely that any reasonable adjustment would bring cash compensation in Japan near the U.S. level. Unless on the job consumption and perquisites are much higher in Japan than the U.S., U.S. executives earn more than their Japanese counterparts.

Table 7B presents regression results of the relation of cash compensation to performance. The regressions use both the change in log cash compensation for all directors and per director as dependent variables. It is not clear which dependent variable is more appropriate for the president and representative directors. If they bear the brunt of the variability in compensation, the estimates using total directors' compensation are more appropriate. If instead, the compensation of all directors moves similarly, compensation per director will be more appropriate. For comparison purposes, the tables also include the estimates calculated for U.S. executives in Murphy (1985). Because compensation does not have the same two-year periodicity as turnover, the regressions are for annual intervals. Performance is measured using four of the five variables used in the turnover regressions.

Table 7B indicates that the relations of cash compensation to performance are roughly the same magnitude as those found for the U.S. Regression 1 indicates that a 100% increase in stock price is associated with a 9.3% increase in total salary and bonus this year and a 13.4% increase next year for a semi-elasticity of 0.227. Regression 2 indicates a semi-elasticity of 0.177 for salary and bonus per director. These are similar to the 0.179 reported by Murphy (1985) for U.S. companies.<sup>23</sup>

Regression 4 indicates that an increase in sales of 100% is associated with an

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<sup>23</sup> Murphy does not include lagged stock returns. The results in Gibbons and Murphy (1990) suggest that including such a lag would increase the semi-elasticity by 0.03.

increased total salary and bonus of 42.1% this year and 4.9% next year -- implying an elasticity of 0.470 with respect to sales. The elasticity of salary and bonus per director in regression 5 is smaller, at 0.239. These estimates, again, are similar to those summarized in Rosen (1990) for U.S. firms.

Regressions 6 and 7 estimate the relation of cash compensation to earnings changes. A decline in pre-tax income over assets of 10% -- for example, from 0% to 10% -- is associated with a 26.9% decline in total directors' compensation and a 25.1% decline in compensation per director over two years. At face value, this implies a greater elasticity than the 1.0 reported in Rosen (1990). However, the true difference may be smaller because the variation of the change in pre-tax income to assets in Japan is roughly only one-half that for U.S. firms.

Regressions 8 and 9 indicate that negative pre-tax income is associated with 15.8% and 13.1% declines, respectively, in total compensation and compensation per director.

As they did with turnover, both earning measures explain more of the variation in cash compensation than sales or stock returns. Again, this is not consistent with Japanese firms and managers ignoring short-term earnings movements.

Regressions 10 and 11 include stock returns and changes in sales together. Regression 12 reports the results of a similar regression in Murphy (1985). Again, the results for the Japanese directors are qualitatively similar to those for U.S. executives.

Regressions 13-15 replace change in log total compensation in regressions 1-3 with change in log directors' bonus. I have 752 firm-years for which I can measure such changes.<sup>24</sup> The coefficients in regression 13 indicate that a 100% increase in stock price is associated with a 65.7% increase in that year's directors' bonus and a 96.9% increase the next year, implying a semi-elasticity of 1.63. The coefficients in regression 14 imply a semi-

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<sup>24</sup> It is not uncommon for directors' bonus to equal 0. To account for this, I take the log of directors' bonus plus 0.1 million yen.

elasticity of 0.90 for bonus per director. The analogous semi-elasticity for U.S. executive bonuses of 1.429 reported by Murphy (1985) is intermediate between the two Japanese estimates.

Rather than looking at elasticities, the regressions in table 7C replicate the regressions on levels estimated by Jensen and Murphy (1990). These estimates compare the yen change in directors' salary and bonus -- both total and per director -- to a million yen change in shareholder wealth in the same year and lagged one year. Regression 1 indicates that a one million yen increase in stockholder wealth is associated with a 219 yen increase (a 93 yen decrease in the same year and a 126 yen increase the next year) in total directors' compensation. The coefficients in regression 2 imply that the one million yen increase is associated with a 6.9 yen increase in compensation per director. All of the coefficients are statistically significant, indicating again that compensation is related to stock performance.

Regression 3 reports the results of the regression of CEO salary and bonus against change in shareholder wealth in table 1 of Jensen and Murphy (1990). Their results are for CEOs of large U.S. companies for the years 1974 - 1986. A one million dollar increase in shareholder wealth is associated with a \$21.9 increase in CEO salary and bonus. This sensitivity is intermediate between the 219 yen increase for all directors and 6.9 yen increase per director. If the Japanese president earns approximately three times as much as the average director, the sensitivities would be identical.

It is worth noting that the Jensen and Murphy (1990) estimates in table 7C do not include the effect of executive stock ownership. In their study, such ownership is the most important determinant of the total compensation-performance relation. Because U.S. executives own a greater percentage of their companies' stock than Japanese executives, the combined sensitivity of executive cash and stock compensation to changes in shareholder wealth is likely greater for U.S. top executives.

Nevertheless, the results in this section indicate that cash compensation of top executives in Japan is significantly related to stock, sales, and earnings performance. These relations appear economically and statistically similar in most respects to those previously found for U.S. executives.

## 7. Summary and discussion

This paper has compared the relations of managerial rewards and performance in Japan and the U.S. The relations are generally similar in the two countries. Measures of top executive turnover are negatively related to all three types of financial performance -- stock, sales, and earnings -- in both countries. In many cases, the sensitivities in the two countries are not statistically different and the total amount of variation explained is similar. While Japanese executives earn less cash compensation than their U.S. counterparts, the relations between that cash compensation and performance are also similar in magnitude to those previously reported for U.S. executives.

Although the reward-performance relations are generally similar, some differences are worth noting. First, earnings measures tend to explain the most variation of turnover and compensation in Japan, while sales measures tend to explain then most turnover variation in the U.S. In some cases, the sensitivities of turnover to earnings in the two countries are statistically different. Second, turnover-performance relations appear to be stronger in Japan for the group of top executives than for just the CEO. This is arguably consistent with a less important role for the CEO in Japan than in the U.S.

These results have several implications. First, Japanese managers are rewarded for stock price performance -- or factors affecting that performance -- and they are motivated by turnover and cash compensation to roughly the same extent as U.S. managers. This is not consistent with the view that shareholders in Japan are completely ignored, if at all.

Second, managerial rewards and punishments in Japan appear most closely tied to

earnings measures -- particularly to low earnings levels. These relations tend to be at least as strong as those in the U.S. The earnings results do not provide strong support for the view that Japanese managers are better able to invest in projects that do not pay off in the short-run. In fact, these results are consistent with Japanese top executives being penalized if they invest exclusively in projects with no short-term payoffs.

The earnings results are consistent with the description of the Japanese governance system given in Aoki (1990). According to Aoki, this system is distinguished by main bank relationships and stable equity crossholdings. He argues that the main bank or other shareholders take no actions as long as the managers run the company well. In what Aoki refers to as bad profit states, the main bank takes an active interest in the company, and, may decide to remove managers. If this is correct, the relations of turnover and performance should be more pronounced in firms with strong bank relationships or large stable shareholders. This seems to be a reasonable direction for future research.

Third, the results are consistent with roughly similar incentives and internal governance pressure in the two countries under the additional assumption that governance mechanisms work primarily through rewarding / disciplining managers who reveal themselves to be good / bad managers. Jensen and Murphy (1990) appear to endorse this assumption when they claim that the relations of pay and turnover to performance in the U.S. are "small for an occupation in which incentive pay is expected to play an important role." The results in this paper indicate that such incentives are approximately the same in Japan. If one accepts the Jensen and Murphy (1990) monitoring assumptions and their argument that U.S. incentives are too small, then Japanese incentives are too small as well. In contrast, one might interpret the concurrence of reward-performance relations in the two countries as evidence that top management incentives are not too small or that they do not matter much.

The interpretation of similar incentives and governance pressure would not be appropriate if governance mechanisms in Japan and the U.S. differ in other ways. In

particular, they may differ in their ability to observe and evaluate managerial actions, not performance, or in their ability to promote better managers to the top. Again, this also seems to be a promising direction for future research.

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## References

- Abegglen, James, and George Stalk, 1985, *Kaisha, the Japanese corporation*, (New York: Basic Books).
- Analysts' Guide, 1989, Daiwa Institute of Research.
- Aoki, Masahiko, 1990, Towards an economic model of the Japanese firm, *Journal of Economic Literature*, 28, 1-27.
- Ballon, Robert and Iwao Tomita, 1988, *The financial behavior of Japanese corporations*, Kodansha International, Tokyo.
- Blinder, Alan, 1991, Profit maximization and international competition, in R. O'Brien (ed.), *Finance and the International Economy: 5 - The AMEX Bank Review Prize Essays* (Oxford University Press), 40-53.
- Blinder, Alan, 1992, More like them, *The American Prospect*, Winter, 51-62.
- Coffee, John C., 1991, Liquidity versus control: The institutional investor as corporate monitor, *Columbia Law Review*, 202-291.
- Corporate Governance in Japan, 1983, *Hawaii Law Review*.
- Diamond's Kaisha Yoran Zenjojo Kaishaban, 1980 to 1990. (in Japanese).
- Diamond's Shokuin Roku, 1980 to 1990. (in Japanese).
- Drucker, Peter, 1991, Reckoning with the pension fund revolution, *Harvard Business Review*, March-April, 106-114.
- French, Kenneth, and James Poterba, 1991, Were Japanese stock prices too high? *Journal of Financial Economics* 29, 337-364.
- Gerlach, Michael, 1991, *Alliance capitalism: The social organization of Japanese Business*, Berkeley CA: University of California Press.
- Gibbons, Robert, and Kevin J. Murphy, 1990, Relative performance evaluation for chief executive officers, *Industrial and Labor Relations Review* 43, S30-51.
- Grundfest, Joseph, 1990, Subordination of American capital, *Journal of Financial Economics* 27, 89-116.
- Hermalin, Benjamin and Michael Weisbach, 1988, The determinants of board composition, *Rand Journal of Economics* 19, 589-606.
- Hoshi, T., A. Kashyap, and D. Scharfstein, 1990a, Corporate structure liquidity and investment: Evidence from Japanese panel data, *Quarterly Journal of Economics* 106, 33-60.
- Hoshi, T., A. Kashyap, and D. Scharfstein, 1990b, The role of banks in reducing the costs of financial distress in Japan, *Journal of Financial Economics* 27, 67-88.

- Jensen, Michael and Kevin J. Murphy, 1990, Performance pay and top management incentives, *Journal of Political Economy* 98, 225-264.
- Kato, Takao and Mark Rockel, 1991, Experiences, credentials and compensation in the Japanese and U.S. managerial labor markets, *Journal of the Japanese and International Economies* (forthcoming).
- Kester, W. Carl, 1991, *Japanese takeovers: The global contest for corporate control*, (Boston: Harvard Business School Press).
- Kigyo Keiretsu Soran, 1982, 1985, and 1988. (in Japanese).
- Lorsch, Jay with Elizabeth MacIver, 1989, *Pawns or Potentates*, (Boston: Harvard Business School Press).
- Mace, Myles, 1986, *Directors: Myth and Reality* (Boston: Harvard Business School Press).
- Milgrom, Paul and John Roberts, 1992, *Economics, Organizations and Management*, (New Jersey: Prentice Hall.)
- Moody's Industrials, 1981-1990.
- Morck, Randall, Andrei Shleifer, and Robert Vishny, 1989, Alternative mechanisms for corporate control, *American Economic Review* 79, 842-852.
- Murphy, Kevin J., 1985, Corporate performance and managerial remuneration: An empirical analysis, *Journal of Accounting and Economics* 7, 11-42.
- Nakatani, I., 1984, The economic role of financial corporate grouping, in M. Aoki, ed., *Economic analysis of the Japanese firm* (New York: Elsevier).
- Prowse, Stephen, 1990, Institutional investment patterns and corporate financial behavior in the U.S. and Japan, *Journal of Financial Economics* 27, 43-66.
- Prowse, Stephen, 1991, The structure of corporate ownership in Japan, Working paper, Federal Reserve Board, Washington, DC.
- Rosen, Sherwin, 1990, Contracts and the market for executives, NBER Working Paper 3542.
- Warner, Jerold, Ross Watts, and Karen Wruck, 1988, Stock prices, event prediction and event studies: An examination of top management restructurings, *Journal of Financial Economics* 20, 461-492.
- Weisbach, Michael, 1988, Outside directors and CEO turnover, *Journal of Financial Economics* 20, 431-460.
- Yang, Charles, 1984, Demystifying Japanese management practices, *Harvard Business Review*, November-December, 172-184.
- Yuka Shoken Hokokusho, 1982, 1984, and 1988. (in Japanese).

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Table 1

Average and medians of firm financial and governance characteristics for 119 large Japanese and 146 large U.S. companies. Japanese companies are listed in Fortune Magazine's 1981 list of the largest international companies (by sales). U.S. companies are listed in Fortune Magazine's 1981 list of the largest industrial companies (by sales) in the U.S. Returns of Japanese companies do not include dividends and are lower than with dividend returns by approximately 1.25% per year. Market excess returns are calculated using the same-country return (including dividends) to a value-weighted index of stocks. Industry excess returns are calculated for Japanese firms using industry returns (including dividends) in Daiwa's Analysts Guide and for U.S. firms using the median return to firms in similar industries. Yen values are converted into dollars using year-end yen-dollar exchange rates. Governance data reflect the fiscal year ending 1980 unless otherwise indicated. Inside directors include directors who are current or former executives of the firm. Executive directors are directors who are current executives of the firm.

	<u>A. Japanese Firms</u>			<u>B. U.S. Firms</u>		
	<u>Mean</u>	<u>Median</u>	<u>Std. Dev.</u>	<u>Mean</u>	<u>Median</u>	<u>Std. Dev.</u>
<u>1. Financial Data</u>						
<u>1.1 Levels</u>						
<u>1980</u>						
Sales in fiscal year (\$ M)	2,401	1,580	2,464	8,556	4,851	12,313
Market value of equity (\$ M)	691	449	733	3,852	2,022	5,673
Current or pre-tax income to assets (%)	5.40	4.65	4.39	12.45	11.55	8.86
Current or pre-tax income to sales (%)	4.40	3.83	3.24	9.16	8.24	6.71
<u>1988</u>						
Sales in fiscal year (\$ M)	5,649	3,456	6,845	11,988	7,065	17,017
Market value of equity (\$ M)	6,638	3,703	7,604	7,652	4,447	10,265
<u>1.2 Panel Data - 2 year periods, 1980 - 1988</u>						
Stock returns	0.315	0.299	0.36	0.259	0.255	0.37
Market excess returns	-0.097	-0.110	0.33	-0.023	0.017	0.35
Industry excess returns	-0.024	-0.029	0.28	0.027	0.026	0.31
Sales growth	0.065	0.071	0.19	0.059	0.077	0.24
Change in pre-tax income to assets	-0.003	-0.002	0.03	-0.008	-0.008	0.08
Initial pre-tax income to assets	0.045	0.037	0.05	0.090	0.092	0.09
Pre-tax income is negative one year or more	0.147			0.186		
<u>2. Governance Data</u>						
Percentage of Companies Taken Over 1980 to 1988	2.52%			21.9%		
Number of directors	22.49	21		14.77	14	
Number of outside directors	0.86	0		9.63	10	
% Firms with outside directors	41.2%			100.0%		
Number of directors joining firm after 1973	1.38	1		N.A.		
Number of directors joining firm after 1969	2.05	1		N.A.		
Number of inside directors	21.63	21		5.14	5	
Number of representative / executive directors	4.22	3		4.53	4	
Shares top 10 shareholders (Japan 1982, U.S. 1980)	37.0	33.3		28.8	24.4	

Table 2A

Average and medians of president characteristics for 119 large Japanese firms and CEO characteristics for 146 large U.S. firms in 1981. Japanese companies are listed in Fortune Magazine's 1981 list of the largest international companies (by sales). U.S. companies are listed in Fortune Magazine's 1981 list of the largest industrial companies (by sales) in the U.S. Turnover is for the years 1980 to 1988. U.S. CEO shareholdings are taken from table 3 of Jensen and Murphy (1990) for large firms in 1987. Japanese shareholdings are taken from the 1984 Yuka Shoken Hokokusho.

	<u>A. Japanese Firms</u>			<u>B. U.S. Firms</u>		
	<u>Mean</u>	<u>Median</u>	<u>Std. Dev.</u>	<u>Mean</u>	<u>Median</u>	<u>Std. Dev.</u>
<u>1. Cross-sectional Data</u>						
President / CEO Age (1980)	65.1	66	5.4	58.3	59	6.1
Years as President / CEO (1980)	5.4	4.3	4.3	7.2	5.0	7.0
Years with company (1980)	34.3	39	13.3	26.0	28	11.4
President / CEO Age (1988)	62.7	63	5.1	60.3	60	6.0
Years as President / CEO (1988)	4.3	3.5	4.4	7.0	4.5	7.4
President / CEO shareholdings as % of firm (Japan 1984, U.S. 1987)	0.24	0.02		1.79	0.14	
Greater of President or Chairman shareholdings as % of firm (Japan 1984)	0.40	0.05	0.13			
<u>2. Panel Data – Fiscal year 1980 to 1988</u>						
Percentage President / CEO turnover per year (excluding death / illness)	14.49%			9.73%		
Implied Average Tenure	6.90 years			10.28 years		
Tenure at beginning of turnover year	6.1	5.3		9.4	7.5	
Age at beginning of turnover year	67.6	68		63.1	64	
Percentage President / CEO turnover per year (including death / illness)	15.77%			9.97%		
Percentage President / CEO turnover per year (including takeovers, not death / illness)	14.66%			12.14%		
<u>3. Position of President / CEO after turnover</u>						
Become or remain chairman	68.5%			15.5%		
Remain on board as director, but not chairman	17.3%			60.9%		
Off board	4.8%			20.9%		
Die in office	9.6%			2.7%		
Loose representative directorship (excluding death / illness)	32.0%			N.A.		

Table 2B

Distribution of age and tenure of the top executive for 119 Japanese and 146 U.S. firms from 1980 to 1988. Japanese companies are listed in Fortune Magazine's 1981 list of the largest international companies (by sales). U.S. companies are listed in Fortune Magazine's 1981 list of the largest industrial companies (by sales) in the U.S. Turnover is for the years 1980 to 1988. The top executive in Japan is the president; the top executive in the U.S. is the CEO.

Age at beginning of year	Japan		U.S.	
	% of obs.	Cumulative % of obs.	% of obs.	Cumulative % of obs.
50 or less	2.2	2.2	6.4	6.4
51 to 55	5.2	7.4	16.7	23.1
56 to 60	18.8	26.2	32.6	55.7
61 to 63	19.0	45.2	24.4	79.8
64 to 66	21.7	66.9	12.4	92.2
67 to 70	24.2	91.1	4.8	97.0
71 to 75	8.0	99.1	1.9	98.9
Greater than 75	0.9	100.0	1.1	100.0
Number of Observations	1053		1178	

Tenure at beginning of year	Japan		U.S.	
	% of obs.	Cumulative % of obs.	% of obs.	Cumulative % of obs.
Less than 3 years	43.8	43.8	29.3	29.3
3 years = < and < 5 years	22.5	66.3	17.0	46.3
5 years = < and < 8 years	16.8	83.1	17.9	64.2
8 years or more	16.9	100.0	35.8	100.0
Number of Observations	1053		1178	

Table 3

Means and medians of (1) representative director and director characteristics for 119 large Japanese firms; and (2) executive and inside director characteristics for 146 large U.S. companies. Japanese companies are listed in Fortune Magazine's 1981 list of the largest international companies (by sales). U.S. companies are listed in Fortune Magazine's 1981 list of the largest industrial companies (by sales) in the U.S. Turnover is for the years 1980 to 1988. Inside directors include directors who are current or former executives of the firm. Executive directors are directors who are current executives of the firm. Turnover of an inside director occurs when a director leaves the board. An executive director turnover occurs when an executive director loses the executive position, but not necessarily the directorship. Japanese shareholdings are taken from the 1984 Yuka Shoken Hokokusho and reflect the holdings of all directors. U.S. board shareholdings for 1980 are obtained from the Corporate Data Exchange and reflect the shareholdings of all directors conditional on having holdings of 0.20%.

	<u>A. Japanese Firms</u>		<u>B. U.S. Firms</u>	
	<u>Mean</u>	<u>Median</u>	<u>Mean</u>	<u>Median</u>
<u>1. Cross-sectional Data (1980 unless otherwise indicated)</u>				
Number representative / executive directors	4.23	3	4.53	4
Number inside directors	21.6	21	5.14	5
Age median representative / executive director	63.5	64	56.4	57
Age oldest representative / executive director	68.5	68	62.8	62
Age youngest representative / executive director	59.7	60	50.5	51
Shareholdings all directors as % of firm (Japan 1984, U.S. 1980)	0.90	0.23	5.59	1.17
<u>2. Panel Data - 2 year periods</u>				
Percentage representative / executive director turnover	28.5	25.0	23.3	20.0
Percentage inside director turnover			19.3	16.7
Percentage total director turnover	24.0	23.8	N.A.	
Percentage firms with new representative / executive director from outside	8.2%		12.2%	
Percentage firms with new representative / executive director with less than five years experience with firm	10.6%		N.A.	
Percentage firms with new director with less than five years experience with firm	40.8%		N.A.	

Table 4

Regression estimates of the probability of turnover of the top executive over a two-year period as a function of age and tenure as top executive for 119 Japanese and 146 U.S. firms from 1980 to 1988. The top executive in Japan is the president; the top executive in the U.S. is the CEO. Observations are excluded if the top executive dies in office or resigns because of illness. Dummy variables are included for president ages (at the beginning of the period) of 63 to 70, and for CEO ages (at the beginning of the period) of 61 to 68. An additional variable is included for presidents older than 70 and CEOs older than 68. Dummy variables are included for tenures as the top executive at the beginning of the period for three to eight years. An additional dummy variable is included for tenures greater than 8 years. The regressions also include dummy variables for the time period.

Regression estimates of probability of turnover of the top executive

Independent variables: Japan / U.S.	Two Year Periods			
	Japan		U.S.	
	Coeff.	S.E.	Coeff.	S.E.
Age 63 / Age 61	-0.083	0.083	0.127 <sup>5</sup>	0.055
Age 64 / Age 62	0.133	0.083	0.069	0.054
Age 65 / Age 63	0.244 <sup>1</sup>	0.078	0.503 <sup>1</sup>	0.063
Age 66 / Age 64	0.267 <sup>1</sup>	0.075	0.596 <sup>1</sup>	0.059
Age 67 / Age 65	0.482 <sup>1</sup>	0.077	0.694 <sup>1</sup>	0.094
Age 68 / Age 66	0.248 <sup>1</sup>	0.079	0.443 <sup>1</sup>	0.089
Age 69 / Age 67	0.382 <sup>1</sup>	0.086	0.254 <sup>10</sup>	0.138
Age 70 / Age 68	0.330 <sup>1</sup>	0.095	0.238 <sup>10</sup>	0.138
Age > 70 / Age > 68	0.470 <sup>1</sup>	0.078	0.023	0.081
In position 3 years	0.219 <sup>1</sup>	0.057	0.009	0.063
In position 4 years	0.202 <sup>1</sup>	0.072	0.167 <sup>5</sup>	0.080
In position 5 years	0.241 <sup>1</sup>	0.077	0.192 <sup>1</sup>	0.062
In position 6 years	0.128	0.095	0.137 <sup>10</sup>	0.077
In position 7 years	0.258 <sup>1</sup>	0.091	0.079	0.065
In position 8 years	0.419 <sup>1</sup>	0.124	0.170 <sup>5</sup>	0.070
In position > 8 years	0.038	0.067	0.074 <sup>10</sup>	0.040
R <sup>2</sup>	0.279		0.350	
Obs.	455		506	

<sup>1</sup> Significant at the 1% level;

<sup>5</sup> Significant at the 5% level; <sup>10</sup> Significant at the 10% level.



Table 5A  
Turnover of the top executive

Univariate regression estimates of the probability of turnover of the top executive as a function of sales growth, stock returns, earnings growth, and earnings levels for 119 Japanese and 146 U.S. firms from 1980 to 1988. The top executive in Japan is the president; the top executive in the U.S. is the CEO. Observations are excluded if the top executive dies in office or resigns because of illness. Regressions are univariate in the sense that a separate regression is run for each performance measure. All regressions include dummy variables for the time period, for president and CEO ages at the beginning of the time period, and for president and CEO tenures at the beginning of the time period.

Univariate regression estimates of probability of turnover of the top executive

Independent variables:	Two Year Periods					
	Japan				U.S.	
	President turnover		President turnover and does not become chairman		CEO Turnover	
	Coeff. [S.E.]	R <sup>2</sup>	Coeff. [S.E.]	R <sup>2</sup>	Coeff. [S.E.]	R <sup>2</sup>
Stock Return:						
year t-2 to t	0.053 <sup>*</sup> [0.059]	0.293	-0.045 [0.038]	0.062	-0.092 <sup>5</sup> [0.044]	0.349
year t-4 to t-2	-0.045 [0.057]		-0.069 <sup>10</sup> [0.037]		-0.054 [0.042]	
Sales growth:						
year t-2 to t	-0.010 [0.114]	0.280	-0.102 [0.075]	0.054	-0.135 <sup>5</sup> [0.066]	0.366
year t-4 to t-2	-0.043 [0.120]		0.099 <sup>*</sup> [0.077]		-0.204 <sup>1</sup> [0.071]	
Income Measures:						
Change in pre-tax income / assets:						
year t-2 to t	-0.544 [0.707]	0.281	-1.432 <sup>1*</sup> [0.455]	0.073	-0.134 [0.213]	0.346
year t-4 to t-2	-0.375 [0.682]		-1.030 <sup>5</sup> [0.438]		-0.043 [0.221]	
Initial pre-tax income / assets:						
Year t-2	-0.601 [0.427]	0.281	-0.173 [0.278]	0.047	-0.457 <sup>1</sup> [0.168]	0.357
Pre-tax Income is negative at least one year: year t-2 to t	0.066 [0.054]	0.281	0.114 <sup>1</sup> [0.035]	0.068	0.086 <sup>5</sup> [0.039]	0.356
Mean dependent variable	0.300		0.073		0.203	
Obs.	448 - 455		448 - 455		493 - 506	

Significantly different from zero <sup>1</sup> at the 1% level; <sup>5</sup> at the 5% level; and <sup>10</sup> at the 10% level.  
\* Coefficient in Japanese regression is different from that in U.S. regression at 5% level or better.

Table 5B  
Turnover of representative, executive, and inside directors

Univariate regression estimates of the percentage turnover of representative directors in Japanese firms and executive and inside directors in U.S. firms as a function of sales growth, stock returns, earnings growth, and earnings levels for 119 Japanese and 146 U.S. firms from 1980 to 1988. Inside directors include directors who are current or former executives of the firm. Executive directors are directors who are current executives of the firm. Turnover of an inside director occurs when a director leaves the board. An executive director turnover occurs when an executive director loses the executive position, but not necessarily the directorship. Regressions are univariate in the sense that a separate regression is run for each performance measure. All regressions include dummy variables for the time period, for president and CEO ages at the beginning of the time period, and for president and CEO tenures at the beginning of the time period.

Univariate regression estimates of percentage of representative, executive, and inside director turnover

Independent variables:	Two Year Periods					
	Japan		U.S.			
	Representative Directors		Executive Directors		Inside Directors	
	Coeff. [S.E.]	R <sup>2</sup>	Coeff. [S.E.]	R <sup>2</sup>	Coeff. [S.E.]	R <sup>2</sup>
Stock Return: year t-2 to t	-0.056 [0.038]	0.139	-0.074 <sup>5</sup> [0.030]	0.139	-0.048 <sup>10</sup> [0.027]	0.063
year t-4 to t-2	-0.100 <sup>1</sup> [0.037]		-0.051 <sup>10</sup> [0.029]		-0.036 [0.026]	
Sales growth: year t-2 to t	-0.176 <sup>5</sup> [0.075]	0.133	-0.192 <sup>1</sup> [0.046]	0.159	-0.190 <sup>1</sup> [0.041]	0.098
year t-4 to t-2	-0.060 [0.076]		-0.014 [0.050]		0.022 [0.045]	
Income Measures:						
Ch. in pre-tax income / assets: year t-2 to t	-0.156 [0.448]	0.127	-0.208 [0.149]	0.129	-0.339 <sup>5</sup> [0.133]	0.070
year t-4 to t-2	-0.745 <sup>10</sup> [0.443]		-0.141 [0.155]		-0.166 [0.138]	
Initial pre-tax income / assets: Year t-2	-0.872 <sup>1</sup> [0.270]	0.141	-0.291 <sup>5*</sup> [0.117]	0.139	-0.147 <sup>*</sup> [0.106]	0.062
Pre-tax Income is negative at least one year: year t-2 to t	0.147 <sup>1</sup> [0.035]	0.155	0.053 <sup>10*</sup> [0.027]	0.133	0.022 <sup>*</sup> [0.024]	0.059
Mean dependent variable	0.285		0.233		0.193	
Obs.	466 - 471		494 - 507		494 - 507	

Significantly different from zero <sup>1</sup> at the 1% level; <sup>5</sup> at the 5% level; and <sup>10</sup> at the 10% level.  
\* Coefficient in U.S. regression is different from that in Japanese regression at 5% level or better.

Table 5C  
Turnover of all Japanese directors

Univariate regression estimates of the percentage turnover of all directors in Japanese firms as a function of sales growth, stock returns, earnings growth, and earnings levels for 119 Japanese firms from 1980 to 1988. Regressions are univariate in the sense that a separate regression is run for each performance measure. All regressions include dummy variables for the time period, for president and CEO ages at the beginning of the time period, and for president and CEO tenures at the beginning of the time period.

Univariate regression estimates of percentage of directors leaving firm

Independent variables:	Two Year Periods	
	Japan	
	All directors	
	Coeff.	R <sup>2</sup>
Stock Return:		
year t-2 to t	-0.018 [0.018]	0.119
year t-4 to t-2	-0.026 [0.017]	
Sales growth:		
year t-2 to t	-0.143 <sup>1</sup> [0.034]	0.124
year t-4 to t-2	-0.082 <sup>5</sup> [0.035]	
Income Measures:		
Change in pre-tax income / assets:		
year t-2 to t	-0.041 [0.205]	0.118
year t-4 to t-2	-0.392 <sup>10</sup> [0.203]	
Initial pre-tax income / assets:		
Year t-2	-0.901 <sup>1</sup> [0.118]	0.210
Pre-tax income is negative at least one year: year t-2 to t	0.111 <sup>1</sup> [0.015]	0.200
Mean dependent variable	.240	
Obs.	467 - 471	

Significantly different from zero <sup>1</sup> at the 1% level; <sup>5</sup> at the 5% level; and <sup>10</sup> at the 10% level.

Table 6A  
Turnover of the top executive - multivariate

Multivariate regression estimates of the probability of turnover of the top executive as a function of sales growth, stock returns, earnings growth, and earnings levels for 119 Japanese and 146 U.S. firms from 1980 to 1988. The top executive in Japan is the president; the top executive in the U.S. is the CEO. In the first Japanese regression, the dependent variable equals one if the president loses his job; in the second, the dependent variable equals one if the president loses his job and does not become chairman. Observations are excluded if the top executive dies in office or resigns because of illness. Regressions are multivariate in the sense that the regressions include all five performance measures simultaneously. All regressions include dummy variables for the time period, for president and CEO ages at the beginning of the time period, and for president and CEO tenures at the beginning of the time period.

Multivariate regression estimates of probability of turnover of the top executive

Independent variables:	Two Year Periods					
	1. Japan - All president turnover		2. Japan - president loses job and not chairman		3. U.S. - All CEO turnover	
	Coeff.	S.E.	Coeff.	S.E.	Coeff.	S.E.
Stock Return: year t-2 to t	0.093	0.067	0.012	0.043	-0.059	0.055
year t-4 to t-2	-0.038	0.063	-0.042	0.041	-0.001	0.052
Sales growth: year t-2 to t	0.078	0.128	-0.049	0.082	-0.105	0.070
year t-4 to t-2	-0.010	0.129	0.119 <sup>*</sup>	0.083	-0.188 <sup>5</sup>	0.080
Change in pre-tax income / assets: year t-2 to t	-1.240	0.986	-0.792	0.625	-0.169	0.300
year t-4 to t-2	-0.058	0.800	-0.822 <sup>*</sup>	0.542	0.424	0.266
Initial pre-tax income / assets: year t-2	-0.781	0.572	0.015	0.366	-0.455	0.283
Pre-tax Income is negative at least one year: year t-2 to t	0.021	0.066	0.083 <sup>10</sup>	0.042	0.002	0.053
R <sup>2</sup>	0.300		0.092		0.369	
Obs.	448		448		488	

Significantly different from zero <sup>1</sup> at the 1% level; <sup>5</sup> at the 5% level; and <sup>10</sup> at the 10% level.

<sup>\*</sup> Coefficient in Japanese regression is different from that in U.S. regression at 5% level or better.

Table 6B  
Turnover of representative, executive, and inside directors - multivariate

Multivariate regression estimates of the percentage turnover of representative directors in Japanese firms and executive and inside directors in U.S. firms as a function of sales growth, stock returns, earnings growth, and earnings levels for 119 Japanese and 146 U.S. firms from 1980 to 1988. Inside directors include directors who are current or former executives of the firm. Executive directors are directors who are current executives of the firm. Turnover of an inside director occurs when a director leaves the board. An executive director turnover occurs when an executive director loses the executive position, but not necessarily the directorship. All regressions include dummy variables for the time period, for president and CEO ages at the beginning of the time period, and for president and CEO tenures at the beginning of the time period.

Multivariate regression estimates of percentage of representative, executive, and inside director turnover

Independent variables:	Two Year Periods					
	Japan		U.S.			
	Representative Directors		Executive Directors		Inside Directors	
	Coeff.	S.E.	Coeff.	S.E.	Coeff.	S.E.
Stock Return: year t-2 to t	-0.034	0.042	-0.027	0.038	0.005	0.034
year t-4 to t-2	-0.073 <sup>10</sup>	0.041	-0.012	0.037	-0.011	0.033
Sales growth: year t-2 to t	-0.081	0.083	-0.163 <sup>1</sup>	0.049	-0.166 <sup>1</sup>	0.044
year t-4 to t-2	0.028	0.083	0.018	0.056	0.021	0.050
Ch. in pre-tax income / assets: year t-2 to t	0.293	0.586	-0.195	0.209	-0.409 <sup>5</sup>	0.187
year t-4 to t-2	-0.221	0.516	0.190	0.185	0.090	0.166
Initial pre-tax income / assets: Year t-2	-0.346	0.363	-0.379 <sup>10</sup>	0.195	-0.348 <sup>5</sup>	0.175
Pre-tax income is negative at least one year: year t-2 to t	0.117 <sup>1</sup>	0.042	-0.009 <sup>*</sup>	0.037	-0.046 <sup>*</sup>	0.033
R <sup>2</sup>	0.173		0.171		0.107	
Obs.	466		490		490	

Significantly different from zero <sup>1</sup> at the 1% level; <sup>5</sup> at the 5% level; and <sup>10</sup> at the 10% level.

\* Coefficient in Japanese regression is different from that in U.S. regression at 5% level or better.

Table 6C  
Turnover of all Japanese directors - multivariate

Multivariate regression estimates of the percentage turnover of all directors in Japanese firms as a function of sales growth, stock returns, earnings growth, and earnings levels for 119 Japanese firms from 1980 to 1988. All regressions include dummy variables for the time period, for president and CEO ages at the beginning of the time period, and for president and CEO tenures at the beginning of the time period.

Multivariate regression estimates of percentage of directors leaving firm

Independent variables:	Two Year Periods	
	Japan	
	All directors	
	Coeff.	[S.E.]
Stock Return:		
year t-2 to t	0.008	[0.018]
year t-4 to t-2	0.001	[0.017]
Sales growth:		
year t-2 to t	-0.056	[0.036]
year t-4 to t-2	0.009	[0.036]
Change in pre-tax income / assets:		
year t-2 to t	-0.095	[0.251]
year t-4 to t-2	-0.115	[0.231]
Initial pre-tax income / assets:		
Year t-2	-0.670 <sup>1</sup>	[0.156]
Pre-tax Income is negative at least one year: year t-2 to t	0.071 <sup>1</sup>	[0.018]
R <sup>2</sup>	.258	
Obs.	467	

Significantly different from zero <sup>1</sup> at the 1% level; <sup>5</sup> at the 5% level; and <sup>10</sup> at the 10% level.

Table 7A

Average and median of characteristics of top management compensation for 119 large Japanese firms in the 1980s and characteristics of top management compensation reported for large U.S. corporations by Murphy (1985) and Jensen and Murphy (1990). Total directors' cash compensation, the sum of salary and bonus, is taken from the 1982 and 1984 Yuka Shoken Hokokusho. Directors' bonus is obtained from the Yuka Shoken Hokokusho and Daiwa Analyst's Guide.

	<u>A. Japanese Firms</u>			<u>B. U.S. Firms</u>	
	<u>Mean</u>	<u>Median</u>	<u>N</u>	<u>Mean</u>	<u>Median</u>
Total directors' cash compensation (mean 1981 to 1984) - in \$000	1,483.	1,340.	415		
Total cash compensation per director (mean 1981 to 1984) - in \$000	63.9	62.4	415		
Directors' bonus (1980 to 1988) in \$000	405.	323.	914		
Directors' bonus per director (1980 to 1988) in \$000	16.5	14.5	914		
Total salary and bonus per top executive in 1983 \$000 (average 1964 to 1981 from Murphy (1985))				360.5	
Bonus per top executive in 1983 \$000 (average 1964 to 1981 from Murphy (1985))				129.1	
CEO salary + bonus in 1986 \$000 (average 1974 to 1986 from Jensen and Murphy (1990))				645.	607.

Tables 7B-7C

Regression estimates of the change in directors' cash compensation in 1981 to 1984 and directors' bonuses in 1980 to 1988, for all directors and per director, for 119 Japanese firms as a function of changes in sales, stock returns, and changes in shareholder wealth. Total directors' cash compensation, the sum of salary and bonus, is taken from the 1982 and 1984 Yuka Shoken Hokokusho. Directors' bonus is obtained from the Yuka Shoken Hokokusho and Daiwa Analyst's Guide. All Japanese regressions include dummy variables for the time period. Results for U.S. top execs are taken from the regressions in tables 5 and 6 of Murphy (1985). (The Murphy (1985) regressions are regressions in levels that include firm-fixed effects.) Results for U.S. CEOs are taken from regression 2 in table 1 of Jensen and Murphy (1990).

Table 7B: Change in Log Compensation

	Change in Log (Salary + Bonus)									
	1.	2.	3.	4.	5.	6.	7.	8.	9.	
	All dirs.	Per dir.	U.S.	All dirs.	Per dir.	All dirs.	Per dir.	All dirs.	Per dir.	
Stock Return:										
year t-1 to t	0.093 <sup>1</sup> [0.034]	0.095 <sup>1</sup> [0.036]	0.179 <sup>1</sup> [0.009]							
year t-2 to t-1	0.134 <sup>1</sup> [0.032]	0.082 <sup>5</sup> [0.034]								
Change in Sales:										
year t-1 to t				0.421 <sup>1</sup> [0.083]	0.250 <sup>1</sup> [0.089]					
year t-2 to t-1				0.049 [0.093]	-0.011 [0.099]					
Change in pre-tax income / assets:										
year t-1 to t						1.591 <sup>1</sup> [0.331]	1.618 <sup>1</sup> [0.345]			
year t-2 to t-1						1.099 <sup>1</sup> [0.323]	0.894 <sup>1</sup> [0.337]			
Pre-tax Income is negative:										
year t-1 to t								-0.158 <sup>1</sup> [0.024]	-0.131 <sup>1</sup> [0.025]	
year t-2 to t-1								0.003 [0.025]	0.001 [0.027]	
N	321	321	4500	321	321	321	321	321	321	
R <sup>2</sup>	0.091	0.068	N.C.	0.098	0.054	0.106	0.105	0.160	0.122	

Significantly different from zero <sup>1</sup> at the 1% level; <sup>5</sup> at the 5% level; and <sup>10</sup> at the 10% level. N.C. is not comparable.



Table 7B (continued): Change in Log Compensation

	Change in Log Salary + Bonus			Change in Log Bonus		
	10. All directors	11. Per director	12. U.S. Top Execs.	13. All directors	14. Per director	15. U.S. Top Execs
Stock Return: year t-1 to t	0.063 <sup>10</sup> [0.034]	0.079 <sup>5</sup> [0.037]	0.114 <sup>1</sup> [0.009]	0.657 <sup>1</sup> [0.273]	0.411 <sup>1</sup> [0.139]	1.429 <sup>1</sup> [0.172]
year t-2 to t-1	0.101 <sup>1</sup> [0.032]	0.064 <sup>10</sup> [0.035]		0.969 <sup>1</sup> [0.272]	0.486 <sup>1</sup> [0.139]	
Change in Sales: year t-1 to t	0.351 <sup>1</sup> [0.087]	0.178 <sup>10</sup> [0.094]	0.249 <sup>1</sup> [0.013]			
year t-2 to t-1	0.071 [0.092]	0.024 [0.099]				
N	321	321	4500	752	752	2067
R <sup>2</sup>	0.145	0.080	N.C.	0.071	0.081	N.C.

Table 7C: Change in Salary + Bonus for Million Yen or Million \$ Change in Shareholder Wealth

	Change in Salary + Bonus		
	1. All directors	2. Per director	3. U.S. CEOs [ Jensen and Murphy (1990)]
Million Yen or \$ Change Shareholder Wealth: year t-1 to t	92.9 <sup>1</sup> [33.6]	2.5 <sup>5</sup> [1.2]	13.9 <sup>1</sup> [1.7]
year t-2 to t-1	126.0 <sup>1</sup> [35.2]	4.4 <sup>1</sup> [1.4]	8.0 <sup>1</sup> [1.5]
N	321	321	7688
R <sup>2</sup>	0.112	0.082	0.012

Significantly different from zero <sup>1</sup> at the 1% level; <sup>5</sup> at the 5% level; and <sup>10</sup> at the 10% level.

Appendix 1

Correlation matrix of performance variables for Japanese and U.S. companies. Japanese companies are listed in Fortune Magazine's 1981 list of the largest international companies (by sales). U.S. companies are listed in Fortune Magazine's 1981 list of the largest industrial companies (by sales) in the U.S.

Japanese Companies: Two Year Periods 1980 - 1988

	Stock Return	Sales Growth	Change Pre-tax Income	Initial Pre-tax Income	Negative Pre-tax Income
Stock Return	1.00				
Sales Growth	0.04	1.00			
Change Pre-tax Income / Assets	0.33 <sup>1</sup>	0.07	1.00		
Initial Pre-tax Income / Assets	0.02	0.24 <sup>1</sup>	-0.41 <sup>1</sup>	1.00	
Negative Pre-tax Income	-0.17 <sup>1</sup>	-0.21 <sup>1</sup>	-0.23 <sup>1</sup>	-0.35 <sup>1</sup>	1.00

U.S. Companies: Two Year Periods 1980 - 1988

	Stock Return	Sales Growth	Change Pre-tax Income	Initial Pre-tax Income	Negative Pre-tax Income
Stock Return	1.00				
Sales Growth	0.19 <sup>1</sup>	1.00			
Change Pre-tax Income / Assets	0.46 <sup>1</sup>	0.23 <sup>1</sup>	1.00		
Initial Pre-tax Income / Assets	0.02	0.11 <sup>5</sup>	-0.52 <sup>1</sup>	1.00	
Negative Pre-tax Income	-0.33 <sup>1</sup>	-0.33 <sup>1</sup>	-0.19 <sup>1</sup>	-0.39 <sup>1</sup>	1.00

Significantly different from zero <sup>1</sup> at the 1% level; <sup>5</sup> at the 5% level; and <sup>10</sup> at the 10% level.

Appendix 2A  
Turnover of the Top Executive with Firm Fixed Effects

Univariate regression estimates of the probability of turnover of the top executive as a function of sales growth, stock returns, earnings growth, and earnings levels for 119 Japanese and 146 U.S. firms from 1980 to 1988. The top executive in Japan is the president; the top executive in the U.S. is the CEO. In the first Japanese regression, the dependent variable equals one if the president loses his job; in the second, the dependent variable equals one if the president loses his job and does not become chairman. Observations are excluded if the top executive dies in office or resigns because of illness. Regressions are univariate in the sense that a separate regression is run for each performance measure. Regressions include dummy variable for each firm. Regressions also include dummy variables for the time period, for president and CEO ages at the beginning of the time period, and for president and CEO tenures at the beginning of the time period.

Univariate regression estimates including firm fixed effects of probability of turnover of the top executive

Independent variables:	Two Year Periods					
	Japan President Turnover				U.S. CEO Turnover	
	All	R <sup>2</sup>	Does not become chairman	R <sup>2</sup>	All	R <sup>2</sup>
Stock Return: year t-2 to t	0.024 [0.060]	0.549	-0.056 [0.042]	0.367	0.025 [0.056]	0.591
year t-4 to t-2	-0.083 [0.063]		-0.054 [0.040]		0.007 [0.051]	
Sales growth: year t-2 to t	-0.014 [0.140]	0.541	-0.106 [0.093]	0.370	-0.084 [0.079]	0.602
year t-4 to t-2	-0.009 <sup>*</sup> [0.138]		0.108 <sup>*</sup> [0.092]		-0.224 <sup>1</sup> [0.081]	
Income Measures:						
Change in pre-tax income / assets: year t-2 to t	-0.358 [0.726]	0.544	-1.329 <sup>1*</sup> [0.480]	0.380	0.045 [0.218]	0.592
year t-4 to t-2	-0.861 [0.697]		-0.999 <sup>5</sup> [0.461]		0.097 [0.227]	
Initial pre-tax income / assets: Year t-2	-1.124 [0.955]	0.544	-0.143 [0.641]	0.362	-0.288 [0.266]	0.594
Pre-tax income is negative at least one year: year t-2 to t	0.119 <sup>10</sup> [0.072]	0.547	0.180 <sup>1*</sup> [0.048]	0.404	0.024 [0.053]	0.595
Mean dependent variable	0.300		0.073		0.203	
Obs.	448 - 455				493 - 506	

Significantly different from zero <sup>1</sup> at the 1% level; <sup>5</sup> at the 5% level; and <sup>10</sup> at the 10% level.

<sup>\*</sup> Coefficient in Japanese regression is different from that in U.S. regression at 5% level or better.

Appendix 2B  
 Representative, executive, and inside director turnover with Firm Fixed Effects

Univariate regression estimates of the percentage turnover of representative directors in Japanese firms and executive and inside directors in U.S. firms as a function of sales growth, stock returns, earnings growth, and earnings levels for 119 Japanese and 146 U.S. firms from 1980 to 1988. Inside directors include directors who are current or former executives of the firm. Executive directors are directors who are current executives of the firm. Turnover of an inside director occurs when a director leaves the board. An executive director turnover occurs when an executive director loses the executive position, but not necessarily the directorship. Regressions are univariate in the sense that a separate regression is run for each performance measure. All regressions include dummy variable for each firm. Regressions also include dummy variables for the time period, for president and CEO ages at the beginning of the time period, and for president and CEO tenures at the beginning of the time period.

Univariate regression estimates including fixed effects of percentage of representative, executive, and inside director turnover

Independent variables:	Two Year Periods					
	Japan		U.S.			
	Representative Directors		Executive Directors		Inside Directors	
	Coeff.	R <sup>2</sup>	Coeff.	R <sup>2</sup>	Coeff.	R <sup>2</sup>
Stock Return: year t-2 to t	-0.083 <sup>5</sup> [0.041]	0.438	-0.017 [0.042]	0.386	0.001 [0.037]	0.343
year t-4 to t-2	-0.115 <sup>1</sup> [0.039]		-0.018 <sup>*</sup> [0.038]		-0.012 <sup>*</sup> [0.033]	
Sales growth: year t-2 to t	-0.111 [0.090]	0.423	-0.195 <sup>1</sup> [0.056]	0.406	-0.183 <sup>1</sup> [0.050]	0.366
year t-4 to t-2	-0.012 [0.089]		-0.009 [0.059]		-0.006 [0.053]	
Income Measures:						
Ch. in pre-tax income / assets: year t-2 to t	-0.367 [0.468]	0.430	-0.230 [0.161]	0.388	-0.344 <sup>5</sup> [0.143]	0.352
year t-4 to t-2	-1.129 <sup>5</sup> [0.475]		-0.146 <sup>*</sup> [0.168]		-0.193 <sup>*</sup> [0.150]	
Initial pre-tax income / assets: Year t-2	-1.221 <sup>10</sup> [0.626]	0.428	-0.138 <sup>*</sup> [0.198]	0.384	-0.047 <sup>*</sup> [0.178]	0.340
Pre-tax income is negative at least one year: year t-2 to t	0.158 <sup>1</sup> [0.048]	0.438	0.033 <sup>*</sup> [0.040]	0.382	0.003 <sup>*</sup> [0.035]	0.337
Mean dependent variable	0.285		0.232		0.188	
Obs.	466 - 470		494 - 507		494 - 507	

Significantly different from zero <sup>1</sup> at the 1% level; <sup>5</sup> at the 5% level; and <sup>10</sup> at the 10% level.  
<sup>\*</sup> Coefficient in Japanese regression is different from that in U.S. regression at 5% level or better.

Appendix 2C  
 Turnover of all Japanese directors with firm fixed effects

Univariate regression estimates of the percentage turnover of all directors in Japanese firms as a function of sales growth, stock returns, earnings growth, and earnings levels for 119 Japanese firms from 1980 to 1988. Regressions are univariate in the sense that a separate regression is run for each performance measure. All regressions include dummy variable for each firm. Regressions also include dummy variables for the time period, for president and CEO ages at the beginning of the time period, and for president and CEO tenures at the beginning of the time period.

Univariate regression estimates with firm fixed effects of percentage of directors leaving firm

Independent variables:	Two Year Periods	
	Japan	
	Coeff.	R <sup>2</sup>
<b>Stock Return:</b>		
year t-2 to t	-0.009 [0.017]	0.489
year t-4 to t-2	-0.038 <sup>5</sup> [0.017]	
<b>Sales growth:</b>		
year t-2 to t	-0.087 <sup>5</sup> [0.039]	0.492
year t-4 to t-2	-0.041 [0.038]	
<b>Income Measures:</b>		
<b>Change in pre-tax income / assets:</b>		
year t-2 to t	-0.330 <sup>10</sup> [0.198]	0.495
year t-4 to t-2	-0.500 <sup>5</sup> [0.196]	
<b>Initial pre-tax income / assets:</b>		
Year t-2	-0.394 [0.264]	0.484
<b>Pre-tax Income is negative at least one year: year t-2 to t</b>	0.092 <sup>1</sup> [0.020]	0.511
<b>Mean dependent variable</b>	.240	
<b>Obs.</b>	467 - 471	

<sup>1</sup> Significant at the 1% level;      <sup>5</sup> Significant at the 5% level;      <sup>10</sup> Significant at the 10% level.

Appendix 3A  
Turnover of the top executive in one year periods

Univariate regression estimates of the probability of turnover of the top executive as a function of sales growth, stock returns, earnings growth, and earnings levels for 119 Japanese and 146 U.S. firms from 1980 to 1988. The top executive in Japan is the president; the top executive in the U.S. is the CEO. Observations are excluded if the top executive dies in office or resigns because of illness. Regressions are univariate in the sense that a separate regression is run for each performance measure. All regressions include dummy variables for the time period, for president and CEO ages at the beginning of the time period, and for president and CEO tenures at the beginning of the time period.

Univariate regression estimates of probability of turnover of the top executive

Independent variables:	One Year Periods					
	Japan -- President Turnover				U.S. - CEO Turnover	
	All		Does not become chairman		All	
	Coeff. [S.E.]	R <sup>2</sup>	Coeff. [S.E.]	R <sup>2</sup>	Coeff. [S.E.]	R <sup>2</sup>
Stock Return: year t-1 to t	0.017 [0.045]	0.183	-0.039 [0.025]	0.039	-0.031 [0.038]	0.217
	-0.003 [0.045]		-0.045 <sup>10</sup> [0.025]		-0.068 <sup>10</sup> [0.037]	
	-0.012 [0.046]		-0.016 [0.026]		-0.013 [0.035]	
Sales growth: year t-1 to t	-0.089 [0.103]	0.189	-0.137 <sup>5</sup> [0.060]	0.042	-0.078 [0.057]	0.218
	0.070 [0.107]		0.121 <sup>5</sup> [0.058]		-0.033 [0.057]	
	-0.108 [0.107]		-0.004 [0.060]		-0.098 [0.062]	
Change in pre-tax income / assets: year t-1 to t	-0.614 [0.576]	0.189	-0.822 <sup>5</sup> [0.322]	0.043	-0.195 [0.147]	0.216
	-0.088 [0.540]		-0.593 <sup>5</sup> [0.302]		0.063 [0.159]	
	-0.302 [0.558]		-0.401 [0.312]		0.087 [0.160]	
Initial pre-tax income / assets: Year t-1	-0.507 <sup>5</sup> [0.253]	0.187	-0.119 [0.143]	0.033	-0.186 <sup>10</sup> [0.103]	0.216
Pre-tax Income is negative: year t-1 to t	0.094 <sup>5</sup> [0.042]	0.188	0.090 <sup>1</sup> [0.023]	0.050	0.073 <sup>5</sup> [0.030]	0.219
	-0.023 [0.043]		-0.007 [0.035]		0.009 [0.031]	
Mean dependent variable	0.149		0.035		0.100	
Obs.	914		914		994	

Significantly different from zero <sup>1</sup> at the 1% level; <sup>5</sup> at the 5% level; and <sup>10</sup> at the 10% level.

\* Coefficient in Japanese regression is different from that in U.S. regression at 5% level or better.

## Appendix 3B

## Representative, executive, and inside director turnover in one year periods

Univariate regression estimates of the percentage turnover of representative directors in Japanese firms and executive and inside directors in U.S. firms as a function of sales growth, stock returns, earnings growth, and earnings levels for 119 Japanese and 146 U.S. firms from 1980 to 1988. Inside directors include directors who are current or former executives of the firm. Executive directors are directors who are current executives of the firm. Turnover of an inside director occurs when a director leaves the board. An executive director turnover occurs when an executive director loses the executive position, but not necessarily the directorship. Regressions are univariate in the sense that a separate regression is run for each performance measure. All regressions include dummy variables for the time period, for president and CEO ages at the beginning of the time period, and for president and CEO tenures at the beginning of the time period.

Univariate regression estimates of percentage of representative, executive, and inside director turnover in one year periods

	Japan		U.S.			
	Representative Directors		Executive Directors		Inside Directors	
	Coeff. [S.E.]	R <sup>2</sup>	Coeff. [S.E.]	R <sup>2</sup>	Coeff. [S.E.]	R <sup>2</sup>
Stock Return:						
year t-1 to t	0.000 [0.028]	0.095	-0.012 [0.026]	0.084	-0.009 [0.022]	0.048
year t-2 to t-1	-0.052 <sup>10</sup> [0.027]		-0.059 <sup>5</sup> [0.026]		-0.055 <sup>5</sup> [0.022]	
year t-3 to t-2	-0.040 [0.029]		-0.042 <sup>10</sup> [0.024]		-0.021 [0.021]	
Sales growth:						
year t-1 to t	-0.176 <sup>1</sup> [0.066]	0.100	-0.174 <sup>1</sup> [0.039]	0.095	-0.174 <sup>1</sup> [0.034]	0.069
year t-2 to t-1	-0.021 [0.064]		0.072 [0.040]		0.023 [0.034]	
year t-3 to t-2	-0.113 <sup>10</sup> [0.066]		0.011 [0.043]		0.059 <sup>*</sup> [0.037]	
Ch. in pre-tax income / assets:						
year t-1 to t	-0.386 [0.353]	0.094	-0.215 <sup>5</sup> [0.102]	0.082	-0.239 <sup>1</sup> [0.088]	0.051
year t-2 to t-1	-0.363 [0.334]		-0.169 [0.111]		-0.251 <sup>1</sup> [0.095]	
year t-3 to t-2	-0.662 <sup>10</sup> [0.346]		0.075 <sup>*</sup> [0.111]		-0.030 [0.096]	
Initial pre-tax income / assets:						
Year t-1	-0.431 <sup>1</sup> [0.155]	0.097	-0.180 <sup>5</sup> [0.072]	0.082	-0.113 <sup>10*</sup> [0.062]	0.044
Pre-tax income is negative at						
year t-1 to t	0.110 <sup>1</sup> [0.026]	0.108	0.072 <sup>1</sup> [0.022]	0.089	0.051 [0.019]	0.049
year t-2 to t-1	-0.018 [0.026]		0.019 [0.023]		-0.005 [0.020]	
Mean dependent variable	0.143		0.124		0.100	
Obs.	933		994		994	

Significantly different from zero <sup>1</sup> at the 1% level; <sup>5</sup> at the 5% level; and <sup>10</sup> at the 10% level.

\* Coefficient in U.S. regression is different from that in Japanese regression at 5% level or better.

Appendix 3C

Turnover of all Japanese directors in one year periods

Univariate regression estimates of the percentage turnover of all directors in Japanese firms as a function of sales growth, stock returns, earnings growth, and earnings levels for 119 Japanese firms from 1980 to 1988. Regressions are univariate in the sense that a separate regression is run for each performance measure. All regressions include dummy variables for the time period, for president and CEO ages at the beginning of the time period, and for president and CEO tenures at the beginning of the time period.

Univariate regression estimates of percentage of directors leaving firm

Independent variables:	One Year Periods	
	Japan	
	Coeff. [S.E.]	R <sup>2</sup>
Stock Return:		
year t-1 to t	-0.005 [0.014]	0.103
year t-2 to t-1	-0.028 <sup>5</sup> [0.014]	
year t-3 to t-2	-0.005 [0.015]	
Sales growth:		
year t-1 to t	-0.151 <sup>1</sup> (0.034)	0.114
year t-2 to t-1	0.010 [0.033]	
year t-3 to t-2	-0.078 <sup>5</sup> [0.034]	
Change in pre-tax income / assets:		
year t-1 to t	-0.386 <sup>5</sup> [0.181]	0.107
year t-2 to t-1	0.080 [0.172]	
year t-3 to t-2	-0.349 <sup>5</sup> [0.177]	
Initial pre-tax income / assets:		
year t-1	-0.488 <sup>1</sup> [0.079]	0.136
Pre-tax income is negative:		
year t-1 to t	0.087 <sup>1</sup> [0.013]	0.158
year t-2 to t-1	0.018 [0.013]	
Mean dependent variable	.121	
Obs.	933	

Significantly different from zero <sup>1</sup> at the 1% level; <sup>5</sup> at the 5% level; and <sup>10</sup> at the 10% level.