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ABSTRACT

It is widely believed that the stock-market oriented US financial system forces corporate managers to behave myopically relative to their Japanese counterparts, who operate in a bank-based system. We hypothesize that if US firms are more myopic than Japanese firms, then episodes of financial distress (when myopia should be most pronounced) should cause US firms to decrease their R&D spending (our main proxy for long-term investment) more than Japanese firms. We find no evidence that this is the case. In addition, we show that Japanese firms do not invest more than US firms after the onset of distress. Our results hold up even when US firms are compared to Japanese "group" firms, which have close financial ties to their banks and are thought to be the least myopic (and the most able to weather distress). The results also withstand a variety of robustness checks. Our findings that US and Japanese firms respond similarly to financial distress cast doubt on the view that US managers are more short-sighted than their Japanese counterparts.

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1. Introduction

The belief that Japanese managers invest for the long run while US managers behave myopically is one of the most widely cited differences between the two economies. Proponents of this view argue that the bank-based Japanese financial system is superior to the stock- market-based US system because the former promotes relationships that enable Japanese managers to focus on the long run. For example, Blinder (1992) argues that the result of the Japanese financial system is that "Japanese executives are effectively liberated from the nexus of stock market analysts, traders, and fund managers that, according to many observers, so distract American executives. This may contribute to the legendarily long-time horizons of Japanese management."[1] By contrast, the US system, with its allegedly impatient shareholders, is thought to push managers to focus on the current bottom line. For example, Porter (1992) argues that "the US system first and foremost advances the goals of shareholders interested in near-term appreciation of their shares -- even at the expense of the long-term performance of American companies."[2]

It is important to emphasize that proponents of this view typically argue that the shorter time horizons of American companies are primarily the result of different financial systems. A particularly forceful argument in this regard is made by Thurow (1992), who states that "the United States has organized a system that is the exact opposite of that of Germany and Japan. Those countries have organized a system (business groups) to minimize the influence of impatient shareholders, while the United States has organized a system (fund dominance) to maximize the

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[1] Blinder (1992), p. 56.

[2] Porter (1992), p. 67.

influence of impatient shareholders."[3]

The relative myopia of American companies is thought to be particularly evident during periods of financial distress. For example, Thurow (1992) states that to "an American firm, cutting R&D is a technique for maintaining profits during a period of declining sales. In Europe and Japan, R&D is not cut, since it is seen as the source of long-run competitive strength .... American firms simply cut back on long-term investments much more sharply during recessions than the Japanese."[4] The strong ties between Japanese firms and their banks is thought to lead to less myopic behavior relative to US firms, which tend to rely on the competitive and impersonal stock market for their finance. And the relative myopia of US corporations is thought to be magnified during periods of financial distress, when bottom line considerations are acute.

Although these beliefs are widely held, Shleifer and Vishny (1995), in their recent survey of the corporate governance literature, conclude that "the theories and arguments [in favor of the view that US companies are relatively short-sighted] are remarkably short of any empirical support."[5] That is, there is scant direct evidence that either confirms or refutes this view. The goal of this paper is to bridge this gap.

Perhaps the most widely cited evidence in favor of these claims comes from survey evidence. For example, Poterba and Summers (1995) find survey evidence that "US CEOs

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[3] Thurow (1992, p. 136). Likewise, Abegglen and Stalk (1985, p. 188) assert that "the shorter time horizon of the US executive is a function of the system he operates in, and is not necessarily from a lack of understanding or concern over the company's future." See also Stein (1989) and Mayer (1988) for similar arguments.

[4] Thurow (1992, pp. 141-42).

[5] Shleifer and Vishny (1995, p. 55)

believed that their firms had systematically shorter time horizons that their major competitors in Europe and (especially) Asia."[6] Likewise, Abegglen and Stalk (1985) discuss a survey of about 500 major US and Japanese companies. The executives were asked to rank the importance of nine corporate objectives. Japanese managers ranked increasing market share as the most important objective and increasing stock price as the least important. US managers ranked stock price second. Abegglen and Stalk and others interpret these survey results as evidence that US managers are more short-sighted.[7] While this type of survey evidence is not without merit, it leaves open the question of whether Japanese and US managers actually do what they say.[8]

Along these lines, Kaplan (1994) compares the relationship between corporate performance (e.g. stock returns, current cash flows) and the fortunes of corporate executives (e.g. turnover and compensation) in the US and Japan and tests for differences in executive incentives to focus on the current bottom line. Interestingly, Kaplan finds that the fortunes of Japanese executives are positively correlated with current cash flows (and stock price performance) and that these correlations are generally economically and statistically similar to those for their US counterparts.[9] Given the similarity of executive incentives to focus on the current bottom line,

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[6] Poterba and Summers (1995, p. 43).

[7] See Stein (1989) and Kaplan (1994) for a discussion of this.

[8] In addition, the very low response rate of most surveys introduces the potential of significant bias, making it difficult to draw strong conclusions. Survey responses are also notoriously sensitive to the way questions are phrased and, thus, sometimes lead to apparent contradictions. As one example, in the Poterba and Summers (1995, p. 48) survey, the average US respondent stated that his firm would substantially "increase its long-term investments if the stock market properly valued those investments." However, 81 percent of respondents stated that their firms had never passed up "profitable investment opportunities because the stock market might penalize the decision."

[9] Note that Kaplan (1994) also finds that the relation between executive fortunes (compensation and turnover) and *negative* earnings is stronger in Japan than in the United States, which strengthens his

Kaplan concludes that the "widely held view that Japanese firms are better able to invest in new projects with little or no short-run payoff is puzzling."[10]

While Kaplan looks at executive incentives, we take a different approach by looking at firm actions. The starting point of our paper is the following hypothesis: if US managers are more myopic than Japanese managers, then episodes of financial distress should cause US firms to decrease their R&D spending (our main proxy for long-term investment) more than Japanese firms. We find no evidence that this is the case. Our key finding is that financial distress seems to cause R&D to fall in both countries by approximately the same amount.

In addition, we compare the investment responses of US and Japanese firms to financial distress. Here, we follow the basic approach of Hoshi, Kashyap and Scharfstein (1990), who compared Japanese group firms (*keiretsu* firms that have close financial ties to a bank and other suppliers) and Japanese non-group firms.[11] Hoshi et. al. find that group firms invest and sell more after the onset of distress, which they interpret as evidence in support of the view that bank ties reduce the costs of financial distress. We do a similar comparison for US and Japanese firms and find that Japanese firms do not invest more than US firms after the onset of distress.[12]

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conclusion.

[10] In addition, in an interesting paper, Branstetter et. al. (1995) do a three-country comparison of the sensitivity of R&D and investment to cash flow and sales and find sensitivity to be higher in the US than in Japan. Although such evidence is suggestive that financial frictions are stronger in the US than they are in Japan, their analysis focusses on healthy firms. They drop financially distressed firms (those with negative cash flow), which are the focus of our study.

[11] See also Hoshi, Kashyap and Scharfstein (1991).

[12] For completeness, we follow Hoshi et. al. (1990) and also compare the sales growth of US and Japanese firms after the onset distress. In regressions that are analogous to the investment regressions, we find the same result for sales growth: no statistical difference between the two countries. Since our study is motivated more by potential differences in myopia than in more general measures of how firms weather

All of these results hold up even when US firms are compared to a restricted set of Japanese companies -- "group" firms, which are thought to be the least myopic and the most able to weather distress. Thus, none of our findings suggest that Japanese firms respond differently to financial distress, casting doubt on the view that US managers are more short-sighted than their Japanese counterparts, at least during periods of financial distress.

This paper proceeds as follows. In the next section, we explore further the (mostly theoretical) reasons why it is commonly believed that US managers are more myopic (especially during periods of distress) than Japanese managers. In the third section, we discuss our estimation strategy. The data is described in the fourth section. In the fifth section, we report and discuss the results of how R&D responds to financial distress in each country. In the sixth section, we investigate how financial distress affects R&D and investment in non-structural specifications. In the seventh section, we rerun our main results comparing US firms to Japanese group firms. We check the robustness of our results to changes in distress rates in the eight section. The ninth section concludes.

2. Distress and Myopia in the US and Japan: Theoretical Issues

There is a large and growing theoretical literature on the relationship between financial structure and myopia. The general conclusion of this literature is that relative to arm's length financial relations, bank-firm relations enable firms to avoid myopic decisions, especially during periods of distress.

Most of these models are driven by asymmetric information, which typically means that

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distress, we focus on changes in investment, especially R&D.

firm managers have better information than the "market." For example, Stein (1989) shows that even with a perfectly rational stock market, managers are "trapped" into behaving myopically. The key problem is one of signal extraction: if short-run earnings are poor, the market is unable to determine whether this is caused by poor management or by prudent long-term investments. Thus, the market uses current earnings (at least to some extent) to predict future earnings. Knowing this, managers attempt to manipulate stockholders' signals by pumping up current earnings, even at the expense of long-term investments.

Of course, the preferred result would be no myopia by managers along with no conjecture of myopia by the market (and therefore no rational discounting of current earnings). This preferred outcome, however, is not a Nash equilibrium: if the market assumes no myopia, managers have an incentive to fool it by manipulating current earnings. For our purposes, a key outcome of this model is that banks, by forming close relationships with firms, reduce asymmetric information problems and therefore may enable firms to behave less myopically.[13]

Although the Stein model is not specifically about firms in financial distress, a related literature analyzes how financial structure affects firm decisions during low profitability. Here, the key issue is the inherent difficulty of renegotiating financial claims when many creditors have made loans to a financially distressed firm. Bulow and Shoven (1978) have argued that free-rider problems reduce the incentive of creditors to extend additional credit to distressed borrowers: the individual creditor shares the benefits of such costly (because they are risky) actions with other free-riding creditors.

Using this basic framework, there are a variety of reasons that the Japanese financial

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[13] See also Von Thadden (1995) for a model in this spirit.

system may overcome managerial myopia in ways that the US system can not. Many Japanese firms are part of a corporate group or *keiretsu*. The members of these groups are centered around a set of affiliated financial institutions (mostly banks) that have close ties to the firms. For example, the banks not only act as the large lenders to the group firms, but also hold large equity stakes in the firms (which is prohibited in the US by the Glass-Steagall Act). It is not unusual for one of the banks, called the "main bank," to take a lead role in these relationships. In addition to their roles as creditors and equity holders, the banks often place some of their key personnel in top managerial and board positions. Such placement is even more likely when a firm enters financial distress. Thus, the banks are thought to have strong long-term ties with group firms -- ties that are a source of strength for the firms, especially when they face financial distress.[14] Note also that the group firms themselves have strong ties with each other, which are often reinforced by cross-trading of products and supplies and cross-shareholdings.

Thus, there are two main reasons to suspect that the Japanese financial system fosters long term thinking relative to the US system. First, the Japanese main bank system may decrease the asymmetric information that is at the root of (alleged) US corporate myopia. Indeed, the focus of the finance literature on the role of banks is that their main function is that of a "delegated monitor" (Diamond, 1984) -- a monitor that specializes in gathering information about firms and using that information to make ongoing credit decisions. Second, because of their close ties with group firms, Japanese "main banks" mitigate the free-rider problems associated with US-style, diffuse debtholding.

Related to this is the argument that hostile takeovers are much less common in Japan than

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[14] See Sheard (1994) and Hoshi, Kashyap and Scharfstein (1990) for a discussion of this.

in the US, presumably because of the differing corporate governance systems. While takeovers may be an important disciplining mechanism in the US, it has also been argued that they lead to managerial myopia (Stein, 1988). The main condition for this to be true is the plausible assumption that corporate raiders have better information than (relatively uninformed) market participants. Then, if managers choose actions that have long-term benefits (e.g. R&D) but *temporarily* lower earnings, the company's stock price will be undervalued, making it an attractive takeover target for relatively informed raiders. US managers, therefore, may take costly (in the sense that they are passing up positive NPV projects) measures in order to boost current earnings. Thus, although there is a striking lack of hard empirical evidence, there are good theoretical underpinnings for the belief that the Japanese financial structure fosters managerial long-term thinking relative to the US financial system.[15]

3. Estimation Strategy

Estimating how sensitive investment is to short-run fluctuations is difficult because there is no well-agreed upon theory that has a high degree of predictive power [see, for example, Hayashi and Inoue (1991)]. We therefore chose to run a mix of structural and non-structural models, first focussing on research and development (R&D). The reasoning behind this choice is clear: R&D is the quintessential long-run investment. Since most expenditures on R&D are unlikely to generate revenues until the knowledge is incorporated in the production process, it is likely that

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[15] Some have argued that the lower cost of capital in Japan (see Poterba (1991) for a survey of evidence on cost of capital differences) suggests that the Japanese are less myopic than Americans. However, such evidence says nothing about how the differing financial systems affect corporate myopia. It only suggests that overall hurdle rates may be lower in Japan.

cuts in R&D are not going to affect sales in the current period. This would make R&D an attractive item to cut for a short-sighted manager faced with a cash-flow problem.

The major problem with focusing on R&D is that there is no well-agreed upon methodology for estimating the optimal level of R&D conducted by a firm. However, virtually all of the problems for estimating R&D are present in the estimation of a firm's demand for capital. We therefore decided to model firm expenditures on R&D in the same way that economists have typically modeled the firm's demand for other inputs, i.e. we used the translog cost function approach.[16] Specifically, we specified that a firm's cost function is of the form:

$$lnC=\ln\alpha_0+\alpha_{R\&D}lnP_{R\&D}+\beta_{R\&D}lnP_{R\&D}D_{Dist}+\sum_{i=1}^{n-1}\alpha_i lnP_i+\sum_{i=1}^{n-1}\beta_i lnP_i D_{Dist}$$
$$+\frac{1}{2}\sum_{i=1}^{n}\sum_{j=1}^{n}\gamma_{ij}lnP_i lnP_j+\alpha_Y lnY+\frac{1}{2}\gamma_{YY}(lnY)^2+\sum_{i=1}^{n}\gamma_{iY}lnP_i lnY \quad (1)$$

where the P_i's correspond to the n input prices, Y is output, D_{Dist} is a dummy that is 1 if the firm has entered financial distress, and the greek letters correspond to estimated parameters of the cost function. Young's theorem guarantees that $\gamma_{ij} = \gamma_{ji}$, and homogeneity in prices ensures that the sum of γ_{ik} over i is zero and that the sum of the αs (not including α_0) is one.

The dummy variable is a key difference from standard cost functions. We model the impact of short-run thinking in a straightforward manner. If a firm were simply maximizing profits, then being in distress would not alter the firm's cost structure and all of the βs would equal zero. Our implementation implies that managers work with two different cost functions. When firms are not in financial distress, managers are not fiscally constrained and conduct the

[16] See Berndt (1990) for an excellent survey of this approach.

optimal amount of R&D necessary for long-run cost minimization. However, when firms enter into financial distress, managers may opt to cut R&D in order to have a more favorable current balance sheet. A second, plausible interpretation of this equation is that when the firm is profitable, agency considerations lead managers to empire build by conducting R&D projects that have lower returns. In other words, they are only fiscally disciplined during periods of financial distress. Regardless of the interpretation, if cash-flow affects investment behavior, one should expect $\beta_{R\&D}$ to be negative.[17]

Following a long tradition of estimating cost-functions, we estimate this equation in its share form or as

$$S_{R\&D} = \alpha_{R\&D} + \beta_{R\&D} D_{Dist} + \sum_{i=2}^{n} \gamma_{R\&D,\,i} \ln(P_i/P_1) + \gamma_{R\&D,Y} lnY, \tag{2}$$

where input 1 (materials) has been arbitrarily chosen as numeraire.

We now have a clear way of testing whether US firms are more constrained by short-run phenomena than Japanese firms. If US firms have shorter investment horizons, then one would expect their R&D expenditures to be more sensitive to financial distress than Japanese firms. In other words, one would expect them to have more negative βs.

4. Data

The data that we used to examine these issues came from two sources. On the US side, we used COMPUSTAT. For Japan, we used the Japan Development Bank (JDB) data base.

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[17] Furthermore, although it does not matter for our analysis, the βs must sum to zero.

Both are fairly comparable data sets covering all listed firms in both countries. There are approximately twice as many firms in COMPUSTAT as in the JDB data base so it is worth noting that the US data contain more small firms than the Japanese data. The JDB data base has notoriously poor information about the levels of firm R&D with major companies occasionally reporting no R&D in certain years. However, the Japan Company Handbook (JCH) reports R&D numbers that are far more reliable. We therefore decided to use the JCH numbers instead. Unfortunately, the JCH numbers are not available in a computer readable format, and hand entry of fifteen years of R&D numbers for over one thousand firms would have been difficult. Fortunately, we were able to obtain Japanese R&D data over this period for the most R&D intensive sectors in Japan from Lee Branstetter, who had hand entered them from the JCH [see Branstetter (1996)]. We therefore decided to limit our attention in both the US and Japan to the relatively R&D intensive sectors of chemicals, general machinery, electrical machinery, transportation equipment, and precision instruments. These industries account for approximately 80% of all manufacturing R&D activity in Japan and 88% in the US.

Input price data for Japan was taken from the Japanese input-output tables as recorded in the *Japan Statistical Yearbook*. Japanese wage data was taken from *Yearbook of Labor Statistics*, and we used the capital goods price deflator from the *Economic Statistics Annual*. Costs were defined to be equal to the sum of cost of goods sold and research and development expenses. On the US side, we obtained capital and R&D industry specific price deflators from Department of Commerce's Bureau of Economic Analysis.[18] Industry materials costs and wages were obtained from the National Bureau of Economic Research's Manufacturing and Productivity

[18] The R&D deflators are from *A Satellite Account for Research and Development* (1994).

Database.[19] Wages were set equal to total payroll divided by the number of employees in the sector. All price data was aggregated to the 2-digit level.

We cleaned the data by removing a number of outliers in both samples. First, some firms had no sales and/or tremendously high R&D expenditures relative to total costs. Since our aim was not to explain how small, productless firms get financing to do research, we eliminated firms that had no sales or had R&D budgets that exceeded 25% of their total costs. In addition, we also deleted firms whose book value of debt was more than 50% larger than their book value of assets. While it is likely that these firms are not insolvent but rather have mismeasured assets or debts, we reasoned that the mismeasurement problems were sufficiently severe to warrant exclusion from the sample. Finally we eliminated all firms that were not manufacturers.

We now turn to the definition of financial distress. Following Hoshi et. al. we defined financial distress to be two consecutive years in which operating income is less than interest expenses.[20] Much of the literature has been concerned with how firms behave following financial distress. For example, Hoshi et. al. look at firm behavior in the three years after the onset of distress. In order to keep our results consistent with theirs, our dummy variable for distress took on a value of one if the firm had at least one period of distress in the last three years. This implies that if distress begins in year t then we are examining behavioral changes in years $t + 1$ to $t + 3$. [21]

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[19] Bartelsman and Gray (1994).

[20] Actually, Hoshi et.al. required that a firm had one healthy year followed by two unhealthy years because their unit of observation was an distress episode rather than a distress/healthy year. When we adopt their methodology in a later section, we also adopt their precise definition.

[21] We experimented with the timing of distress, moving the period back one. That is, we also examined the period t to $t + 2$ instead. All of our results are robust to this change. Since none of the results are qualitatively affected by this change, we report the results with the more standard definition only.

Figure 1 presents evidence on the rates of financial distress in Japan and the US. The most striking feature of this figure is the fact that rates of distress are considerably higher in Japan than in the US. At first glance, one might guess that this is a product of the fact that Japanese firms are more levered and therefore have higher interest expenses than US firms. The summary statistics in table 1, however, suggests that this is only part of the explanation. In fact, interest expenses are roughly of the same magnitude in the two samples. Our data suggest that the main reason for the higher rate of distress in Japan is that Japanese firms have profit rates that are less than half as large as the US firms, and the standard deviation of the profit rate of Japanese firms is proportionately larger.

There are several explanations for the higher rates of distress in Japan. One possible explanation is that the cost of capital is lower in Japan, and hence Japanese firms have a lower required rate of return but a similar variance. Alternatively it is possible that Japanese managers are more risk averse and may trade some profits for having smaller fluctuations in their earnings. Finally, the higher rate of distress in Japan may be due to the fact that bankruptcy is a less frequent event in Japan. However, this does not seem to be the case for the listed manufacturing firms in our sample. Between 1978 and 1992, on average only 6 firms out of 1500 listed on the Tokyo Stock Exchange delisted per year for any reason (and most of these were not bankruptcies). Likewise in the US, out of a sample of over two thousand manufacturers only 13 firms in our sample, less than one per year, declared bankruptcy. It is therefore doubtful that the small difference in the bankruptcy rate is driving our results.

Figure 1 also reveals that distress in both countries is counter-cyclical. For example, following the first oil shock, the growth rate manufacturing production suddenly went negative in

1974 and fell even more dramatically in 1975. Distress in Japan seems to have followed with a two year lag. Similarly, distress in the US tends to rise during economic downturns (albeit more modestly), also with a two year lag. Furthermore, in the US there is a slight upward increase in the 1980's corresponding to the overall increase in leverage in the US, but in Japan there is no clear trend to the data.

5. Estimation

We estimate equation (2) using industry dummies in some regressions and firm fixed effects in others. The results are presented in Table 2. Most of the price variables are precisely measured. The R&D price variable is not significant, however, which may reflect the difficulty of measuring the price of R&D. In the OLS regression, distress has a negative and significant coefficient for both Japan and the US. In both countries financial distress is associated with lower expenditures on R&D, but the magnitude of this effect is significantly larger in Japan. This suggests that Japanese firms are almost twice as sensitive to short-run downturns than their US counterparts, despite the fact that these downturns are more frequent in Japan.

An obvious question is whether our results are driven by the cross-sectional or within properties of our sample. The next four columns in the table present the results from the between regressions (i.e. cross-sectional regressions) and firm fixed-effects regressions. Taken together, the three sets of regressions tell a fairly consistent story about the impact of financial distress on R&D in both countries. [22]

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[22] Including a post-82 dummy variable in the US regressions to capture the effects of the change in the tax status of R&D produced only a trivial (.0001) change in the distress coefficients. Including year dummies (which we do not report since we want to allow for time variation in R&D) lowers the distress

The cross-sectional evidence indicates that firms that have more instances of financial distress tend to conduct less R&D than firms with lower incidences, while the fixed-effects results indicate that both US and Japanese firms tend to cut R&D following the onset of distress. In other words, firms not only cut R&D in response to distress, but firms that enter into distress more frequently do less R&D. In both cases (between and fixed) the US and Japan point estimates are not statistically different from one another at conventional levels of significance. These regressions indicate that US and Japanese firms respond to distress quite similarly.[23]

The coefficient estimates in Table 2 actually understate the difference in the role that financial distress plays in the two countries. Because the standard deviation of the ratio of R&D to costs is smaller in Japan and the standard deviation of distress is larger, similar coefficient estimates on the distress term imply that a one standard deviation movement in the incidence of distress explains proportionately more variance in Japan than in the US. This can be considered more formally by examining beta coefficients. A beta coefficient is defined to be $\beta \sigma_x / \sigma_y$ where x denotes the independent variable and y, the dependent variable. This statistic tells us how many standard deviations of the dependent variable can be explained by a one standard deviation movement in an independent variable. Based on our total estimation, we calculate a beta for Japan of -0.15 and for the US of -0.05. In other words, financial distress has a three times larger impact on the distribution of R&D in Japan than in the US. We therefore conclude that contrary

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coefficients by a only small amount (in absolute value) in both countries and does not qualitatively affect the results.

[23] As a robustness check, we also tried using R&D to sales ratios instead of R&D to costs as our dependent variable. The results are qualitatively similar. The Japanese distress coefficient is larger (in absolute value) in the OLS and between regressions and is the same as the US coefficient (almost exactly) with firm fixed effects.

to popular belief, Japanese firms appear at least as sensitive to short run phenomena as US firms.

6. Alternative Specifications

We have only looked at one mechanism linking financial distress to long term investment. We now seek to determine if our results are robust to alternative specifications. A major contribution to this area is the work of Hoshi et.al. documenting that firms with main banks in Japan invest and sell more after the onset of distress, controlling for a variety of factors. These results have often been used to support the notion that firms with main bank ties in Japan may be less sensitive to the onset of distress than firms without such ties.

In this section we use the Hoshi et.al. methodology to determine whether there are differences between Japan and the US. We therefore also use the Hoshi et.al. definition of financial distress: namely, a firm is defined to have had an episode financial distress if it has a year in which its operating income exceeds its interest expenses followed by two years in which this is not the case. Based on these criteria we were able to assemble a sample of 150 US and 380 Japanese distressed firm-observations over the period 1978 to 1992 in Japan and 1978 to 1994 in the US.

6.1 R&D and Distress

For the sake of consistency, we reran our R&D regressions in a manner that more closely resembles the methodology used by Hoshi et.al. We started with the smaller sample of distressed firms (including 153 distress "episodes") from our initial set of firms for which we had R&D data. We then regressed the share of R&D in costs in the three years following the onset of distress on

a US dummy, the industry R&D average, and firm size. We then add, sequentially, the lagged three-year average of this ratio, the coverage ratio (defined to be the ratio of operating income less interest expenses, all divided by sales),[24] and the debt to asset ratio.[25] We also interacted each of the control variables with a US dummy variable.

The results, presented in Table 3, indicate that there is no significant difference in R&D rates following distress between Japanese and US firms. The US coefficient is positive in all cases, suggesting that, if anything, US firms do more R&D following distress. But the significance and size of this coefficient falls off when the control variables are added. In other words, no matter how we examine the R&D data we cannot find any evidence that US firms sacrifice long-run objectives in times of financial crisis more than Japanese firms do.

6.2 Investment and Distress

Following Hoshi et.al., we also examined how physical investment rates changed in the two countries following financial distress. In these specifications, we were able to use a broader sample of manufacturers to examine the role of financial distress on investment behavior. The sample statistics for this larger group of firms are presented in Table 4.

Overall, distressed Japanese firms are typically about 10 percent larger than distressed US

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[24] We should note that our definition of coverage differs slightly from the one used by Hoshi et.al.. Their definition was operating income less interest expenses divided by interest expenses. Because there were a number of firms in both countries that had both low interest expenses and large losses, this number tended to blow up in our sample. We therefore deflated by sales instead of interest expenses.

[25] In the cases where we had less than three observations in a row, we used an average of the available observations.

firms when size is measured by sales.[26] Following Hoshi et. al. , our dependent variable is "Cumulative Investment Rate (t+1 to t+3)"-- the sum of real investment relative to the firm's capital stock in the year of distress. As control variables, we include the "Industry Investment Rate (t+1 to t+3)," which is this number for the corresponding industry in the firm's country. We also include the lagged investment rate for each firm, which is the investment rate for the previous three years (t-2 to t). US firms seem to have lower investment in the three years following the onset of distress than Japanese firms, but the fact that the industries that they are in also tend to invest less makes it difficult to interpret this evidence.

We also included several financial variables. As mentioned earlier, we define "Coverage" to be the ratio of operating income less interest expenses to sales. By this measure, US firms seem to be in much worse shape than their Japanese counterparts. Distressed firms in the US typically have profit to sales ratios that are twice as negative as Japanese firms. Finally, distressed Japanese firms are more levered, with debt to asset ratios that are about twice as high as US firms.

Table 5 presents the results from regressing firm investment rates in the three years following distress on most of the same independent variables used by Hoshi et.al. and a dummy variable that is 1 if the firm is based in the US. The first two columns show specifications without the financial variables. In both cases, the coefficient on US is positive, but not significant, indicating that there is no significant difference between the countries in terms of their investment rates following distress.

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[26] We used a sample average exchange rate of ¥172 = $1 to convert US sales into yen. Sales numbers are in millions of yen.

Adding a measure of the degree of distress (coverage) does not change the basic story. While controlling for this variable does not affect the overall significance of the US dummy, it is interesting to note that while the severity of distress is significant for Japanese firms, it is not significant for US firms. This suggests that the size of a negative shocks to cash-flow is associated with the size of the reduction in future investment in Japan but not in the US. In other words, once again distressed US firms appear to be less sensitive to income shocks than distressed Japanese firms.

Finally we added the ratio of the book value of firm debt to its assets in order to determine whether the level of debt at the time of distress seemed to affect firms differently in the two countries. It is often argued that the main bank system in Japan makes it easier for firms to carry large amounts of debt, and hence we might expect that high debt to asset ratios might have a larger impact on US firms than on Japanese firms. As column 4 indicates, future investment does not seem strongly tied to leverage in either country. In addition, the coefficient on the US dummy remains insignificant.

Finally, following Hoshi et. al. we reran these regressions with sales growth instead of investment growth as the dependent variable. In all specifications (not reported), the US dummy was positive and insignificant, suggesting that US firms do not cut back on sales growth more than Japanese firms in response to financial distress.

7. Comparing US firms with Japanese Group Firms

One potential criticism of our work is that the Japanese financial system created two sets of firms, those affiliated with main banks and those without ties. It is possible that firms with

main bank ties perform better than US firms following financial distress, but unaffiliated firms perform worse. Because one subset of the Japanese sample performs worse following financial distress, it may be the case that the average firm in Japan does not perform any better than the average firm in the US, but firms with main banks perform better. In order to see if there was a set of Japanese firms that consistently outperformed US firms, we reran the many of our specifications using the same US sample but restricting the Japanese sample to the set of firms with main bank ties.

While it is very easy to determine whether certain firms have close bank ties, for the vast majority of firms in Japan this determination is more art than science. Weinstein and Yafeh (1995) found that definitions of affiliation were not very highly correlated across sources. Hoshi et.al. used a definition based on a combination of president's club members and a set of firms judged to have main banks developed by Nakatani (1984).[27] This definition has certain problems because president's club members like Toyota, Sharp, and Shinmeiwa are counted as firms with main banks despite the fact that they have no bank debt. Furthermore, firms affiliated with the Tokai Bank and the Industrial Bank of Japan are automatically considered to be independent.

An alternative definition of firms affiliated with financial groups published by Dodwell Marketing Consultants. This definition avoids the problem of classifying firms like Toyota as main bank firms and includes firms affiliated with the Tokai Bank and IBJ, but also contains a few anomalies like not counting Toshiba as part of the Mitsui group. Since neither definition is perfect, we decided to use both definitions to test the robustness of our results. In our sample of

[27] The presidents of firms that are members of presidents clubs meet once or twice a month with each other and typically the presidents of the corporate group's main banks.

firms, those that are members of these groups are typically far larger than non-members. The average group member by the Dodwell definition has sales that are 50 percent higher than the typical US firm. The president's club members merged with the Nakatani sample resulted in firms that were on average over twice as large as the typical US firm.

We view our core results as those presented in Tables 2 (the structural R&D results) and 5 (the investment responses to distress). Hence, we decided to focus the remainder of our robustness checks on these results. Table 6 contains the results for estimating the structural R&D regressions for the US and a sample of Japanese group members. These results are quite similar to those presented in Table 2. Out of six possible comparisons between Japan and the US, Japanese group members seemed more or about as sensitive to financial distress than US firms in five of them. In the one case of higher US sensitivity, the difference between the US and Japan was not significant in a two-sided test.

Replicating the investment results with group members produces a similar result, as shown in Table 7. The sign on the US dummy coefficient tends to reverse sign as the definition of group firm changes, but none of the coefficients are statistically significant. In fact, none of the coefficients (in absolute value) are larger than their standard errors. We therefore conclude that even main bank firms, which are thought to be the most shielded from short-run fluctuations, appear to respond similarly to US firms. In other words, the US firms perform about as well as Japanese firms even if we restrict our attention to those Japanese firms that arguably benefit the most from main bank relations.

8. Adjusting the Rates of Distress

Any international comparison is always potentially open to the criticism that accounting practices might differ across countries. We therefore compared the elements of profits and the other variables used in our analysis line by line to check for differences in definitions, and found none. Nonetheless, we were concerned that the fact that distress is more frequent in Japan might be biasing our results in some way. Thus, as a robustness check, we adjusted our definition of distress so that the percentage of firms in distress are the same in both countries. There are two obvious ways to make this adjustment: 1) lowering the Japanese distress rate to the US rate (by requiring Japanese firms to have even more negative profits to count as distressed); and 2) raising the US rate to the Japanese rate (by counting US firms that have low but not necessarily negative profits to count as distressed). We did both and obtained similar results; so we report only the results of the first experiment.

In Tables 8 and 9, rates of distress were equalized in the two countries. We maintained the same definition of distress used in Tables 2 and 5 for the US and reduced the rate of distress in Japan to the US level (by requiring that Japanese profits were below the appropriate negative threshold two years in a row). Our results do not appear to be driven by the differential rates of distress in the two countries; the results of Tables 8 and 9 are qualitatively similar to those of Tables 2 and 5.

Finally, in Tables 10 and 11 we repeated the same experiment, this time comparing US firms with Japanese group members. Once again the data suggest that our results are not driven by the different rates of distress in the two countries. When the rates of distress are equalized, both the R&D and the investment responses to financial distress appear to be the same in both

countries.

9. Conclusion

It is commonly argued that the "bank-based" financial system of Japan is superior to the "market-based" financial system of the US because the former leads to less myopic behavior, especially during periods of financial distress. Yet, there is little empirical support for this claim. Indeed, Kaplan (1994) has found that the incentives of top executives to focus on the current bottom line (e.g. current cash flow) are approximately the same. We take a different approach, by looking at firms actions rather than managerial incentives.

We hypothesize that tests of differences in firm behavior between Japan and the US after the onset of financial distress is one good way to detect such a difference, if it exists, since myopic behavior is likely to be magnified during financial distress. In particular, if US managers are more myopic than Japanese managers, then episodes of financial distress should cause US firms to decrease their R&D spending (our main proxy for long-term investment) more than Japanese firms. We find no evidence that this is the case. Rather, the evidence suggests that financial distress causes R&D to fall in both countries by approximately the same amount. In addition, we compare the investment responses of US and Japanese firms to financial distress and find that Japanese firms do not invest more than US firms after the onset of distress.

Our results holds up even when US firms are compared to Japanese "group" firms, which are thought to be the least myopic and the most able to weather distress. And the results do not appear to be driven by the different rates of financial distress in the two countries. Our findings

lend no support to the widely held view that US financial system leads to more corporate myopia than the Japanese system.

References

Abegglen, James C., and Stalk, George Jr,. *Kaisha, the Japanese Corporation*, Basic Books, 1985.

Bartelsman, Eric and Wayne Gray, "NBER Manufacturing Productivity Database," 1994.

Berndt, Ernst (1991) *The Practice of Econometrics: Classic and Contemporary* Reading: Addison-Wesley Publishing Co.

Blinder, Alan, "More Like Them?" *American Prospect*, Winter 1992, pp. 51-62.

Branstetter, Lee, Bruno Crepon, Bronwyn H. Hall, and Jacques Mairesse, "The Time Series Relationship Between Investment and Cash Flow in the Scientific Sector: A Panel Data Study Comparing French, Japanese, and the Unites States Firms, manuscript, June 1995.

Branstetter, Lee (1996) "Are Knowledge Spillovers International or Intranational," Harvard University mimeo

Bulow, Jeremy and John Shoven, "The Bankruptcy Decision," *Bell Journal of Economics*, 1978, pp. 437-456.

Carson, Carol S., Bruce Grimm, and Carol E. Moylan, "A Satellite Account for Research and Development," *Survey of Current Business*, Bureau of Economic Analysis, November 1994.

Diamond, Douglas W. "Financial Intermediation and Delegated Monitoring," *Review of Economic Studies*, 1984, pp. 393-414.

Hayashi, Fumio, and Tohru Inoue (1991) "The Relation between Firm Growth and Q with Multiple Capital Goods: Theory and Evidence from Panel Data on Japanese Firms," *Econometrica*, 59 (3), pp. 731-53.

Hoshi, Takeo, Anil Kashyap and David Scharfstein, "The Role of Banks in Reducing the Costs of Financial Distress in Japan," *Journal of Financial Economics*, 1990, pp. 67-88.

Hoshi, Takeo, Anil Kashyap and David Scharfstein, "Corporate Structure, Liquidity, and Investment: Evidence from Japanese Industrial Groups," *Quarterly Journal of Economics*, February 1991, pp. 33-60.

Kaplan, Steven N., "Top Executive Rewards and Firm Performance: A Comparison of Japan and the United States," *Journal of Political Economy*, 1994, pp. 510-546

Mayer, Colin, "New Issues in Corporate Finance," *European Economic Review*, 1988, pp. 1167-1189.

Nakatani, I (1984) "The Role of Financial Corporate Grouping," in Aoki, Masahiko ed. *Economic Analysis of the Japanese Firm*, New York: North Holland.

Porter, Michael, E., "Capital Disadvantage: America's Failing Capital Investment System," *Harvard Business Review*, September-October, 1992.

Poterba, James M., "Comparing the Cost of Capital in the United States and Japan: A Survey of Methods," *FRBNY Quarterly Review*, Winter 1991.

Poterba, James M. and Lawrence H. Summers, "A CEO Survey of US Companies' Time Horizons and Hurdle Rates," *Sloan Management Review*, Vol. 7 No. 1, Fall, 1995.

Sheard, Paul, "Main Banks and the Governance of Financial Distress," in *The Japanese Main Bank System*, edited by Aoki and Patrick, Oxford University Press, 1994.

Shleifer, Andrei and Robert W. Vishny, "A Survey of Corporate Governance," Harvard Institute of Economic Research discussion paper 1741, October 1995.

Stein, Jeremy, "Takeover Threats and Managerial Myopia," *Journal of Political Economy*, 1988, pp. 61-80.

Stein, Jeremy, "Efficient Capital Markets, Inefficient Firms: A Model of Myopic Corporate Behavior," *Quarterly Journal of Economics*, 1989, pp. 655-669.

Thurow, Lester, *Head to Head: The Coming Economic Battle Among Japan, Europe and America*, Warner Books, 1993.

Von Thadden, Ernst-Ludwig, "Long-Term Contracts, Short-Term Investment and Monitoring," *Review of Economic Studies*, 1995, 557-575.

Weinstein, David and Yishay Yafeh (1995) "Japan's Corporate Groups: Collusive or Competitive? An Empirical Investigation of *Keiretsu* Behavior," *Journal of Industrial Economics*, 43 (4): 359-376.

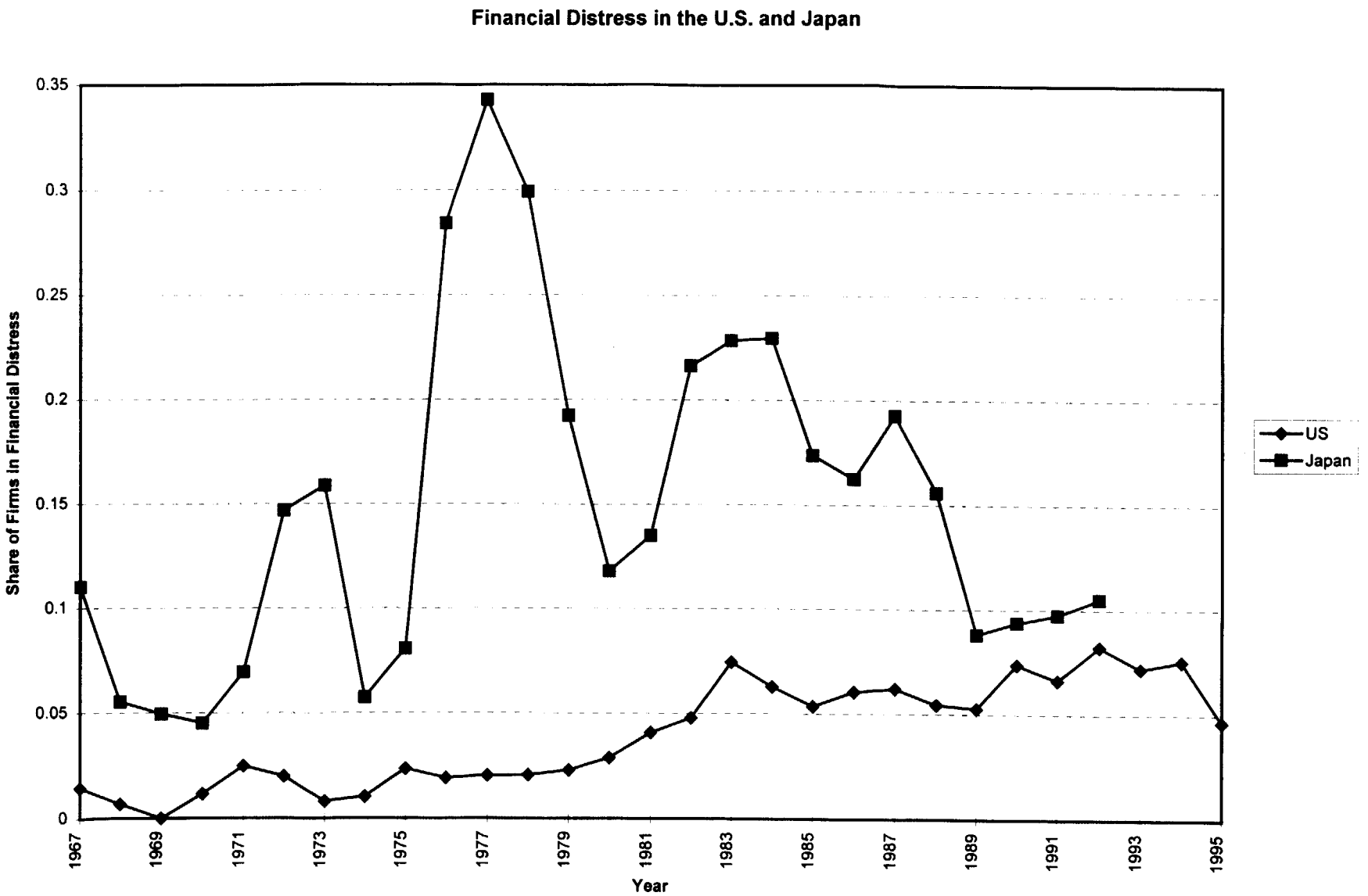
Financial Distress in the U.S. and Japan
Share of Firms In Financial Distress
0.35
0.3
0.25
0.2
0.15
0.1
0.05
0
1967
1969
1971
1973
1975
1977
1979
1981
1983
1985
1987
1989
1991
1993
1995
Year
US
Japan

Figure 1

Table 1

U.S. Sample (n=5721)				
Variable	Mean	St. Dev	Min	Max
R&D/Costs	0.059	0.049	0	0.249
Assets ($ millions)	1085	3343	0.18	43982
Opr Inc/Sales	0.114	0.075	-0.354	0.494
Opr Inc-Int Exp/Sales	0.093	0.080	-0.744	0.474
Distress	0.040	0.195	0	1
Debt/Assets	0.737	0.289	0.021	1.498
Japanese Sample (n=2218)				
Variable	Mean	St. Dev	Min	Max
R&D/Costs	0.051	0.039	0	0.242
Assets (¥ millions)	289258	552829	2142	6081937
Opr Inc/Sales	0.053	0.045	-0.255	0.333
Opr Inc-Int Exp/Sales	0.034	0.051	-0.329	0.328
Distress	0.116	0.321	0	1
Debt/Assets	0.626	0.173	0.146	1.025

Table 2

R & D and Distress: U.S. vs. Japan
Dependent Variable: R & D / Costs

	OLS		Between		Fixed	
Independent Variable	**Japan**	**U.S.**	**Japan**	**U.S.**	**Japan**	**U.S.**
Wage	0.0418 (0.0109)	0.0413 (0.0338)			0.0724 (0.0049)	0.0556 (0.0149)
R&D Price	0.0624 (0.0690)	-0.0012 (0.0365)			0.0003 (0.0221)	-0.0195 (0.0160)
Capital Price	-0.0891 (0.0676)	-0.0666 (0.0221)			-0.0488 (0.0208)	-0.0382 (0.0099)
Log(Sales)	0.0070 (0.0006)	0.0022 (0.0004)	0.0070 (0.0018)	0.0022 (0.0012)	-0.0076 (0.0016)	-0.0026 (0.0015)
Lagged Distress (t-1, t-2, or t-3)	-0.0181 (0.0018)	-0.0114 (0.0027)	-0.0296 (0.0076)	-0.0198 (0.0092)	-0.0022 (0.0011)	-0.0040 (0.0022)
Dummies	Industry	Industry	Industry	Industry	Firm	Firm
R^2	0.31	0.10	0.34	0.10	0.39	0.02
Number of Observations	1926	3347	1926	3347	1926	3347

Note: White standard errors appear in parentheses.

Table 3

R & D and Distress: U.S. vs. Japan
Dependent Variable is Average R & D / Costs from t+1 to t+3

Independent Variable				
U.S. Dummy	0.0985 (0.0419)	0.0427 (0.0193)	0.0348 (0.0191)	0.0239 (0.0188)
Industry Average R&D/Costs from t+1 to t+3	1.067 (0.2275)	0.1314 (0.0774)	0.0798 (0.0817)	0.0635 (0.0773)
Industry Average R&D/Costs from t+1 to t+3 * U.S. Dummy	0.0621 (0.3375)	0.0738 (0.1552)	0.1243 (0.1571)	0.1440 (0.1616)
Log(Sales)	0.0067 (0.0026)	0.0037 (0.0010)	0.0035 (0.0009)	0.0037 (0.0009)
Log(Sales) * U.S. Dummy	-0.0083 (0.0034)	-0.0042 (0.0016)	-0.0039 (0.0016)	-0.0041 (0.0015)
Average R&D/Costs from t-2 to t		0.9915 (0.0302)	1.009 (0.0304)	0.9922 (0.0188)
Average R&D/Costs from t-2 to t * U.S. Dummy		-0.1803 (0.0739)	-0.1977 (0.0740)	-0.1811 (0.0700)
Coverage			0.0744 (0.0320)	0.0722 (0.0351)
Coverage * U.S. Dummy			-0.0783 (0.0457)	-0.0769 (0.0496)
Debt/Assets				-0.0152 (0.0081)
Debt/Assets * U.S. Dummy				0.0145 (0.0126)
R^2	0.22	0.82	0.82	0.82
Number of Observations	153	153	153	153

Note: White standard errors appear in parentheses.

Table 4

U.S Distressed Firm Sample (n=150)				
Variable	Mean	St. Dev.	Min	Max
Sales	104781	226763	952	1260186
Cum. Invest. Rate (t+1 to t+3)	0.258	0.159	0.015	1.011
Ind. Invest. Rate (t+1 to t+3)	0.438	0.085	0.260	0.717
Lagged Invest. Rate (t-2 to t)	0.382	0.214	0.024	1.077
Coverage	-0.081	0.080	-0.549	-0.00005
Debt/Assets	0.357	0.196	0	0.905
Log(Sales)	10.005	1.742	6.858	14.047
Japanese Distressed Firm Sample (n=380)				
Variable	Mean	St. Dev.	Min	Max
Sales	112083	271101	1684	2644370
Cum. Invest. Rate (t+1 to t+3)	0.388	0.163	0.028	1.073
Ind. Invest. Rate (t+1 to t+3)	0.499	0.105	0.305	0.802
Lagged Invest. Rate (t-2 to t)	0.395	0.172	0.073	1.110
Coverage	-0.037	0.042	-0.296	-0.00005
Debt/Assets	0.799	0.148	0.222	1.272
Log(Sales)	10.461	1.384	7.429	14.788

Table 5

Investment and Distress: U.S. vs. Japan
Dependent Variable is Cumulative Investment Rate (t+1 to t+3)

Independent Variable				
U.S. Dummy	0.0679	0.0240	0.0025	-0.0386
	(0.1267)	(0.1264)	(0.1225)	(0.1311)
Cumulative Industry Investment Rate (t+1 to t+3)	0.3452	0.2499	0.2582	0.2435
	(0.0748)	(0.0773)	(0.0760)	(0.0800)
Cumulative Industry Investment Rate (t+1 to t+3) * U.S. Dummy	-0.1171	-0.1769	-0.1968	-0.1629
	(0.1606)	(0.1603)	(0.1556)	(0.1549)
Log(Sales)	0.0055	0.0005	-0.0027	-0.0021
	(0.0060)	(0.0057)	(0.0056)	(0.0057)
Log(Sales) * U.S. Dummy	-0.0123	-0.0077	-0.0064	-0.0060
	(0.0094)	(0.0092)	(0.0089)	(0.0088)
Cumulative Investment Rate (t-2 to t)		0.2479	0.2322	0.2294
		(0.0524)	(0.0521)	(0.0522)
Cumulative Investment Rate (t-2 to t) * U.S. Dummy		0.0508	0.0775	0.0937
		(0.0837)	(0.0809)	(0.0821)
Coverage			0.5884	0.5796
			(0.2086)	(0.2078)
Coverage * U.S. Dummy			-0.3828	-0.4021
			(0.2374)	(0.2371)
Debt/Assets				-0.0441
				(0.0576)
Debt/Assets * U.S. Dummy				-0.0166
				(0.0759)
R^2	0.15	0.23	0.25	0.25
Number of Observations	530	530	530	530

Note: White standard errors appear in parentheses.

Table 6

R & D and Distress: U.S. vs. Japanese Group Firms
Dependent Variable: R & D / Costs

	OLS			Between			Fixed		
Independent Variable	**Dodwell**	**Pres/Nak**	**U.S.**	**Dodwell**	**Pres/Nak**	**U.S.**	**Dodwell**	**Pres/Nak**	**U.S.**
Wage	0.0522	0.0425	0.0413				0.0727	0.0730	0.0556
	(0.0162)	(0.0135)	(0.0338)				(0.0068)	(0.0068)	(0.0149)
R&D Price	0.0182	0.0791	-0.0012				0.0085	0.0624	-0.0195
	(0.1100)	(0.0884)	(0.0365)				(0.0305)	(0.0298)	(0.0160)
Capital Price	-0.0679	-0.1014	-0.0666				-0.0632	-0.1009	-0.0382
	(0.1064)	(0.0854)	(0.0221)				(0.0287)	(0.0271)	(0.0099)
Log(Sales)	0.0057	0.0079	0.0022	0.0066	0.0067	0.0022	-0.0108	-0.0075	-0.0026
	(0.0012)	(0.0008)	(0.0004)	(0.0036)	(0.0028)	(0.0012)	(0.0028)	(0.0023)	(0.0015)
Lagged Distress	-0.0166	-0.0221	-0.0114	-0.0218	-0.0353	-0.0198	-0.0035	0.0006	-0.0040
(t-1, t-2, or t-3)	(0.0026)	(0.0020)	(0.0027)	(0.0115)	(0.0098)	(0.0092)	(0.0014)	(0.0013)	(0.0022)
Dummies	Industry	Industry	Industry	Industry	Industry	Industry	Firm	Firm	Firm
R^2	0.26	0.39	0.10	0.32	0.43	0.09	0.41	0.52	0.02
Number of Observations	852	887	3347	852	887	3347	852	887	3347

Note: White standard errors appear in parentheses.

Table 7

Investment and Distress: U.S. vs. Japanese Group Firms
Dependent Variable is Cumulative Investment Rate (t+1 to t+3)

Independent Variable	Dodwell	Pres. & Nakatani	Dodwell	Pres. & Nakatani	Dodwell	Pres. & Nakatani	Dodwell	Pres. & Nakatani
U.S. Dummy	0.1043	-0.0764	0.0789	-0.1350	0.0066	-0.1407	-0.0040	-0.1700
	(0.1468)	(0.1785)	(0.1460)	(0.1732)	(0.1437)	(0.1745)	(0.1659)	(0.2081)
Cumulative Industry Investment Rate (t+1 to t+3)	0.3269	0.3873	0.2339	0.3110	0.2208	0.3113	0.2191	0.3013
	(0.1160)	(0.1239)	(0.1288)	(0.1337)	(0.1245)	(0.1315)	(0.1282)	(0.1450)
Cumulative Industry Investment Rate (t+1 to t+3) * U.S. Dummy	-0.0988	-0.1592	-0.1610	-0.2380	-0.1595	-0.2500	-0.1385	0.2207
	(0.1835)	(0.1885)	(0.1905)	(0.1939)	(0.1843)	(0.1890)	(0.1845)	(0.1966)
Log(Sales)	0.0095	-0.0077	0.0065	-0.0129	0.0001	-0.0131	0.0003	-0.0126
	(0.0075)	(0.0106)	(0.0074)	(0.0100)	(0.0071)	(0.0099)	(0.0071)	(0.0104)
Log(Sales) * U.S. Dummy	-0.0163	0.0009	-0.0137	0.0057	-0.0092	0.0040	-0.0084	0.0045
	(0.0105)	(0.0129)	(0.0103)	(0.0123)	(0.0099)	(0.0121)	(0.0098)	(0.0125)
Cumulative Investment Rate (t-2 to t)			0.2473	0.2110	0.2379	0.1577	0.2368	0.1537
			(0.0968)	(0.1062)	(0.0946)	(0.1197)	(0.0960)	(0.1206)
Cumulative Investment Rate (t-2 to t) * U.S. Dummy			0.0514	0.0877	0.0719	0.1521	0.0862	0.1693
			(0.1168)	(0.1246)	(0.1130)	(0.1348)	(0.1150)	(0.1362)
Coverage					0.7727	0.6538	0.7694	0.6408
					(0.2573)	(0.4310)	(0.2554)	(0.4327)
Coverage * U.S. Dummy					-0.5671	-0.4482	-0.5919	-0.4633
					(0.2812)	(0.4456)	(0.2797)	(0.4475)
Debt/Assets							-0.0083	-0.0300
							(0.0886)	(0.1470)
Debt/Assets * U.S. Dummy							-0.0524	-0.0307
							(0.1014)	(0.1551)
R^2	0.17	0.22	0.26	0.30	0.28	0.32	0.29	0.32
Number of Observations	313	263	313	263	313	263	313	263

Note: White standard errors appear in parentheses.

Table 8

R & D and Distress: U.S. vs. Japan
Dependent Variable: R & D / Costs
(Japanese Distress Levels Lowered to U.S. Levels)

	OLS		Between		Fixed	
Independent Variable	**Japan**	**U.S.**	**Japan**	**U.S.**	**Japan**	**U.S.**
Wage	0.0413 (0.0125)	0.0413 (0.0338)			0.0694 (0.0051)	0.0556 (0.0149)
R&D Price	0.0736 (0.0729)	-0.0012 (0.0365)			0.0145 (0.0225)	-0.0195 (0.0160)
Capital Price	-0.0953 (0.0700)	-0.0666 (0.0221)			-0.0574 (0.0208)	-0.0382 (0.0099)
Log(Sales)	0.0070 (0.0006)	0.0022 (0.0004)	0.0068 (0.0019)	0.0022 (0.0012)	-0.0080 (0.0016)	-0.0026 (0.0015)
Lagged Distress (t-1, t-2, or t-3)	-0.0159 (0.0028)	-0.0114 (0.0027)	-0.0322 (0.0127)	-0.0198 (0.0092)	-0.0051 (0.0012)	-0.0040 (0.0022)
Dummies	Industry	Industry	Industry	Industry	Firm	Firm
R^2	0.29	0.10	0.31	0.10	0.39	0.02
Number of Observations	1907	3347	1907	3347	1907	3347

Note: White standard errors appear in parentheses.

Table 9

Investment and Distress: U.S. vs. Japan
Dependent Variable is Cumulative Investment Rate (t+1 to t+3)
(Japanese Distress Levels Lowered to U.S. Levels)

Independent Variable				
U.S. Dummy	0.1554	0.1353	0.1513	0.1382
	(0.1367)	(0.1341)	(0.1297)	(0.1377)
Cumulative Industry Investment Rate (t+1 to t+3)	0.5040	0.4118	0.4222	0.4193
	(0.0988)	(0.0990)	(0.0989)	(0.1029)
Cumulative Industry Investment Rate (t+1 to t+3) * U.S. Dummy	-0.2760	-0.3388	-0.3609	-0.3387
	(0.1731)	(0.1718)	(0.1680)	(0.1679)
Log(Sales)	0.0018	-0.0002	-0.0014	-0.0013
	(0.0086)	(0.0081)	(0.0080)	(0.0081)
Log(Sales) * U.S. Dummy	-0.0087	-0.0070	-0.0077	-0.0068
	(0.0113)	(0.0108)	(0.0106)	(0.0106)
Cumulative Investment Rate (t-2 to t)		0.2395	0.2342	0.2335
		(0.0633)	(0.0634)	(0.0625)
Cumulative Investment Rate (t-2 to t) * U.S. Dummy		0.0592	0.0755	0.0896
		(0.0909)	(0.0886)	(0.0890)
Coverage			0.1577	0.1575
			(0.2173)	(0.2168)
Coverage * U.S. Dummy			0.0480	0.0200
			(0.2451)	(0.2450)
Debt/Assets				-0.0099
				(0.0700)
Debt/Assets * U.S. Dummy				-0.0508
				(0.0856)
R^2	0.12	0.21	0.22	0.22
Number of Observations	370	370	370	370

Note: White standard errors appear in parentheses.

Table 10

R & D and Distress: U.S. vs. Japanese Group Firms
Dependent Variable: R & D / Costs
(Japanese Distress Levels Lowered to U.S. Levels)

	OLS			Between			Fixed		
Independent Variable	**Dodwell**	**Pres/Nak**	**U.S.**	**Dodwell**	**Pres/Nak**	**U.S.**	**Dodwell**	**Pres/Nak**	**U.S.**
Wage	0.0490	0.0347	0.0413				0.0672	0.0661	0.0556
	(0.0196)	(0.0163)	(0.0338)				(0.0074)	(0.0073)	(0.0149)
R&D Price	0.0695	0.1439	-0.0012				0.0380	0.0828	-0.0195
	(0.1202)	(0.0961)	(0.0365)				(0.0319)	(0.0306)	(0.0160)
Capital Price	-0.1110	-0.1542	-0.0666				-0.0834	-0.1105	-0.0382
	(0.1127)	(0.0903)	(0.0221)				(0.0291)	(0.0272)	(0.0099)
Log(Sales)	0.0063	0.0084	0.0022	0.0072	0.0077	0.0022	-0.0112	-0.0076	-0.0026
	(0.0012)	(0.0008)	(0.0004)	(0.0037)	(0.0029)	(0.0012)	(0.0028)	(0.0024)	(0.0015)
Lagged Distress	-0.0108	-0.0233	-0.0114	-0.0178	-0.0532	-0.0198	-0.0069	-0.0029	-0.0040
(t-1, t-2, or t-3)	(0.0040)	(0.0021)	(0.0027)	(0.0186)	(0.0172)	(0.0092)	(0.0015)	(0.0013)	(0.0022)
Dummies	Industry	Industry	Industry	Industry	Industry	Industry	Firm	Firm	Firm
R^2	0.23	0.36	0.10	0.26	0.38	0.10	0.41	0.51	0.02
Number of Observations	842	875	3347	842	875	3347	842	875	3347

Note: White standard errors appear in parentheses.

Table 11

Investment and Distress: U.S. vs. Japanese Group Firms
Dependent Variable is Cumulative Investment Rate (t+1 to t+3)
(Japanese Distress Levels Lowered to U.S. Levels)

Independent Variable	Dodwell	Pres. & Nakatani	Dodwell	Pres. & Nakatani	Dodwell	Pres. & Nakatani	Dodwell	Pres. & Nakatani
U.S. Dummy	0.1338	-0.2621	0.1234	-0.1875	0.0989	-0.1635	0.1882	-0.0840
	(0.1503)	(0.1937)	(0.1508)	(0.1890)	(0.1572)	(0.2008)	(0.1804)	(0.2160)
Cumulative Industry Investment Rate (t+1 to t+3)	0.4077	0.2387	0.3585	0.2267	0.3683	0.2273	0.3772	0.2621
	(0.1572)	(0.1385)	(0.1542)	(0.1244)	(0.1492)	(0.1226)	(0.1477)	(0.1254)
Cumulative Industry Investment Rate (t+1 to t+3) * U.S. Dummy	-0.1796	-0.0106	-0.2855	-0.1537	-0.3070	-0.1660	-0.2966	-0.1815
	(0.2119)	(0.1985)	(0.2086)	(0.1863)	(0.2018)	(0.1830)	(0.1986)	(0.1825)
Log(Sales)	0.0038	-0.0211	0.0022	-0.0215	-0.0016	-0.0217	-0.0030	-0.0238
	(0.0102)	(0.0134)	(0.0101)	(0.0109)	(0.0106)	(0.0111)	(0.0107)	(0.0136)
Log(Sales) * U.S. Dummy	-0.0107	0.0143	-0.0094	0.0143	-0.0075	0.0127	-0.0051	0.0157
	(0.0126)	(0.0153)	(0.0124)	(0.0130)	(0.0127)	(0.0131)	(0.0126)	(0.0152)
Cumulative Investment Rate (t-2 to t)			0.2012	0.3574	0.1891	0.3485	0.2025	0.3584
			(0.0911)	(0.1412)	(0.0905)	(0.1559)	(0.0888)	(0.1545)
Cumulative Investment Rate (t-2 to t) * U.S. Dummy			0.0975	-0.0587	0.1206	-0.0388	0.1205	-0.0354
			(0.1121)	(0.1555)	(0.1096)	(0.1677)	(0.1091)	(0.1670)
Coverage					0.3106	0.1196	0.3145	0.1505
					(0.2059)	(0.6187)	(0.2123)	(0.6266)
Coverage * U.S. Dummy					-0.1049	0.0861	-0.1370	0.0270
					(0.2351)	(0.6290)	(0.2410)	(0.6369)
Debt/Assets							0.1142	0.1024
							(0.1102)	(0.2119)
Debt/Assets * U.S. Dummy							-0.1748	-0.1630
							(0.1117)	(0.2176)
R^2	0.10	0.12	0.21	0.25	0.22	0.26	0.22	0.26
Number of Observations	247	216	247	216	247	216	247	216

Note: White standard errors appear in parentheses.