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The Impact of Ownership Structure on Wage Intensity in Japanese Corporations

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The authors studied the effect of ownership structure on human capital investments as indicated by wage intensity, defined as the ratio of expenditure on employee wages to sales, in a sample of 996 Japanese manufacturing firms during their economic recession of 1998-2002. They found that domestic shareholders, with interests beyond financial considerations, enhance wage intensity, especially when performance is low, and thereby safeguard human capital investments. Foreign shareholders with sole interest in financial returns have an opposite effect; they reduce wage intensity when firm performance is low.

Keywords: *corporate governance; Japan; human capital theory; ownership structure; theory of the firm*

A firm's most valuable resource is often its human capital—the knowledge, skills, and capabilities of its people (Huselid, 1995). For sustained competitive advantage and above-normal performance, firms should nurture human capital by making long-term investments in building human capability and appropriately allocating resources to wages (Barney & Wright,

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1998). Firms often provide institutional safeguards to protect investments in human capital; for example, Japanese firms have institutionalized a practice of lifetime employment to foster human capital investments. When economic conditions worsen, however, it becomes challenging for firms to stay committed to maintaining such institutional safeguards. Although cutting wages and employment may be an economic necessity to improve cash flows (Cascio, 1993), it can also hurt performance by undermining employee trust, loyalty, and commitment (Mroczkowski & Hanaoka, 1997).

Although employee human capital investments represent a crucial resource for sustained competitive advantage, agency theory–based research continues to exclude consideration of employee stakeholders (Blair & Roe, 1999). As residual claimants, owners play an important role in the shaping of resource allocation decisions. When faced with economic hardship, do owners support implicit contracts to safeguard human capital, or do they pressure managers to cut costs? Recent research has emphasized that owners are heterogeneous and have different preferences (Hoskisson, Hitt, Johnson, & Grossman, 2002). Heterogeneous owners are likely to differ in their effects on human capital investments. We focus on wage intensity (the ratio of expenditure on wages to firm sales) as an indicator of human capital investments. We present and test theory to explain why some owners safeguard wages even when firms face economic hardship, whereas other owners pressure firms to cut wages to reduce costs.

Research on the relationship between corporate governance and firm performance has yielded mixed results (cf. Dalton, Daily, Ellstrand, & Johnson, 1998). This is because the relationship is mediated by intervening variables, and is likely to be recursive and therefore causally ambiguous. Our study has the potential to partially address this issue by developing a midrange theory examining the effects of ownership structure on human capital investments. This approach gives us a theoretically defensible model for the relationship between corporate governance and firm-level decisions, which we believe represents a contribution to the continuing debate over whether corporate governance matters to competitive advantage.

Theory

Agency Theory

Agency theory examines the issues that arise in public corporations when their principals (owners) delegate the task of managing to agents (managers) (Jensen & Meckling, 1976). In this model, principals contract with agents to manage a firm with a view to maximizing the wealth of the principals. However, information asymmetry and the potential for opportunism make it difficult to ensure that agents always act in the best interests of principals. Extant empirical studies using agency theory examine the resolution of principal-agent conflicts through governance mechanisms, such as boards of directors, executive pay and succession, and takeover defenses, as well as the effects of these conflicts on corporate strategy, such as investments in R&D, capital, and diversification, and on performance (see Shleifer & Vishny [1997] for a comprehensive review).

Some research in agency theory has also examined principal-*principal* conflicts. Here, principals differ in their preferences with respect to risk and returns on investments, so that

conflicts among them can also lead to agency problems. Although the research assumes that a principal's goal is to seek maximization on a security's returns, one stream advances the notion that principals with conflicting interests may support agents' pursuit of self-interest if in doing so the former achieve their own goals (Salancik & Pfeffer, 1983). The empirical research has examined such issues as how principal conflicts shape takeover defenses (Brickley, Lease, & Smith, 1988), CEO pay (David, Kochhar, & Levitas, 1998), R&D investments (Bushee, 1998; Kochhar & David, 1995), corporate innovation (Hoskisson et al., 2002; Zahra, 1996), and firm performance (Thomsen & Pedersen, 2000). Another stream examines principal conflicts that arise when block shareholders use their power to expropriate wealth from minority shareholders (Chang, 2003; Claessens, Djankov, Fan, & Lang, 2002; Dharwadkar, George, & Brandes, 2000; Faccio, Lang, & Young, 2001; Morck, Shleifer, & Vishny, 1988).

Although agency theory views the firm as a *nexus of contracts*, the research almost exclusively focuses on the relationship between just principals and agents (Jensen & Meckling, 1976), paying scant attention to other stakeholders. Partly, this is because the focus of the corporate governance question is on the residual claimants (the owners) who are most exposed to expropriation (Jensen, 1986). Stakeholders such as employees are treated as factors of production—wages are exogenously determined by labor markets, and the employee contract is thus outside the purview of corporate governance (Aguilera & Jackson, 2003; Blair & Roe, 1999).

Despite the valuable insights offered by agency theory, it has needlessly limited the scope of corporate governance research by focusing only on principals and agents. Several researchers have called for extending the agency model to incorporate a broader set of stakeholders (Hill & Jones, 1992), particularly employees (Aguilera & Jackson, 2003; Blair & Roe, 1999), as a way to build more complete models. Indeed, the concept of corporate governance is concerned with "the distribution of rights and responsibilities among different participants in the corporation, such as, the board, managers, shareholders and other stakeholders" (Organization for Economic Cooperation and Development [OECD], 1999: 11), placing an emphasis on the importance of the institutional context. Thus, we need to separate corporate governance from agency theory and not assume that stakeholders have full protection of their claims through explicit contracts (Morck et al., 1988).

Stakeholder-Agency Theory

If labor is a generic input, then the forces of supply and demand in external labor markets should be a good determinant of its price (wages). However, the actual relationship between a firm and labor is more complex. To maximize productivity, employees may need to develop firm-specific skills (Becker, 1964). Yet employees may be reluctant to make such investments because they are vulnerable to ex post expropriation by the firm (Williamson, 1985). For example, employment contracts that guarantee a wage payment can solve this firm-specific investment problem, but they work only in munificent environments where the need for recontracting (or revaluation of the wage contract) is low. If a firm's competitive environment is dynamic, the costs of frequent recontracting can be prohibitive. Thus, governance safe-

guards are necessary to prevent market failure in firm-specific investments in labor (Williamson, 1985).

An implicit long-term employment contract is another solution to the firm-specific investment problem (Blair & Roe, 1999). For example, Japanese corporations have institutionalized "permanent employment" wherein new university graduates are recruited with an assurance of job security till retirement (McMillan, 1996). In such labor contracts, employees are paid less than marginal product in the early years and more than marginal product in later years (Milgrom & Roberts, 1992). The high pay in later years represents a deferred compensation for firm-specific investments made by the employee during the early years.

However, because such employees are unlikely to find greater-than-marginal product wages outside the firm, they are exposed to expropriation risk after having made their firm-specific human capital investments. A firm can transfer the marginal product of an employee's effort (the "excess" wage) to its shareholders by reneging on implied promises of job security. This can happen when firms face economic hardship. In poor economic environments, wage cuts and layoffs may become necessary to protect the viability of a firm. Although wage cuts and layoffs can lower operating costs, they can also hurt employee morale, undermine the value of irreversible investments in firm-specific human capital, and negatively affect labor productivity. If we could objectively determine the performance implications of wage cuts and layoffs, deciding whether to use them would be straightforward. In reality, uncertainty and bounded rationality make this difficult to do, leading to stakeholder conflict during the course of action.

Therefore, to understand managerial choices on wage intensity, we need to consider the interests of a firm's most strategic stakeholders, the owners, and the influence they are likely to have over managerial choices. The question posed here is whether owners support or oppose implicit long-term employment contracts. Supporting such contracts can increase operating costs but provides institutional safeguards that can enhance managerial credibility and employee trust, thereby facilitating firm-specific human capital investments. Opposing such contracts attenuates employees' incentives to make firm-specific human capital investments but can reduce operating costs.

Ownership Structure

Ownership structure can provide the institutional mechanism needed for safeguarding implicit contracts. Aguilera and Jackson (2003) highlighted two dimensions that help categorize owners: (a) whether they pursue financial or strategic interests and (b) the degree of commitment or liquidity represented by their ownership stakes. Owners emphasizing financial interests are strictly concerned with their returns on investments. Such owners are likely to value liquidity and typically own fewer shares so that they can easily exit their holdings. Owners that emphasize strategic interests are concerned with multiple goals such as "regulating competition between firms, underwriting relational contracts, securing markets, managing technological dependence, and protecting managerial autonomy from outside shareholders" (Aguilera & Jackson, 2003: 451). Typically, they have other commercial interests or strategic

relationships with the firms in which they invest. Such owners are likely to own larger stakes and be committed to the long-term interests of the firm.

The *domestic owners* of Japanese firms, such as other Japanese firms and financial institutions, tend to emphasize strategic interests. They support employees' investments in human capital by using their ownership stakes as a form of insurance against ex post recontracting risks. Although they have an incentive to protect the current value of their investments as stockholders, strategic imperatives force them to consider the long-term performance and stability of the network of firms in which they are a part. For example, they may assist financially challenged firms in protecting employment contracts by muting the demand for stock returns. They can also facilitate the restructuring of corporate capital, which is more liquid than human capital, by actively managing and/or financing the restructuring effort of troubled firms (Gedajlovic & Shapiro, 2002; Lincoln, Gerlach, & Ahmadjian, 1996; Nakatani, 1984). Such cross-subsidization of cash flows is a form of insurance to reduce performance variability among the members of a network and a reinforcement of reciprocity norms (Gerlach, 1992).

Foreign owners pursue a strictly financial objective for their investments. As arm's-length investors, they do not benefit from any commercial transactions with investee firms. Because they can hedge their risks through portfolio diversification, they are more likely to be concerned with the immediate efficiencies achieved through wage cuts and layoffs. As a consequence, foreign owners are less likely to be committed to stakeholder management principles. Driven solely by financial gains, these investors take a relatively dispassionate attitude toward employee wages. They are more likely to calculate the extent to which investment in human capital affects a company's bottom line in the short term. Accordingly, foreign owners may oppose implicit employment contracts and pressure firms to reduce wage intensity.

Hypotheses

Wage Intensity

The research on the relationship between boards of directors and firm performance has yielded mixed results (cf. Dalton et al., 1998). To build finer grained theory, we examine the impact of corporate governance on specific managerial strategic decisions that may lead to firm performance. We argued that a firm's most valuable resource is its human capital and that the long-term results of such investments are cumulative (Barney & Wright, 1998; Huselid, 1995). Thus, the stance taken by a firm's dominant owners on the importance of human capital would shape managerial decisions, especially during economic hardship, on such investments. To measure the commitment to human capital investments, we use wage intensity, defined as the ratio of expenditure on wages to firm sales. This measure of labor costs can include both wage cuts and layoffs.

Main Effects

Implicit contracts such as "lifetime employment" are a means to protect firm-specific investments in human capital. During years of prosperity, it is relatively easy to fulfill such implicit contracts. In a difficult economic environment, it is more challenging to sustain these implicit contracts. For example, in Japanese corporations, decades of prosperity had reinforced the practice of "lifetime employment," yet the economic challenges following the crash in the 1990s threatened to undermine such practices. We have argued that the effects of ownership structure on wage intensity depend on the nature of ownership. Domestic owners, as long-term owners with business relationships, share a norm of reciprocity and are likely to favor higher wage intensity to safeguard long-term human capital investments. Foreign owners have strict financial goals and are more likely to push for a reduction in wage intensity to cut costs.

Hypothesis 1: The ratio of ownership by domestic investors is positively associated with wage intensity.

Hypothesis 2: The ratio of ownership by foreign investors is negatively associated with wage intensity.

Moderating Effects

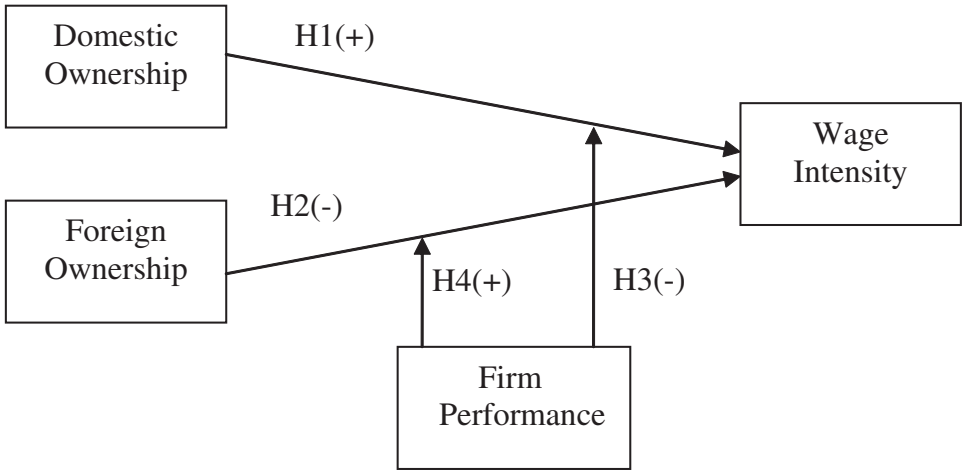
Although all firms face pressures on wages in a difficult economy, such pressures are particularly high for firms with poor financial performance. When firm performance is low, firms are strapped for resources and are under pressure to cut costs. If a firm suffers poor performance, restructuring accompanied by layoffs and wage reductions becomes more important for protecting cash flows. As foreign owners are primarily interested in maximizing financial returns or minimizing investment losses, they would likely interpret poor performance as a signal for more wage cuts and layoffs to reduce costs. Domestic owners, on the other hand, are likely to see poor performance as a signal for more employee protection. We have argued that domestic and foreign owners have opposite effects on wage intensity, with the former enhancing wage intensity and the latter attenuating wage intensity. This tendency is likely to be even stronger when firms encounter poor performance, implying the following moderation hypotheses:

Hypothesis 3: Poor firm performance strengthens the positive association between domestic ownership and wage intensity.

Hypothesis 4: Poor firm performance strengthens the negative association between foreign ownership and wage intensity.

There relationships are illustrated in Figure 1.

Figure 1
Research Model Showing Relationships Among Variables



Method

The Japanese Context

Japan provides a useful context for our study because (a) Japanese corporations have institutionalized a practice of lifetime employment to demonstrate their commitment to human capital, and (b) the economic recession during the 1990s has placed significant pressure on the ability to preserve the institution of lifetime employment. In the years following World War II, the Japanese economy expanded at double-digit rates, allowing firms to accumulate enough financial slack to satisfy the claims of employees and shareholders. During this period, many Japanese firms institutionalized a practice known as lifetime employment wherein new university graduates are recruited with assurances of job and wage security until retirement (McMillan, 1996). Although they do not *guarantee* lifetime employment (firms retain the right to fire employees), an implicit social contract exists. After the economic bubble burst, the Japanese economy grew at an average annual rate of 1.7% between 1992 and 1997 and saw further declines to 0.2% between 1998 and 2002 (Economic and Social Research Institute, 2002). This eliminated financial slack, which increased the pressure for economic efficiency on managers and shareholders. Although there is now a question as to whether the lifetime employment system still exists (Ahmadjian & Robinson, 2001), anecdotal evidence suggests that many firms are still trying to maintain it.

According to a 1999 survey of 1,204 Japanese firms, 68% claimed to still have a lifetime employment system (Suzuki, 2001). Yoshimori (1995: 34), quoting the chairman of Toshiba, said that discharging employees "is the most serious sin" and further quoting the chairman of Chichibu, stated that job security is the "responsibility of the corporation." In his speech at the 2003 Japan Corporate Governance Forum, Mr. Idei, CEO of Sony, stated that

> we . . . cannot use employee layoffs. Therefore, although we are trying to improve our productivity quickly . . . we have the life-time employment system in Japan and *that* is reducing labor mobility. Thus, there is a gap between our need to win global competition and various practices in the post-war system that have contributed to social stability. (Japan Corporate Governance Forum, 2004: 3)

In sum, large Japanese corporations still encounter social constraints in using layoffs or wage reductions to combat performance declines. Organizational inertia is likely to slow the deinstitutionalization process of such practices (Greenwood & Hinings, 1993).

The Sample

This consisted of a pooled cross-sectional time series of data on 996 publicly traded Japanese manufacturing firms collected from the Nikkei NEEDS database during the period 1998-2002. This database covers 1,184 to 1,400 manufacturing firms (the actual number varies yearly) listed in the first and second sections of the domestic stock exchanges. Our sample firms include those listed on the Tokyo Stock Exchange (TSE) and four other domestic exchanges.

The firms are divided into first-section and second-section listings, comparable to the New York Stock Exchange (NYSE) and the National Association of Securities Dealers Automated Quotation (system) (NASDAQ), respectively. Firms in the first section listings include "blue-chip" firms and those with long operating histories and proven cash flows. As of March 2002, there are 1,562 firms in the first section. Second-section listings, of which there are 928, represent smaller and relatively younger firms. Our sample consists of 658 or 42% of the total firms in the first section and 338 or 36% of the total firms in the second section. The ratio of representation is not statistically different between the two groups.

We could not obtain consistent data for all the firms for the entire duration of the study period because some firms changed their fiscal year-ends, declared bankruptcy, or were delisted because of merger or acquisition. After dropping firms for which consistent data were unavailable, we had a total of 4,980 firm-years, representing 996 manufacturing firms over 5 years (1998-2002).

To limit heterogeneity effects arising from widely different employment practices and accounting conventions across manufacturing and service industries, we restricted our sample to manufacturing firms. The sample was categorized into 16 industries, via the classification provided in the Nikkei database. They included food, textiles, pulp and paper, chemicals, pharmaceuticals, petroleum, rubber, ceramics, steel, nonferrous metals, machinery, electric, shipbuilding, and transportation. In all, the total sales of our sample firms represent 29% of

Japan's gross domestic product in 2002 and represents 40% of all listed firms in the first and second sections of the Japanese stock exchanges.

Dependent Variable

We measured *wage intensity* as the ratio of expenditure on wages to firm sales. Wages are defined as executive and employee salaries, bonuses, and other benefits such as pension contributions provided by the company. Because the use of stock options is still uncommon in Japan, salary captures most of the wages paid in this category. Payments to executive directors consist of base salary and director fees (if they serve on the board), so part of executive compensation is counted as a wage payment to employees according to Japanese tax law.

Recall that our research focuses on the effects of ownership structure on resource allocation to employee wages. Managers can reduce resource allocations to wages by reducing the wages of each employee, reducing the number of employees, or both. Prior research has used various alternate measures, such as average wages per employee (Bertrand & Mullainathan, 1999), total number of employees (Brown & Medhoff, 1988), and total wages as a ratio of firm sales (Scheps, 1981). In layoff studies, dummy variables representing large reductions in number of employees have also been used as a measure of labor intensity (Ahmadjian & Robinson, 2001). In the absence of specific information on the *type* of employee laid off, effects on wage allocation are ambiguous. If layoffs involve reduction in low-wage employees, average wages per employee will rise; conversely, a reduction in high-wage employees will result in a decrease of average wage per employee.

Taking previous measures and their limitations into consideration, we chose to measure wage intensity as the proportion of total wages to sales for our dependent variable. This measure of resource allocation to wages is analogous to measures of resource allocation in similar long-term investments such as R&D; R&D intensity has long been measured as the ratio of R&D expenditures to firm sales (David et al., 1998; Hoskisson et al., 2002). Our wage intensity measure is comprehensive as it captures the net amount of resources allocated to wages after reductions in head count (through hiring freezes, early retirement, and layoffs) and in total wages (through reduced overtime or employee transfers to lower paying subsidiaries) (Mroczkowski & Hanaoka, 1997).

Independent Variables

The independent variables of this study were domestic and foreign ownership. *Domestic ownership* was the proportion of total shares held by Japanese corporations and financial institutions (Gedajlovic & Shapiro, 2002). *Foreign ownership* was the proportion of total shares held by foreign owners (Ahmadjian & Robinson, 2001). These measures have been used reliably in past studies (Gedajlovic & Shapiro, 2002; Gerlach, 1992; Lincoln et al., 1996). Ownership data were obtained from the Nikkei NEEDS database.

Domestic owners are other Japanese corporations and financial institutions that own shares for the long term. Ownership is typically a means for bolstering business and other ties

(Gedajlovic & Shapiro, 2002), and thus corporate owners may include suppliers and customers. Financial owners include bank lenders and insurance companies that underwrite insurance policies for their investee firms. Japanese companies are often organized in business groups termed *keiretsu*, and domestic owners use shares to cement business group relationships even when direct commercial ties are absent. Domestic owners own large stakes, often held reciprocally, and over the long term and are rarely sold. Although a small portion of their shares may be used for trading, the bulk of the shares are held for the long term (Gerlach, 1992).

According to the Bank of Japan (2001), most foreign owners tend to be institutional investors from the United States and the United Kingdom, accounting for 40% and 30% of total foreign shareholdings, respectively. Unlike domestic owners who own higher stakes and trade their shares infrequently if at all, foreign investors own relatively small stakes and trade their shares frequently (Charkham, 1994). For example, more than 45% of the stock traded in the first section on the TSE was done by foreign institutions in 1998, up from 10% in 1988 (Kikuchi, 1999). As most of the shares held by domestic owners are not actively traded, active trading of stocks by foreign owners can significantly affect the stock price of a firm.

Moderator Variable

Performance was measured as the ratio of net income to total assets, or return on assets (ROA). We followed prior research on Japanese corporations in choosing to use an accounting rather than a market measure of performance (Gedajlovic & Shapiro, 2002). Previous studies have found ROA to be a stable and reliable measure of Japanese firm performance (e.g., Ahmadjian & Robinson, 2001; Gedajlovic & Shapiro, 2002; Gedajlovic, Yoshikawa, & Hashimoto, 2005).

Control Variables

We included debt, size, and industry controls to account for other factors that might affect wage intensity. Debt financing reduces available free cash by imposing regular interest payments, thereby pressuring a firm to cut back on discretionary expenses (Jensen, 1986) such as wages. We measured *debt* as the ratio of debt to total assets. *Size* was the log of firm sales. Larger firms are traditionally more likely to maintain prevailing employment practices, although by the mid-1990s, large Japanese firms began to feel increasingly pressured to cut back on employees (Ahmadjian & Robinson, 2001). Our control variable for *industry* was the mean value of wage intensity for all the firms in the same two-digit Standard Industrial Classification (SIC) code as a focal firm, as reported by the NEEDS database. Mean industry values of the dependent variable are considered superior to coarser grained controls such as industry dummy variables because they deal specifically with the systematic variance of the dependent variable caused by unobserved fixed effects (Dess, Ireland, & Hitt, 1990).

Table 1
Descriptive Statistics and Correlations[a]

Variable	M	SD	Minimum	Maximum	1	2	3	4	5	6	7	8	9	10	11	12
1. Wage intensity	0.17	0.07	0.01	0.54												
2. Wage intensity—industry	0.16	0.03	0.02	0.23	–.04											
3. Wages/employee	7.54	1.49	1.90	20.69	–.18	.30										
4. Wages/employee—industry	7.45	0.48	6.30	10.36	–.13	.19	.01									
5. Employees (000)	2.27	5.47	0.01	70.38	.07	.01	.09	.22								
6. Employees (000)—industry	0.90	0.46	0.40	2.55	–.02	–.07	–.03	–.06	–.06							
7. Downsize	0.36	0.48	0.00	1.00	–.01	–.02	–.08	–.03	–.13	.13						
8. Downsize—industry	0.10	0.30	0.00	1.00	.35	–.20	–.51	.07	.32	–.03	–.06					
9. Size	10.72	1.40	5.33	15.93	–.41	.40	.17	.63	.24	–.10	–.04	–.09				
10. Debt	0.55	0.22	0.00	3.34	–.10	.02	–.05	.01	–.07	.17	.04	–.02	–.01			
11. Return on assets	0.03	0.04	–0.61	0.29	–.17	.14	.16	.03	.14	–.24	–.07	–.06	.19	–.49		
12. Domestic ownership	0.59	0.14	0.00	0.92	–.10	.20	.05	.09	.08	–.08	.01	–.08	.29	.04	.07	
13. Foreign ownership	0.06	0.09	0.00	0.78	–.19	.15	.03	.37	.20	–.08	–.04	.08	.51	–.27	.25	–0.11

Note: Size is reported as the log of sales. The mean for sales in millions of yen is 154,274.6, and the standard deviation is 469,611.8. For correlations with values greater than .05, $p < .001$.

a. $N = 4{,}980$ (panel data on 996 firms × 5 years).

Table 2
Results of Panel Data Analysis of Wage Intensity[a]

		Analysis								
		General Method of Moments				Generalized Least Squares				
Variable	Hypothesis (Sign)	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8	Model 9
Lagged wage intensity		–.09	–.04	.15***	.11***					
Industry wage intensity		.27***	.23***	–.01	.02	.67***	.64***	.45***	.45***	.69***
Size		–.10***	–.10***	–.06***	–.07***	–.03***	–.04***	–.03***	–.03***	–.02***
Debt		.00	.00	–.01	–.01*	–.01**	–.01*	–.03***	–.02***	–.03***
Domestic ownership	Hypothesis 1 (+)		.11**	.11***	.14***		.04***	.05***	.05***	.02***
Foreign ownership	Hypothesis 2 (–)		–.03	–.12	–.07		.01	.01	.00	–.01
Return on assets (ROA)				–.41***	–.35***			–.28***	–.26***	–.32***
Domestic Ownership × ROA	Hypothesis 3 (–)				–.41***				–.10*	–.12*
Foreign Ownership × ROA	Hypothesis 4 (+)				.58***				.41***	.36***
Model Wald χ^2		636.80	729.56	1,747.48	1,923.81	1,360.71	1,415.06	2,223.87	2,262.60	1,809.82
Model F						54.59***	55.53***	59.42***	59.89***	52.49***
R^2						23.44	24.63	32.66	33.19	26.67
Change in R^2							1.19***	8.03***	0.53***	

a. $N = 4{,}980$ (panel data on 996 firms × 5 years).
*$p < .05$
**$p < .01$
***$p < .001$

Data Analysis

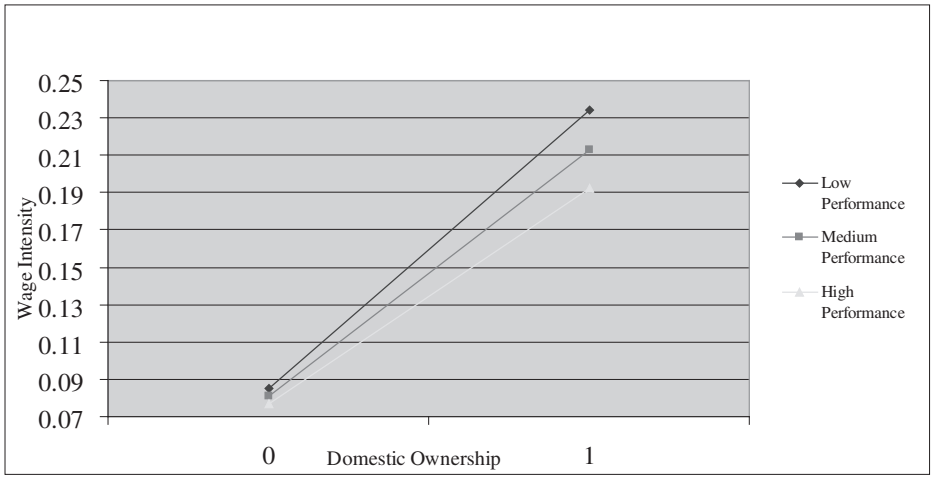
Table 1 reports descriptive statistics and correlations of the variables, and Table 2 presents the results of the panel data analysis. We used panel data, with observations on a set of firms made repeatedly during a period of time, and controlled for lagged values of the dependent variable, wage intensity, as well as for lagged values of other explanatory variables, to obtain consistent estimates of the parameters. White's test of heteroscedasticity and the Arellano-Bond test of first-order autocorrelation indicate that the models are heteroscedastic and autocorrelated (Arellano, 2003). We therefore employed the Arellano-Bond procedure, which is designed for analyzing autoregressive-distributed lag models from panels with many cross-sectional units observed for relatively few time periods via general method of moments (GMM) estimates (Arellano & Bond, 1991).

Using GMM provides improved estimates in the presence of the unknown heteroscedasticity and autocorrelation that often arise in dynamic panels (Arellano, 2003). In addition, panel data analysis accounts for firm-specific heterogeneity that is constant over time, arising, for example, from differences in firm-specific employment practices. Unobserved firm-specific heterogeneity is eliminated by first-differencing or subtracting the lagged values of the regressors. Second, endogeneity issues that arise when explanatory variables are correlated with an error term are easily addressed with panel data. Endogeneity could arise in two ways in our model. If the dependent variable were a function of the error term, and the lagged dependent variable were in turn a function of the dependent variable, the lagged dependent variable would be correlated with the error term. Ownership stakes, which represent a discretionary choice made by both domestic and foreign owners, are determined in part by a firm's prior performance and other unobservable factors, such as the firm's idiosyncratic employment policies, and are therefore potentially correlated with the error term. Prior research has emphasized the importance of modeling endogeneity by using instrumental variables for ownership structure to control for possible reverse causality (Chang, 2003). To do so, we used lagged values of the regressors as instruments of the first-differenced regressors. These instruments were chosen because they were correlated with the first-differenced regressors but not with the error term.

We centered the values of the explanatory variables by subtracting the means to reduce potential multicollinearity in our tests of the interaction effects (Aiken & West, 1991). We examined variance inflation factors (VIFs) to check for multicollinearity and found the values to be less than 2, well below the cutoff value of 10 that indicates excessive multicollinearity (Greene, 2003). Model 4 of Table 2 reports the full results of the dynamic panel data estimation using the GMM procedure.

The GMM residuals are computed with the actual values of the endogenous variables. Thus, the residuals are computed across a different set of regressors than those used to estimate the model, which would lead to inconsistencies in reporting *R*-squared values (Sribney, Wiggins, & Drukker, 2003). Accordingly, in the Arellano-Bond procedure, *R*-squared values are not reported. We therefore present another set of results (Models 5 to 8 in Table 2), based on generalized least squares (GLS) random-effects regression, in order to report the changes in variance explained for a series of hierarchical models (Cohen & Cohen, 1983). GLS models account for heteroscedasticity and autocorrelation but not for firm heterogeneity and

Figure 2
The Relationship Between Wage Intensity and Domestic Ownership Given Firm Performance



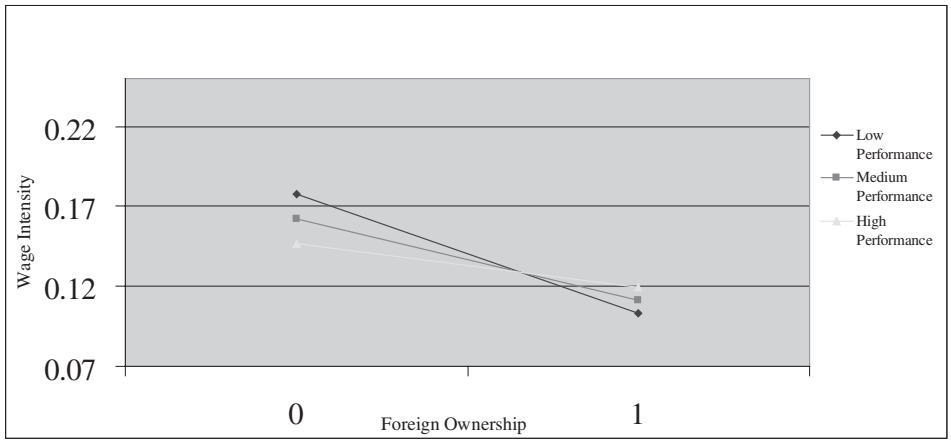
endogeneity and do not control for the impact of lagged dependent variables. However, it allows us to assess the size of the effects and the significance of the size. We found that the GLS model coefficients were very similar to those derived with the GMM model and so were confident that our results were robust to the choice of the model.

Results

We note that the hierarchical GLS models essentially provided results very similar to the more appropriate GMM procedure (compare Model 4 and Model 8). The coefficient for foreign ownership has a negative sign in the GMM estimates and a positive sign in the GLS estimates, but the coefficient is not statistically significant in either model. The changes in *R*-squared were statistically significant in each step. Hypothesis 1, which states that domestic owners enhance wage intensity, is supported by the significant, positive coefficient for domestic ownership. Hypothesis 2, which states that foreign ownership reduces wage intensity, is not supported, as the statistically insignificant coefficient for foreign ownership indicates.

The interaction effects of both foreign and domestic ownership with firm performance are statistically significant in the hypothesized direction. We therefore infer support for Hypotheses 3 and 4, which state that domestic owners enhance wage intensity as performance declines, and foreign owners reduce wage intensity as performance declines. To facilitate interpretation of the interaction effects, we present plots of the relationship between ownership and wage intensity in Figures 2 and 3 (Aiken & West, 1991; Cohen & Cohen, 1983). For the entire range

Figure 3
The Relationship Between Wage Intensity and Foreign Ownership Given Firm Performance



of possible ownership values, we plotted wage intensity at mean levels of the other explanatory variables and performance levels set at low (mean minus one standard deviation), medium (mean), and high (mean plus one standard deviation) values. The plots visually confirm that wage intensity increases as domestic ownership increases (Hypothesis 1) and that the slope is higher at lower levels of firm performance (Hypothesis 3). The plot for foreign ownership indicates a negative slope, but the magnitude is not significantly different from zero (thus failing to support Hypothesis 2). However, the pattern indicates support for an interaction effect (Hypothesis 4) such that at high levels of foreign ownership, wage intensity for low-performance firms is lower than for high-performance firms. At low levels of foreign ownership, low-performance firms have higher wage intensity than high-performance firms.

We note that the changes in *R*-squared, although statistically significant, were of low magnitude. This is consistent with the literature as the values we obtain are very *similar* to those reported in similar research examining effects of ownership structure on firm performance in Japanese corporations. Specifically, our *R*-squared changes of 1.19, 8.03, and 0.53 are very similar to values of 1% and 0.2% reported by Gedajlovic and Shapiro (2002) and Lincoln et al. (1996). There may be two reasons for the relatively low magnitudes of *R*-squared changes. First, *R*-squared statistics are based on GLS models, and these may be misestimated in dynamic panel data analysis involving lagged dependent variables. Another reason may be that ownership, although statistically significant, may not inherently explain much variance because wage decisions are complex and also depend on a number of other factors. Thus, we feel that the *R*-squared values should be taken as suggestive rather than conclusive evidence and be interpreted cautiously. A closer examination of the fully standardized coefficients (beta

Table 3
Results of Panel Data Analysis of Wages/Employee, Number of Employees, and Downsizing[a]

	Hypothesis (Sign)	Wages/Employee GMM	Employees GMM	Downsizing Probit
Wages per employee—lagged		0.18***		
Employees—lagged			1.02***	
Wages per employee—industry		0.49***		
Employees—industry			0.07	
Downsizing—industry				0.49***
Size		0.72***	0.42***	–0.03
Debt		1.15***	0.32*	0.45***
Domestic ownership	Hypothesis 1 (+)	2.96*	2.29**	–0.64***
Foreign ownership	Hypothesis 2 (–)	–4.68*	–3.00***	–0.10
Return on assets (ROA)		4.67***	–1.32	–7.24***
Domestic Ownership × ROA	Hypothesis 3 (–)	1.06	–1.92	–10.05*
Foreign Ownership × ROA	Hypothesis 4 (+)	–7.11	–0.09	9.27
Model Wald χ^2		248.20***	3,478.46***	336.72***

Note: GMM = general method of moments.
a. N = 4,980 (panel data on 996 firms × 5 years).
*$p < .05$
**$p < .01$
***$p < .001$

coefficient multiplied by the variance of the independent variable divided by the variance of the dependent variable) indicates that wage intensity increases by 0.28 standard deviations for every 1 standard deviation increase in domestic ownership. That is, a 1 standard deviation increase in domestic ownership increases wage intensity by 12%, suggesting that domestic owners do have a meaningful impact.

We report one additional model (Model 9) in order to test the robustness of our model to alternate measures of moderator and control variables. Firm size can be measured using alternate measures such as size, assets, and employees (Hitt, Hoskisson, Johnson, & Moesel, 1996). Furthermore, firm performance can be measured as absolute ROA or ROA adjusted for industry. Because many of the firms are diversified, adjustment for industry ROA can provide a better measure of relative performance. Ideally, ROA should be adjusted for weighted industry performance (the multiple of the ratio of sales in each industry to industry ROA) (Stimpert & Duhaime, 1997). We do not have access to industry segment data, and we therefore adjusted for mean industry ROA based on reported two-digit SIC codes (similar to Hitt et al., 1996). Results using log of total assets as a measure of firm size and adjusted ROA (difference between firm and industry ROA) are reported in Model 9. The results are substantially very similar to our other models and provide additional evidence of the robustness of our findings to alternate measures.

To test the robustness of our model to the specification of the dependent variable, we present additional analysis in Table 3 using alternate operationalizations of the dependent variable. We follow prior research in reporting results for wages per employee (Bertrand &

Mullainathan, 1999), number of employees (Brown & Medhoff, 1988), and layoffs measured as a decrease in number of employees in excess of 5% between previous and current year (Ahmadjian & Robinson, 2001). Out of a total of 4,980 firm-years, 1,794 (36%) had employee reductions in excess of 5%, 1,786 (36%) had employee reductions in excess of 0% but less than 5%, 57 (1%) had no change, and 1,343 (27%) had an increase in number of employees. Overall, these numbers indicate a downward trend in employment that is consistent with Ahmadjian and Robinson (2001).

The results across all three measures are consistent with Hypothesis 1; domestic ownership is positively associated with wages per employee and number of employees, and negatively with downsizing, indicating that domestic owners support human capital investments. We also find some support for Hypothesis 2; foreign ownership is negatively associated with wages per employee and number of employees, but, in contrast to Ahmadjian and Robinson (2001) who reported a positive effect, we find no effect on downsizing. We did not find significant interaction effects. The only significant interaction effect, domestic ownership with performance, has a negative effect on downsizing. Contrary to Hypothesis 3, this indicates that domestic owners are more likely to reduce pressures for downsizing when performance is high than when performance is low. These mixed findings indicate that more research is probably needed on the *type* of employee laid off. If layoffs involve reduction in low-wage employees, average wages per employee will rise; conversely, a reduction in high-wage employees will result in a decrease of average wage per employee.

Summary of Results

In sum, we found that domestic investors supported investments in human capital. Furthermore, this positive effect was stronger when performance was low. Foreign ownership had the opposite effect on human capital investments. Foreign ownership reduced wage intensity, but this relationship was observed only when performance was low; foreign ownership was not associated with wage intensity when performance was high.

We interpret the strongest of these results to mean that the effect of domestic owners is consistent with their role as an institutional safeguard to facilitate asset-specific human capital investments. Their long-term ownership and infrequent sales of shares serve to attenuate short-term capital market pressures and the threat of takeovers, thereby making it easier for managers to support implicit long-term contracts that protect employee interests (Lee & O'Neill, 2003). Our empirical results lend support to Aguilera and Jackson's statement that "the strategic interests and long-term commitment of capital support managerial alignment with employees and facilitate investments in firm-specific skills and stable employment" (2003: 460).

Our results show that foreign owners sought to reduce wage intensity only when performance was low, as indicated by the positive coefficient for the interaction of performance with foreign ownership. This can be interpreted to mean that foreign investors likely view wages as discretionary expenditure that can be adjusted downward if necessary to cut costs. They are thus likely to pressure poorly performing firms to demonstrate a commitment to cost cutting. This result is congruent with the agency view that owners strictly concerned with financial

returns are willing to oppose implicit long-term contracts if they appear to conflict with profit maximization goals.

Discussion

Research Implications

Our results reinforce the need to integrate stakeholder theory and transaction cost theory to agency theory to develop a richer understanding of corporate governance. Agency theory is based on the assumption of profit-maximizing principals (Jensen & Meckling, 1976), yet principals may have divergent preferences and ideas on how to maximize those preferences. Transaction cost theory suggests that governance mechanisms are needed to safeguard employees' firm-specific human capital investments from ex post expropriation (Williamson, 1985). Combined with stakeholder theory, which highlights the importance of considering the interests not just of shareholders but also of other stakeholders (Freeman, 1984), we believe that this more general framework affords us a more comprehensive approach of modeling the complex relationships between different groups of principals, management, and other stakeholders.

Integrating stakeholder theory helps us extend prior findings in agency theory. Prior research has shown evidence of profit redistribution from shareholders to managers as managers may use their power to expropriate wealth, for example, through excessive pay (Hambrick & Finkelstein, 1995). Similarly, profit redistribution may occur from minority to majority shareholders, as powerful majority shareholders may use their power to expropriate wealth (Chang, 2003; Claessens et al., 2002). Gedajlovic and Shapiro (2002) demonstrated profit redistribution effects when owners transfer profits from more profitable to less profitable firms in their portfolio. Similarly, our findings may be interpreted as a form of profit redistribution from shareholders to employees and vice versa. Thus, although agency theory limits itself to relationships between owners and shareholders, integrating stakeholder theory permits us to extend governance research to provide insights about a broader set of stakeholders.

Directions for Future Research

Although Japanese firms have struggled to cope with the 1990s' economic downturn by reducing wage intensity (Mroczkowski & Hanaoka, 1997), our results suggest that the presence of domestic ownership mitigated some of the pressure. Nevertheless, the influence of domestic owners was not enough to completely negate the need for cost cutting, which was exacerbated by the presence of foreign owners. The practice of lifetime employment has come under threat during this time (Ahmadjian & Robinson, 2001), and more research is needed to determine if Japanese corporations can continue to use such implicit contracts.

The operationalization of our wage intensity construct does not separate the wages paid to executives and employees, which exposes our results to the interpretation that when domestic owners are de facto committed to maintaining wage intensity, top management may exploit

this fact to protect their own wages by disproportionately reducing employee expenses. Although future studies can unpack the wage measure to ensure that such explanations are ruled out, the study's specific context suggests that this interpretation may not hold. Japanese executives are promoted from within so they tend to be sympathetic to the interests of employees. A Japanese CEO's wage is on average 20 times lower than that of a comparable U.S. firm and only 10 times, compared to 350 times for a U.S. firm, the average employee's wage (Wahlgren, 2001). Thus, ceteris paribus, executive wages account for a smaller share of total labor costs than in a comparable U.S. firm.

We have noted that the impact of dominant owners on wage intensity is small. Because wages represent one of the largest cost components, we feel that there *should* be more of an impact on the human capital policy of the firm. In poor economic environments, firms are constantly looking for ways to improve operational efficiency, and trimming discretionary expenses on employment is one. The relationship is likely to be complex, being mediated by, for example, technological intensity, life-cycle stage, or other human capital investments such as training. Thus, future research should aim to build more comprehensive models linking ownership structure and wage intensity by including strategy and structure constructs.

More research is needed on the processes used by various shareholder groups to influence decisions in the boardroom. Ultimately, managers, not shareholders, make decisions on strategic investments, which boards of directors ratify. Therefore, an important future research question concerns the role of boards, their structure, and their internal processes in relation to shareholders' preferences. Our research suggests that the influence mechanisms of domestic and foreign shareholders are likely to be different. The large and long-term holdings of domestic owners provide them direct access to the boardroom. Foreign investors with smaller ownership shares and shorter holding periods are less likely to enjoy the same direct channels of influence. Instead, their ability to vote with their feet by selling stock, combined with the power of moral suasion, confers indirect and perhaps substantial influence over the boardroom. Such influence may increase over time as foreign investors provide an increasing amount of liquidity, and thus lower cost of capital, to a market's equity stock.

Although we examined manufacturing companies in Japanese corporations, we believe that our findings are generalizable. First, human capital is at least as important in service firms as in manufacturing firms because the creation of economic wealth depends on management's ability to induce employees to make firm-specific asset investments (Blair & Roe, 1999). Second, foreign owners of Japanese corporations are likely to be U.S.-based institutional investors who focus on financial interests. Third, as with Japanese domestic owners, founding families in the United States such as Ford, Disney, Hewlett, Packard, or Busch are likely to view their ownership stakes as more than a financial interest (Carlock & Florent-Treacy, 2002; Lowenstein, 2004; Orwall & Lubin, 2004). Thus, similar ownership relationships are likely to be observed across national contexts.

However, this does not mean that context is unimportant. Appropriate mechanisms, which depend on the laws and social practices embedded in a national context (Aguilera & Jackson, 2003), are needed to safeguard long-term, irreversible, firm-specific investments in human capital. In U.S. corporations, efficient external labor markets may obviate the need for implicit guarantees of lifetime employment. Instead, firms use contingent pay, stock options, and employee ownership to motivate firm-specific investments in human capital. In German cor-

porations, the principle of codetermination explicitly safeguards employee investment in human capital by providing employees with representation on the supervisory board. Thus, we believe that a fruitful direction for future research lies in understanding how diverse institutional environments can affect the ability of corporate governance systems to mediate the claims of stakeholders and protect the firm's value-creating potential.

Managerial Implications

Ultimately, managers make resource allocation decisions by balancing multiple pressures. Capital markets may pressure poorly performing firms to reduce employee head count and/or reduce wages to improve immediate cash flows. However, cutting employee wages during a period of poor firm performance may discourage employees from making future firm-specific investments and potentially hurt long-term competitiveness. In addition to human capital, pressures to cut costs may affect other strategic investments such as intellectual capital and physical capital. Our results suggest that investors with long-term interests tend to protect employee wages, whereas those with more short-term interests favor wage cuts and layoffs during performance declines. Navigating these opposing pressures from diverse owners is challenging, and managers must be cognizant of the preferences of their most influential shareholders. More research is needed to understand how managers can balance conflicting demands from shareholders and ultimate effects on firm performance.

Our study demonstrates that absent *patient* investors, firms that perform poorly are likely to find it difficult to justify high wages and thus face greater pressures to cut cost by reducing wage intensity. This result is congruent with the agency theory view of the atomistic value-maximizing investor who is willing to rewrite implicit long-term contracts if they appear to conflict with profit maximization goals. In addition, our study extends agency theory research by showing that governance mechanisms are needed not just to shape the relationships between principals and agents but also to provide an institutional safeguard for key stakeholders that have an eventual impact on the future value of a firm through the choices they make today.

Principals with strict profit maximization concerns appear to use a principal-agent calculus, wherein individual profit maximization is the main objective, and stakeholders are treated as constraints on the maximization of this objective. Principals with broader agendas such as the coordination of strategic actions may view profit maximization from the perspective of a collective system or group of firms and owners (Lincoln et al., 1996). Therefore, their decisions to protect employee interests are entirely rational and consistent with that perspective. In sum, principals committed to long-term ownership can provide safeguards for implicit contracts to facilitate valuable long-term, firm-specific investments in human capital.

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