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ABSTRACT

Corporate diversification benefits employees by decreasing unemployment risks associated with the financial distress and bankruptcy of their firms. However, its implications for wages are ambiguous. This paper examines the possibility that the effect of diversification on wages is contingent upon employee bargaining power based on Japanese data. I find that diversified firms pay higher (lower) wages than representative-focused firms in the same industries when their employees are unionized (nonunionized). This pattern is robust to alternative measures of employee power and the controls for unobserved heterogeneity and endogeneity. My results suggest that diversification is valuable for powerful organizational insiders even when it is not for shareholders.

***JEL classification*:** G34; J31; L25

***Keywords*:** Corporate diversification, Wage, Union, Organizational capital, Japan

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Introduction

The effect of corporate diversification on shareholder wealth has been intensely debated since the 1990s. Berger and Ofek (1995) and Lang and Stulz (1994) find that diversified firms trade at a discount relative to a portfolio of focused firms in the same industry. The diversification discount identified by these and ensuing studies raises many important questions. In particular, if the value of diversification is negative for shareholders, why do managers diversify their firms? A standard answer to this question is that self-interested managers pursue private benefits associated with firm scope. For instance, Amihud and Lev (1981) note that the wealth of managers depends critically on firm survival, as their most important asset is firm-specific human capital. Accordingly, managers have a strong incentive to diversify their firm to reduce bankruptcy risks.

Moreover, how does diversification affect firm value?[1] An influential view is that diversification generates inefficiencies in internal capital markets (Shin and Stulz, 1998; Scharfstein and Stein, 2000; Rajan, Servaes, and Zingales, 2000). However, researchers have provided other explanations as well. For instance, Schoar (2002) suggests that diversified firms overpay their employees. She finds that the plants of diversified firms are more productive than those of focused firms. Nevertheless, diversified firms bear excessive labor costs because they pay wage premiums that are larger than justified by their productivity advantage. Schoar (2002) suggests that costly labor potentially explains a large fraction of the stock market discount for diversified firms.

Employees are important corporate stakeholders who may capture a large share of the value generated by their firm (Zingales, 2000). A growing body of research indicates that as

[1] Whether the discount for diversified firms is caused by diversification itself is a debated issue. Campa and Kedia (2002) and Villalonga (2004) demonstrate that when the endogeneity of firm scope is accounted for, diversification discounts disappear or even turn to a premium. Hoechle, Schmid, Walter, and Yermack (2012) and Ushijima (2016) provide evidence for diversification discounts that is robust to various controls for endogeneity.

organizational insiders, employees exert a large influence on the financial and non- financial polices of their firm (e.g., Atanassov and Kim, 2009; Bae, Kang, and Wang, 2011; Agrawal and Matsa, 2013; Simintzi, Vig, and Volpin, 2014). Therefore, whether and how employees benefit from corporate diversification is of considerable interest to understand its causes and consequences. Nevertheless, the value of diversification for employees has been barely studied in the literature. The present article seeks to partially fill this gap by estimating the effect of firm scope on wages.

Diversification likely benefits employees by increasing employment stability. The coinsurance effect, which decreases the distress and bankruptcy risks of diversified firms by stabilizing corporate-level cash flows (Lewellen, 1971), improves the job security of employees as well as managers. Moreover, as stressed by Tate and Yang (2015), diversified firms have the ability to reallocate labor from unpromising to promising businesses without discontinuing employment. However, the employment-stabilizing effect of diversification renders its effect on wages ambiguous. On the one hand, diversified firms may pay less to employees than focused firms because firms that offer greater job security can hire risk-averse workers with lower wages in competitive labor markets. On the other hand, a lower risk of job loss may enable workers to bargain more aggressively in wage negotiations, and consequently, diversified firms may overpay their employees, as suggested by Schoar (2002).[2] Therefore, the effect of diversification on wages may differ sharply depending on whether employees have bargaining power in wage determination. The present paper examines this possibility based on firm-level wage data.

My sample is publicly traded Japanese firms from 2001 to 2010. Public firms in Japan are required to report the per capita cash compensation of permanent employees in financial

[2] Tate and Yang (2015) posit that the job security of diversified firms increases employees' incentives to invest in human capital and thereby wages. I discuss this channel in Section I.B.

statements. Based on this information and Berger and Ofek's (1995) methodology to estimate diversification discounts (premiums), I create an excess measure of firm wage. That is, I measure a firm's wage relative to that of focused firms by matching the firm's industrial segments with representative focused firms in the same industry. The excess wage reveals that diversified firms pay wages that are, on average, 5 to 6% higher than those of focused firms. The wage premium is particularly large for diversified firms with a unionized workforce. The mean excess wage of unionized diversified firms is 10% higher than that of focused firms in the same industries.

Multivariate regressions reveal that the univariate statistics cited above overstate the effect of firm scope. In particular, consistent with the notion that firms that offer more-secure jobs can attract workers with lower wages, the effect of diversification on wages is significantly negative for nonunionized firms. For unionized firms, however, the effect of diversification is significantly positive even when other determinants of firm wages are controlled for. Therefore, the effect of diversification on wages is highly contingent upon employee bargaining power. Regressions also reveal that the effect of firm scope increases in magnitude with the degree of diversification. That is, more-diversified firms pay higher (lower) wages when their employees are unionized (nonunionized).

As a robustness check, I also examine an alternative measure of employee power. Zingales (2000) suggests that the ability of employees to appropriate value stems from their contribution to organizational capital, which makes a firm worth more than the sum of its parts. Although organizational capital is difficult to quantify, Lev and Radhakrishnan (2005) and Eisfeldt and Papanikolaou (2013) claim that the selling, general, and administrative (SGA) expense serves as an empirical proxy for investment in it. Following their approach, I measure the importance of employees' labor in corporate value creation with the share of labor cost

reported as SGA rather than the cost of goods sold (CGS). I find that the effect of diversification on wages is significantly positive (negative) for firms with a high (low) share of SGA labor cost. Moreover, the positive (negative) effect of diversification increases in magnitude for unionized (nonunionized) firms with a high (low) share of SGA labor cost. Therefore, the differential effects of firm scope are robust to alternative measures of employee power. I find that the effects are also robust to the controls for omitted variables and the endogeneity of firm scope and unionization.

To summarize, evidence presented in this article suggests that diversification benefits employees especially when they have strong power to appropriate value. Employees are important stakeholders who can exert a large influence on corporate policies from inside the firm. Bertrand and Mullainatahn (1999 and 2003), Cronqvist et al. (2009), and Pagano and Volpin (2005) suggest that managers ally with employees to maintain organizational peace and to resist external control pressures. The results documented herein suggest that industrial diversification is a common form of firm growth in part because it benefits organizational insiders, especially powerful ones, even when it decreases shareholder wealth.

The rest of this article is organized as follows. To develop hypotheses, the next section considers how diversification potentially affects wages. Section II introduces data and the excess measure of firm wages. Section III presents the main regression results. Section IV performs robustness checks. The final section concludes this article.

I. Hypothesis development

A. Diversification and job security

Firms with multiple business lines can use cash flow generated by a business to fulfill the debt obligations of other businesses. Because of this coinsurance effect, diversification decreases the financial distress and bankruptcy risks of engaging firms, making them attractive

borrowers to creditors (Lewellen, 1971). Consistent with this view, Mansi and Reeb (2002) and Glaser and Muller (2010) demonstrate that the discount for diversified firms diminishes when the market value of debt is used to compute firm value, while Aivazian, Qiu, and Rahaman (2015) find that diversified firms borrow at lower loan rates than comparable focused firms. The coinsurance effect also implies that the employees of diversified firms are better protected from the risk of losing jobs due to restructuring or bankruptcy than those of focused firms. Singhal and Zhu (2013) demonstrate that diversification decreases the likelihood that a firm will file for Chapter 11 bankruptcy. Therefore, as Amihud and Lev (1981) stress for executive managers, diversification mitigates the unemployment risk of employees. This effect can be strengthened by the internal labor market of diversified firms, which enables them to reallocate labor across businesses without discontinuing employment (Tate and Yang, 2015).

Although employment stability provided by diversification is beneficial for employees, its implications for wages are ambiguous because of opposing effects. On the one hand, the theory of compensating wage differential in labor economics suggests that if wages are determined competitively and employees are risk averse, firms with greater job security pay lower wages in equilibrium (e.g., Abowd and Ashenfelter, 1981). This theory implies that by offering more-secure jobs, diversified firms are able to hire and retain workers at wages that are lower than those of focused firms. Evidence supplied by Chemmanur, Cheng, and Zhang (2013) on the effects of debt on executive and employee compensation lends indirect support to this scenario. They find that, ceteris paribus, more-conservatively financed, and thus safer, firms pay less to executives and regular employees.

At the same time, diversification may mitigate a dilemma faced by employees in collective bargaining whereby high wages can destabilize employment by increasing the

operating leverage and, therefore, the riskiness of their firms.[3] This dilemma can be particularly serious for core employees whose jobs are protected by lifetime employment contracts, because their payroll is often the largest fixed cost of their firm (Shleifer and Summers, 1988). If diversification enables employees to bargain more aggressively by increasing firm stability, the relationship between a firm's industrial scope and wages can be positive. There is substantial evidence that the bargaining power of employees is inversely associated with the riskiness of their firm. Benmelech, Bergman, and Enriquez (2012) document that airlines tend to renegotiate wages downward in times of financial distress. Matsa (2010) shows that firms strategically use debt to curb the power of unions. Hanka (1998) finds that the effect of financial leverage on firm wages is significantly negative.

A hypothesis suggested by the above discussion is that the effect of diversification on wages is positive (negative) when employees have strong (weak) bargaining power. For instance, diversification may result in higher wages when employees are unionized and therefore have strong power to appropriate value by limiting labor supply. In contrast, the employees of a nonunionized diversified firm may accept lower wages in exchange for greater job security because they are unshielded from competition in external labor markets. Hence, a possible test of the hypothesis is to compare the effects of diversification on the wages of unionized and nonunionized firms. In the sections that follow, I conduct this test based on firm-level wage data of Japanese firms.

B. Other scenarios

The above hypothesis is not the only possible scenario regarding how corporate diversification affects wages. I briefly consider other scenarios before moving on to empirical

[3] Chen, Kacperczyk, and Ortiz-Molina (2011) provide evidence that unions increase the operating leverage and cost of equity of firms.

analyses. Rose (1991) posits that diversification increases the bargaining power of firms over unions, but not vice versa, because diversified firms can endure longer strikes than focused firms by cross-subsidizing businesses. If internal capital markets generate such a “deep pocket” effect, the effect of diversification on the wages of unionized firms can be negative rather than positive.

Tate and Yang (2015) posit that diversification positively affects wages by increasing labor productivity. Diversified firms can shift labor from businesses with poor prospects to those with promising opportunities without discontinuing employment. Such internal reallocation increases the incentives and opportunities of employees to invest in human capital, which in turn improves their productivity. Consistent with this view, the authors find that the labor productivity of diversified firms is higher than that of focused firms. They also find that when entering the external labor market, the employees of diversified firms experience smaller wage losses than employees of focused firms.

The perspectives of Tate and Yang (2015) and the present study are highly complementary because the intra-firm mobility of labor and that of capital both increase diversified firms’ ability to respond to industry shocks, thus increasing the job security of employees. Accordingly, the internal capital market may also promote human-capital investment, while the internal labor market may reinforce the effects discussed in the previous subsection. At the same time, in considering how diversification affects wages, Tate and Yang (2015) and the present study focus on different routes. In particular, Tate and Yang (2015) stress an effect mediated by labor productivity. Because this effect is unlikely to change direction depending on employee power, comparing unionized and nonunionized firms while controlling for human capital and productivity can help separate potentially coexisting effects.

II. Data

A. Empirical setting

My research sample is publicly traded Japanese firms. JGAAP (Japanese generally accept accounting principles) requires firms to disclose the average per capita cash compensation of permanent employees in *Yukashoken-Hokokusho* (Japanese equivalent of 10-K). Based on this information and segmental reporting, I measure the relative wage of diversified firms over the portfolio of focused firms in the same industries. That is, I adopt the excess measure approach developed by Berger and Ofek (1995) in their seminal contribution to the diversification discount literature. There is considerable evidence that interindustry wage differentials are large and persistent (Thaler, 1989). Diversified and focused firms can reward employees differently merely because they are distributed differently across industries. The excess measure approach addresses this problem by matching a diversified firm's segments to focused firms in the same industries.

Research has shown that diversified firms in Japan are traded at a discount relative to focused firms (Lins and Servaes, 1999; Ushijima, 2016). However, diversification can be highly valuable for the employees of Japanese firms. As is well known, the core employees of large Japanese firms are protected by the implicit lifetime employment contract (Ono, 2010). Corporate diversification is likely to increase the enforceability of the contract by lowering firm risks. Diversification may also increase the power of unions, which are predominantly organized at the firm-level in Japan. The bargaining power of enterprise unions is seriously undermined when firms fall into financial distress.

B. Sample

The sample is based on firms that were publicly traded between 2001 and 2010.

Consistent with previous studies, I define firms as diversified if they have multiple segments that belong to different four-digit industries. The sample begins in 2001 because JGAAP introduced segmental reporting in 2000. Since that year, all public firms have been required to report segmental revenue, operating income, assets, and depreciations if they have a segment whose revenue, operating income, or assets exceed 10% of the sum of all segments. In 2011, JGAAP adopted the management approach for segmental reporting in place of the traditional industry approach. The sample ends in 2010 to avoid potential discontinuities that may have been the result of this change in accounting standards.

I obtain segmental data from the Nikkei NEEDS-FinancialQuest database, which assigns up to three Japan Standard Industrial Classification (JSIC) codes to each segment. When a segment has more than one JSIC code, I use the first (primary) code to define its industry.[4] I exclude firms for which the sum of segmental sales exceeds or falls short of the firm-level sales by 1% or more. Firms with negative equity, financial firms (JSIC 6100-6750), firms with a segment in these industries based on the primary JSIC code, and firms with a segment coded "9999" (unclassifiable industries) are also excluded. For the reason described below, I also exclude holding companies. After excising observations with extreme values, the sample includes 28,488 observations (firm-years).

C. Excess wage

I define the excess wage of firm *i* in year *t* as follows:

$$Excess\ \ wage_{it} = ln\left(\frac{Wage_{it}}{Imputed\ \ wage_{it}}\right),$$

[4] When multiple segments within a firm share the same primary 4-digit code, I merge them into one.

where *Wage* is the annual per capita compensation (salaries and bonuses) of permanent employees, as obtained from the Nikkei NEEDS database, and *Imputed wage* is the hypothetical wage, that is, the wage employees would have earned if they had worked for representative focused firms in the same industries.

The imputed wage is defined as the employment-weighted average of industry median wages. That is,

$$Imputed\ \ wage_{it} = \sum_j \left(\frac{Employment_{ijt}}{\sum_j Employment_{ijt}} \right) \times \widehat{Wage_{jt}} \quad ,$$

where *Employment* is the number of employees of segment *j* and $\widehat{Wage}$ is the median wage of focused firms in industry *j*. Therefore, excess wage is positive (negative) if a firm pays a premium (discounted) wage compared to representative focused firms in the same industries. I match a segment to a four-digit industry if five or more focused firms exist in the industry. If the four-digit industry contains less than five focused firms, matching is performed at the finest lower digit level at which five or more focused firms exist.

Unlike segmental sales and assets, segmental employment is a discretionary reporting item and is therefore not available for all multi-segment firms. In the present sample, the share of multi-segment firms that report segmental employment is 94%. As a sensitivity check, I also perform estimations that use segmental sales and assets as the weight for industry wage. Another caveat is that JGAAP requires reporting firms to disclose the wages of direct employees. Accordingly, the present data do not cover the wages of subsidiary employees who, on average, account for 30% of the total (consolidated) employment of sample firms. Excluding subsidiary employees has pros and cons. On the one hand, it eliminates noises due to international wage differentials because the employees of foreign subsidiaries may earn wages

that are substantially different from those of domestic employees. On the other hand, it is problematic for holding companies, which perform all productive activities in subsidiaries. Because the direct employees of a holding company include only headquarters staff, their compensation is unlikely to be a good proxy for the wages of regular (subsidiary) employees. Holding companies are omitted from the sample for this reason.

D. Univariate analysis

Table I compares the nominal and excess wages between focused and diversified firms.[5] As reported in the third column, approximately 50% of sample firms are diversified during the sample period. I find that diversified firms, on average, pay higher wages than focused firms. When all years are pooled, both the mean and median nominal wages are 9% higher for diversified firms. These differences can be a reflection of interindustry wage differentials rather than the effect of firm scope if firms diversify into high-wage industries. However, the excess wages of diversified firms tabulated in the last two columns show that diversified firms, on average, pay higher wages than focused firms even when industry distribution is adjusted for. The mean and median excess wages of diversified firms are in the range of 5% to 7% and are significantly different from zero.

My hypothesis is that employee bargaining power moderates the effect of firm scope on wages. As a preliminary test of the hypothesis, Table II compares the mean and median excess wages of four groups of firms that are partitioned based on unionization and industrial scope. I find that regardless of whether a firm is diversified or focused, the mean and median excess wages are significantly positive for unionized firms and negative for nonunionized firms. The difference between unionized and nonunionized firms is particularly large for diversified

[5] The Japanese consumer price index is virtually constant from 2001 to 2010. The deviation between nominal and real wages is thus negligibly small.

firms. The mean excess wage of unionized diversified firms is 12 percentage points higher than that of nonunionized diversified firms. The data thus provide prima facie evidence that unionization moderates the effect of firm scope.

III. Regressions

A. Model

The univariate statistics reported in the preceding section can be confounded by many factors. To estimate the effect of diversification on the wages of unionized and nonunionized firms, this section performs regression analyses. The dependent variable is the excess wage introduced earlier. The baseline model is specified as follows:

$$Excess\ \ wage_{it} = \alpha + \beta \cdot Div_{it} + \gamma \cdot Union_{it} + \delta \cdot Div_{it} \cdot Union_{it} + \theta \cdot Z_{it} + \eta_t + \epsilon_{it},$$

where *Div* is a dummy variable that takes one for diversified firms and zero for focused firms. *Union* is a dummy variable for unionized firms. The model includes the interaction between diversification and union dummies to highlight the moderating role of unions. Z is a vector of control variables. η is a year fixed effect.

My control variables include employee human capital and firm productivity. Tate and Yang's (2015) analysis suggests that controlling these factors is crucial for reliably identifying the direct effect of diversification. Following the labor economics literature, I measure human capital by the internal and external experiences of employees. JGAAP stipulates that in addition to the average wage, firms must report the average age and tenure of permanent employees. I measure internal experience by the logged average tenure of employees. External experience is measured by the logged value of the average age minus average tenure minus fifteen. Because

fifteen is the age at which Japan's compulsory education ends, this variable mainly captures the length of higher education for employees who stay with the same firm after graduating school. However, for firms with high employee turnover, it also captures the previous working experience of employees. I measure firm productivity with the logged value added per employee.

In addition to these variables, all of my regressions control for Tobin's Q, R&D and marketing intensities, firm size, and financial leverage. I control for Tobin's Q because firms with ample growth opportunities may pay high wages to fulfill their increasing demand for labor. I define Tobin's Q as the sum of market equity and liabilities divided by total assets. R&D and marketing intensities measure intangible assets that may generate rents shared by employees. R&D and marketing intensities may also capture the quality of human capital. For instance, R&D-intensive firms are likely to employ relatively more personnel with advanced degrees in science and engineering. R&D intensity is defined as R&D expenditure divided by sales. Marketing intensity is the sum of advertising and sales promotion expenditures divided by sales.

There is considerable evidence that larger firms pay higher wages (Oi and Idson, 1999). Controlling for the size effect is crucial because firm size and scope are positively correlated. I measure firm size with logged total assets. My measure of leverage is debt over market equity. Evidence on the effect of leverage on wages is mixed. Hanka (1998) find that leveraged firms pay lower wages and employ relatively more temporary workers than conservatively financed firms. These patterns suggest that financial leverage crowds out operating leverage. However, Chemmanur, Chen, and Zhang (2013) find that more-leveraged firms pay higher wages, consistent with the view that firms that impose greater unemployment risks on employees need to compensate for the risks by paying more.

Table III reports the descriptive statistics of regression variables that are jointly and separately tabulated for focused and diversified firms. I find that diversified firms are significantly more likely to be unionized than focused firms: the share of unionized firms in diversified firms is 67%, compared to 49% for focused firms. Diversified firms are also significantly larger, more leveraged, and more productive than focused firms. The positive correlation between firm scope and leverage is consistent with the notion that diversified firms have greater debt capacity because of the coinsurance effect.

B. Main results

Table IV reports estimation results. The specification for Column (1) omits the interaction effect between diversification and unionization. The coefficient for diversification is positive and significant. Therefore, diversified firms, on average, pay higher wages than focused firms even when other determinants of wages are controlled for. However, the estimated wage premium of diversified firms is 1.1%, which is considerably smaller than that suggested by univariate statistics. For U.S. firms, Schoar (2002), using plant-level data, estimates that the mean wage premium of diversified firms is 2.3%.[6] In Column (1), the coefficient for the union dummy is also significantly positive, indicating that unionized firms, on average, pay higher wages than nonunionized firms.

Column (2) introduces the interaction effect. In this specification, the main effect of diversification is negative and highly significant. The estimated coefficient implies that, ceteris paribus, the wages of nonunionized diversified firms are 1.7 percentage points lower than those of representative focused firms. In contrast, the coefficient on the interaction term is significantly positive and larger in absolute value than the main effect of diversification. The

[6] Tate and Yang's (2015) regression reported in their Online Appendix suggests that diversified firms pay 2.2% higher wages than focused firms.

sum of these coefficients implies that the wages of unionized diversified firms are 3.0 percentage points higher than those of focused firms in the same industries. A t-test rejects the hypothesis that the sum of the coefficients is zero, with a p-value of .0001. Therefore, the regression lends support to the hypothesis that employee power differentiates the effect of firm scope on wages. Interestingly, the main effect of unions is significantly negative in this specification. Therefore, unionized focused firms, on average, pay lower wages than nonunionized focused firms when other factors are accounted for. This result probably reflects the tendency of employees to form a union as a response to adversarial shocks on their firm. Section IV.B provides evidence for such a tendency.

Columns (3) and (4) separate unionized and nonunionized firms for subsample estimations. The estimated effects of diversification differ in direction between the two sets of firms. The effect of diversification is significantly negative in Column (3), where the estimation sample is nonunionized firms. On average, the employees of nonunionized diversified firms earn 1.4% lower wages than those of focused firms in the same industries. In contrast, as reported in Column (4), the effect of diversification is positive and significant when the estimation sample is limited to unionized firms. The estimated coefficient for diversification implies that unionized diversified firms pay 1.7% higher wages than focused firms. The hypothesis that the effects of diversification are the same between nonunionized and unionized firms is rejected, with a p-value of 0.000.[7]

Turning to control variables, I find that the coefficients for most variables have the anticipated signs. In particular, the coefficients for internal and external experiences and logged value added per employee are significantly positive, confirming that firms with more-productive employees pay higher wages. The effects of Tobin's Q and R&D and marketing

[7] This test is conducted by stacking the wage regressions of nonunionized and unionized firms.

intensities are also positive and significant. In contrast, the estimated effect of the debt-to-equity ratio is negative, suggesting that financial leverage crowds out operating leverage, as claimed by Hanka (1998).

C. Alternative wage and firm scope measures

Next, I examine the sensitivity of the above-documented results to alternative measures of firm wage and scope. Table V reports the regression results. For brevity, I report only the coefficients for terms involving diversification and unionization. Panel A tabulates regressions that use segmental sales or assets as the weight for industry median wages. That is, the dependent variable is the sales-based excess wage for Columns (1) to (3) and the asset-based excess wage for Columns (4) to (6).[8] I find that the estimation results are not sensitive to the choice of weight. In the full-sample estimations reported in Columns (1) and (4), the main effect of diversification is significantly negative, but the interaction effect between diversification and unionization is significantly positive and larger in absolute value than the main effect. Subsample estimations also confirm that diversification oppositely affects the wages of nonunionized and unionized firms. While the effect of diversification is significantly negative for nonunionized firms, as reported in Columns (2) and (5), it is significantly positive for unionized firms, as reported in Columns (3) and (6).

The regressions reported in Panel B adopt alternative measures of firm scope. The dependent variable is the employment-based excess wage. The specifications for Columns (1) to (3) measure firm scope with the logged number of industrial segments. In the full-sample estimation reported in Column (1), the main effect of firm scope is significantly negative.

[8] The sum of segmental assets can greatly deviate from firm assets because of corporate and unallocated assets. Following Berger and Ofek (1995), the reported estimations based on asset-based excess wage retain firms in the sample insofar as the deviation is no more than 25%.

However, the interaction effect between firm scope and unionization is significantly positive and larger in absolute value than the main effect. The subsample estimations reported in Columns (2) and (3) show that the effect of firm scope is significantly negative for nonunionized firms and significantly positive for unionized firms. In Columns (4) to (6), firm scope is measured by the diversification index, which is defined as one minus the Herfindahl index of segmental sales. As reported in Column (5), the effect of diversification is negative but only marginally significant (p =.101) for nonunionized firms. Otherwise, the estimated effects of firm scope are qualitatively unchanged from the previous results.

Overall, the regressions performed in this section show that while unionized diversified firms pay higher wages than comparable focused firms, nonunionized diversified firms pay lower wages. Diversification therefore exerts opposite effects on the wages of unionized and nonunionized firms. This asymmetry is consistent with the hypothesis that job security provided by diversification has differential implications for wages depending on employee bargaining power.

IV. Robustness checks

A. Organizational capital

The differential effects of firm scope on wages identified in the preceding section were previously unreported. This section therefore performs a battery of robustness tests. First, I consider an alternative measure of employee power. Unions increase employees' ability to appropriate value by limiting labor supply. Zingales (2000) suggests that an alternative source of employee power is their contribution to organizational capital—the ability of a firm to create value that is greater than the sum of its parts. Employees whose labor is an important ingredient of such firm-specific ability, which is also known as distinctive capability or core competence

in the strategic management literature, are likely to have a bargaining edge in capturing value generated by their firm.

Organizational capital is difficult to quantify. However, Lev and Radhakrishnan (2005) and Eisfeldt and Papanikolaou (2013) advance that selling, general, and administrative expenses (SGA) serve as an empirical proxy for investment in organizational capital. Building on their approach, I measure employees' contribution to organizational capital by the share of labor cost reported as SGA rather than the cost of goods sold (CGS).[9] Specifically, the share of SGA labor cost in total labor cost is measured as follows:

$$\text{SGA labor cost share} = \frac{SGA\ \ labor\ \ cost}{CGS\ \ labor\ \ cost + SGA\ \ labor\ \ cost}\ .$$

The mean (median) value of this ratio is .541(.463), while the standard deviation is .321. To the extent that SGA expenses capture organizational capital, the ratio takes a large value for firms that treat employees' labor as an essential input for value creation. I therefore expect that employees' power to appropriate value increases with the above ratio.

Table VI reports regressions that use the SGA labor cost share as a measure of employee power. Column (1) is for the baseline specification. The main effect of SGA labor cost share is positive and highly significant, suggesting that employees who contribute more to value creation earn higher wages. Consistent with previous estimations, the main effect of diversification is significantly negative, while the interaction effect between diversification and SGA labor cost share is significantly positive. The estimated coefficients imply that the effect of diversification changes from negative to positive as the SGA labor cost share increases. The

[9] Public firms in Japan are required to report the breakdown of CGS and SGA as notes to the financial statement. The labor cost disclosed in these notes includes not only the wages of permanent employees but also the wages of temporary employees, social security payments, and fringe benefits.

estimated threshold is .274, which is well within the sample distribution of the share.

The regression reported in Column (2) jointly estimates the effects of organizational capital and unions. The coefficients for the SGA labor cost share and its interaction with diversification remain positive and significant. The main effect of unions and the interaction effect between unionization and diversification are also significantly different from zero and are similar to the previous estimates. These results confirm that unionization and SGA labor cost capture different sources of employee power. In addition, both variables suggest that the effect of diversification on wages is negative (positive) when employee bargaining power is low (high).

Columns (3) to (6) examine the combined effect of unions and organizational capital by partitioning firms into four groups. The estimation sample for Column (3) is nonunionized firms with a low (below-median) SG&A labor cost share. For these firms, in which employee power is expected to be weakest, the effect of diversification is significantly negative. When diversified, these firms, on average, pay wages that are 3.3 percentage points lower than those of focused firms. Column (6) examines unionized firms with a high (above-median) SG&A labor cost share. The effect of firm scope is significantly positive for these firms, which likely have the most powerful employees. When diversified, these firms pay wages that are 3.2 percentage points higher than those of focused firms in the same industries. Columns (4) and (5) examine nonunionized firms with a high SG&A labor cost share and unionized firms with a low SG&A labor cost share, respectively. For these firms, in which employee power is likely be moderate, the effect of firm scope is insignificant or weakly positive. These results lend further support to the hypothesis that employee power importantly moderates the effect of diversification on wages.

B. Organizational structure

As noted in Section II.C, the present data do not cover wages paid to employees affiliated with subsidiaries. A potential problem of excluding subsidiary employees is that diversification may pick up the effect of organizational structure rather than firm scope. Firms often use subsidiaries as an organizational vehicle for diversification (Ushijima, 2016). If they also use subsidiaries to separate low- and high-wage jobs, diversification can capture intra-firm wage differentials. To examine this possibility, I perform regressions that incorporate the ratio of subsidiary employees in total employment as an additional control variable.[10]

Regression results are reported in Columns (1) to (3) of Table VII. As reported in the first two columns, the coefficient for the subsidiary employee ratio is positive and highly significant for the full-sample estimation and the subsample estimation for nonunionized firms. These results suggest that firms generally pay lower wages to subsidiary employees than to direct employees. However, as reported in Column (3), the effect of the subsidiary employee ratio is not significant for the wages of unionized firms, perhaps because unions oppose wage inequality among affiliates. These patterns notwithstanding, the estimated effects of firm scope are comparable to previous estimates and show that diversification oppositely affects the wages of unionized and nonunionized firms.

C. Employee treatment and attributes

Diversified and focused firms may reward employees differently because their personnel policies and labor demand are different. The regressions reported in the last three columns of Table VII examine this possibility by incorporating three additional control

[10] The number of subsidiary employees is estimated as consolidated minus unconsolidated employment. It is set to zero if a firm does not file consolidated financial statements.

variables—the ratios of female and managerial employees and the employee treatment index.[11] These variables are taken from *Toyo Keizai*'s CSR Database, which is based on proprietary annual surveys conducted by *Toyo Keizai*. The employee treatment index measures non-pecuniary aspects of a firm's employee treatment and takes an integer value from one (worst) to five (best) based on *Toyo Keizai*'s rating. A disadvantage of incorporating these variables is that the sample size is substantially reduced because the initial year of the CSR Database is 2006, and firm response to the *Toyo Keizai*'s survey is voluntary.

The estimation results show that the coefficients for the female and managerial employee ratios are significantly negative and positive, respectively, suggesting that there are important employee attributes that are left uncontrolled in previous estimations. The effect of the employee treatment index is also significant across the board. The positive coefficient for the index suggests the firms that treat employees better also reward them better. When these factors are controlled for, diversification loses power to explain the wages of nonunionized firms: the main effect of diversification in Columns (4) and (5) is not significantly different from zero. However, the effect of diversification is significantly positive for the wages of unionized firms. The estimated coefficient for the diversification dummy in Column (6) suggests that unionized diversified firms, on average, pay 4.4% higher wages than focused firms in the same industries.

D. Endogeneity

The endogeneity of firm scope is a debated issue in the diversification discount literature (Campa and Kedia, 2004; Villalonga, 2004). If low-value firms grow across industries, a discount for diversified firms can arise even without a causal effect of firm scope. Similarly,

[11] Managerial employees are defined as employees whose job title is *bucho* (general managers) or higher authority.

if a firm's ability/willingness to pay high wages and its incentive to diversify are correlated, ignoring such a correlation can result in a biased estimate of the effect of firm scope on wages. For instance, if firms with more-productive employees are more likely to diversify, divarication can pick up the effect of unobserved human capital on wages. To mitigate this concern, this section performs regressions with firm fixed effects, which absorb the influence of any unobserved permanent factors.

Table VIII reports the estimation results. I find that the longitudinal regression results are very similar to the pooled cross-sectional regression results. In the full-sample estimation reported in Column (1), the main effect of diversification is significantly negative, while the interaction effect between diversification and unionization is significantly positive and larger in absolute value than the main effect. The subsample regressions reported in Columns (2) and (3) also show that the effect of diversification is significantly negative (positive) for nonunionized (unionized) firms.

Regressions with firm fixed effects are robust to endogeneity associated with permanent firm attributes. However, they do not address endogeneity caused by time-varying factors. To address both types of endogeneity, the fixed effects regressions reported in Columns (4) and (5) separate unionized and nonunionized firms and instrument the diversification dummy with the lagged share of diversified firms in the 3-digit industry. The estimated effects of diversification are qualitatively unchanged from previous estimates. The coefficients for diversification are significantly negative for nonunionized firms and significantly positive for unionized firms, as reported in Columns (4) and (5), respectively. Moreover, the effect of firm scope becomes larger in absolute value when diversification is instrumented. The estimated coefficients imply that nonunionized (unionized) diversified firms pay wages that are approximately 7% lower (5% higher) than those of focused firms. These results suggest that the

differential effects of diversification on the wages of unionized and nonunionized firms are not a spurious outcome of the endogeneity of firm scope.

E. Employee self-selection

Thus far, I have assumed that employee unionization is exogenously given. However, employees can form a union based on the anticipated benefits and costs of engaging in collective bargaining. If the factors underlying this choice also affect wages, the previous regressions can suffer self-selection biases. In practice, the longitudinal variation of unionization is small in the present data, suggesting that the value of union is relatively constant for the employees of a given firm.[12] Accordingly, the fixed effects regressions reported in the preceding section may have addressed this issue as well as the endogeneity of firm scope. This section performs two-step regressions as an additional check.

In the first step, I estimate a probit model of the probability that a firm is unionized. The second step involves wage regressions separately performed for unionized and nonunionized firms. To correct for selection biases, the second-step regressions include the inverse Mills ratio obtained from the probit. The inverse Mills ratio is defined as $\phi(z\gamma)/\Phi(z\gamma)$ for unionized firms and $-\phi(Z\gamma)/[1-\Phi(Z\gamma)]$ for nonunionized firms, where Z is a vector of probit variables, γ is associated parameters, and ϕ and Φ are the standard normal density and distribution functions, respectively. The predictors of the probit model are lagged by one year and include the diversification dummy, a dummy for negative net income, the ratio of unionized firms in the firm's 3-digit industry, and all control variables of the wage regression. The negative net income dummy is included to examine the possibility that employees form a union when their jobs and wages are threatened by adversarial shocks on their firm.

[12] The number of nonunionized sample firms that became unionized in 2001 to 2010 is 67, whereas the number of unionized sample firms that became nonunionized is 29.

The estimation results are reported in Table IX. Column (1) shows the probit regression result. The coefficient for the negative net income dummy is significantly positive, consistent with the view that unionization is induced by adversarial shocks. Interestingly, the coefficients for the internal and external experiences of employees have the opposite signs. They suggest that firm-specific (general) human capital increases (decreases) the likelihood of unionization, perhaps because Japanese unions are predominantly organized at the firm level. The positive and significant coefficient for the share of unionized firms in the industry indicates that unions cluster by industry.

Columns (2) and (3) report the wage regression results for nonunionized and unionized firms, respectively. In both regressions, the coefficient for the inverse Mills ratio is positive and significant, suggesting that employees form a union when the anticipated benefit of engaging in collective bargaining is large. This evidence for self-selection notwithstanding, the coefficient for the diversification dummy is significantly negative for nonunionized firms and significantly positive for unionized firms. Moreover, the estimated effects of diversification are comparable in magnitude to previous estimates.

Overall, the results reported in this section confirm that the effect of firm scope on wages is importantly moderated by employee bargaining power. Diversification increases the job security of employees by improving a firm's ability to respond to external shocks. My results suggest that in exchange for greater job security, the employees of diversified firms accept discounted wages when their bargaining power is low. However, employees with strong power turn firm stability to their advantage in wage negotiations and thereby obtain premium wages.

V. Conclusion

Even when diversification decreases the wealth of shareholders, it may benefit other corporate stakeholders. In examining this possibility, researchers have almost exclusively focused on managerial agency problems. However, managerial decisions can be influenced by other non-shareholder stakeholders, especially core employees who, as organizational insiders, have close contact with managers. Nevertheless, the value of diversification for employees has barely been studied in the literature. The present article contributes to filling this gap partially by estimating the effect of diversification on wages.

I find that the effect of diversification on wages is highly contingent upon employee bargaining power in that it is significantly positive for unionized firms and significantly negative for nonunionized firms. This asymmetry is robust to alternative measures of employee power and the controls for unobserved heterogeneity and endogeneity. The evidence therefore suggests that the value of diversification is particularly large for powerful employees who may share many interests with managers as organizational insiders. This observation provides an explanation for why industrial diversification is a common form of corporate growth despite its adversarial effect on shareholder wealth.

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Table I: Nominal and excess wages of focused and diversified firms

This table tabulates the mean and median wages of focused and diversified firms. The sample is publicly traded non-financial Japanese firms from 2001 to 2010. Diversified firms are defined as firms that operate multiple segments that are distinct at the 4-digit level. The nominal wage is the average annual salary and bonuses of permanent employees. Excess wage is the logged ratio of nominal wage to imputed wage. The imputed wage is the segmental-employment-weighted value of the median wage of focused firms in the same industries. *** denotes significant at the 0.01 or higher level.

Year	# observations	Ratio of diversified firms	Nominal wage (million yen)				Excess wage			
			Focused firms		Diversified firms		Focused firms		Diversified firms	
			Mean	Median	Mean	Median	Mean	Median	Mean	Median
2001	2,191	0.513	5.521	5.487	5.963	5.845	-0.009	0.000	0.058 ***	0.050 ***
2002	2,726	0.489	5.403	5.355	5.911	5.771	-0.003	0.000	0.064 ***	0.068 ***
2003	2,769	0.486	5.335	5.293	5.798	5.672	-0.007	0.000	0.055 ***	0.053 ***
2004	2,782	0.491	5.374	5.315	5.832	5.756	-0.005	0.000	0.055 ***	0.056 ***
2005	2,862	0.483	5.450	5.422	5.924	5.829	0.000	0.000	0.056 ***	0.055 ***
2006	2,916	0.483	5.495	5.410	5.994	5.931	-0.005	0.000	0.059 ***	0.057 ***
2007	2,941	0.479	5.522	5.461	6.058	5.950	-0.007	0.000	0.056 ***	0.050 ***
2008	2,928	0.483	5.520	5.430	6.058	5.948	-0.005	0.000	0.062 ***	0.053 ***
2009	2,796	0.483	5.470	5.366	5.982	5.912	-0.007	0.000	0.060 ***	0.055 ***
2010	2,742	0.487	5.227	5.111	5.691	5.594	-0.008	0.000	0.059 ***	0.059 ***
Total	27,653	0.487	5.432	5.358	5.922	5.828	-0.006	0.000	0.058 ***	0.055 ***

Table II: Mean and median excess wage by firm scope and unionization

This table presents the mean (upper) and median (lower) excess wages of firms grouped by firm scope (focused/diversified) and unionization (nonunionized/unionized). Diversified firms are firms that operate multiple segments that are distinct at the 4-digit level. Unionized firms are firms with a union. The number of observations is reported in brackets. A signed-rank test is performed to test the significance of the medians. The significance of the difference in median is based on the rank-sum test. *** Significantly different from zero at the 0.01 or higher level.

	Focused	Diversified	Difference (Diversified -Focused)
Nonunionized	-0.033 ***	-0.022 ***	0.011 ***
	-0.021 ***	-0.029 ***	-0.008 **
	[7,311]	[4,444]	
Unionized	0.023 ***	0.098 ***	0.075 ***
	0.014 ***	0.096 ***	0.082 ***
	[6,875]	[9,023]	
Difference (Unionized - Nonunionized)	0.055 ***	0.119 ***	
	0.035 ***	0.125 ***	

Table III: Descriptive statistics of excess wage regression variables

This table reports the mean and standard deviation (in parenthesis) of the dependent and independent variables of excess wage regressions. Diversification and union dummies take one for diversified and unionized firms, respectively. Internal experience is the logged average tenure of employees. External experience is the log of average employee age minus average tenure minus fifteen. Tobin's Q is the market value of equity plus book liabilities over total assets. R&D (advertising) intensity is R&D (advertising) expenditure over sales. Leverage is debt over the market value of equity. Brackets indicate p-values associated with the reported difference in mean between focused firms and diversified firms.

	(1) Full sample N=27,653	(2) Focused N=14,187	(3) Diversified N=14,301	(4) Difference (2) - (3)
Excess wage	0.025	-0.006	0.058	-0.064
	(0.196)	(0.175)	(0.211)	[0.000]
Diversification dummy	0.487	0.000	1.000	-
	(0.500)	(0.000)	(0.000)	-
Union dummy	0.575	0.485	0.670	-0.185
	(0.494)	(0.500)	(0.470)	[0.000]
Internal experience	2.413	2.281	2.553	-0.272
	(0.601)	(0.638)	(0.526)	[0.000]
External experience	2.303	2.349	2.255	0.093
	(0.317)	(0.302)	(0.324)	[0.000]
Logged value added/employee	2.618	2.578	2.660	-0.081
	(0.602)	(0.580)	(0.622)	[0.000]
Tobin's Q	1.180	1.262	1.093	0.168
	(1.193)	(1.553)	(0.605)	[0.000]
R&D intensity	0.015	0.015	0.016	0.000
	(0.029)	(0.031)	(0.026)	[0.276]
Marketing intensity	0.014	0.016	0.012	0.004
	(0.034)	(0.036)	(0.031)	[0.000]
Logged total assets	10.35	9.872	10.85	-0.974
	(1.501)	(1.299)	(1.536)	[0.000]
Leverage	0.867	0.690	1.053	-0.362
	(1.278)	(1.133)	(1.390)	[0.000]

Table IV: The effects of diversification on excess wages of unionized and nonunionized firms

This table reports the regressions for estimating the effect of diversification on wages. The dependent variable is excess wage. The diversification dummy takes one for firms with multiple 4-digit segments. The union dummy takes one for unionized firms. Other explanatory variables are as defined in the text and Table III. All regressions include year fixed effects. The estimation sample for Columns (1) and (2) are all firms. Columns (3) and (4) perform separate regressions for unionized nonunionized firms. Parentheses indicate robust standard errors clustered by firms. *** Significant at the 0.01 level. ** Significant at the 0.05 level. * Significant at the 0.10 level.

	Full sample	Full sample	Nonunionized	Unionized
	(1)	(2)	(3)	(4)
Diversification dummy	0.011 ***	-0.017 ***	-0.012 ***	0.019 ***
	(0.002)	(0.003)	(0.003)	(0.002)
Union dummy	0.011 ***	-0.010 ***		
	(0.002)	(0.003)		
Diversification * Union		0.047 ***		
		(0.004)		
Internal experience	0.065 ***	0.066 ***	0.053 ***	0.137 ***
	(0.003)	(0.003)	(0.004)	(0.005)
External experience	0.052 ***	0.055 ***	0.067 ***	0.085 ***
	(0.005)	(0.005)	(0.008)	(0.006)
Logged value added/employee	0.121 ***	0.121 ***	0.120 ***	0.122 ***
	(0.003)	(0.003)	(0.004)	(0.003)
Tobin's Q	0.007 ***	0.007 ***	0.005 **	0.006
	(0.003)	(0.002)	(0.002)	(0.004)
R&D intensity	0.449 ***	0.441 ***	0.585 ***	0.177 ***
	(0.038)	(0.038)	(0.057)	(0.045)
Marketing intensity	0.240 ***	0.250 ***	0.340 ***	0.164 ***
	(0.030)	(0.030)	(0.045)	(0.039)
Logged total assets	0.039 ***	0.039 ***	0.033 ***	0.044 ***
	(0.001)	(0.001)	(0.002)	(0.001)
Leverage	-0.021 ***	-0.021 ***	-0.018 ***	-0.025 ***
	(0.001)	(0.001)	(0.001)	(0.001)
Year fixed effects	Yes	Yes	Yes	Yes
R-squared	0.390	0.393	0.292	0.430
# Observations	27,653	27,653	11,755	15,898

Table V: Sensitivity checks of the effects of diversification on wages

This table reports regressions that use alternative measures of excess wages (Panel A) and firm scope (Panel B). Only the coefficients for terms involving firm scope and union dummy are reported. The dependent variable for Columns (1) to (3) of Panel A is excess wage, using segmental sales in weighing industry wages. The dependent variable for Columns (4) to (6) is excess wage, using segmental assets as the weight. The dependent variable for the Panel B regressions is employment-based excess wage. The diversification measure for Columns (1) to (3) of Panel B is the logged number of 4-digit industry segments. Columns (4) to (6) of Panel B measure firm scope with the diversification index (one minus the revenue-based Herfindahl index). Control variables are the internal and external experiences of employees, logged value added per employee, Tobin's Q, R&D and advertising intensities, logged total assets, and leverage. Parentheses indicate robust standard errors clustered by firms. *** Significant at the 0.01 level. ** Significant at the 0.05 level. * Significant at the 0.10 level.

	(1)	(2)	(3)	(4)	(5)	(6)
Panel A: Alternative excess wage measures						
	Sales-based excess wage			Asset-based excess wage		
	Full sample	Nonunionized	Unionized	Full sample	Nonunionized	Unionized
Diversification	-0.018 ***	-0.014 ***	0.017 ***	-0.025 ***	-0.019 ***	0.012 ***
	(0.003)	(0.003)	(0.002)	(0.004)	(0.004)	(0.003)
Union dummy	-0.011 ***			-0.013 ***		
	(0.003)			(0.003)		
Diversification * Union	0.047 ***			0.048 ***		
	(0.004)			(0.004)		
# Observations	28,488	12,125	16,363	24,956	10,616	14,340
Panel B: Alternative diversification measures						
	Logged # segments			Diversification index		
	Full sample	Nonunionized	Unionized	Full sample	Nonunionized	Unionized
Diversification	-0.015 ***	-0.011 ***	0.010 ***	-0.024 ***	-0.013	0.014 ***
	(0.003)	(0.003)	(0.002)	(0.007)	(0.008)	(0.005)
Union	-0.005 *			0.002		
	(0.003)			(0.003)		
Diversification * Union	0.036 ***			0.062 ***		
	(0.003)			(0.009)		
# Observations	27,653	11,755	15,898	27,653	11,755	15,898

Table VI: Regressions of excess wage with alternative measures of employee power

This table reports regressions of employment-based excess wages that use alternative measures of employee bargaining power. The SGA labor cost share is the share of labor cost reported as SGA expense in total labor cost. The estimation sample for Columns (1) and (2) is all firms. The sample of the Column (3) regression is nonunionized firms with a low (below-median) SGA labor cost share. The estimation sample for Column (4) is nonunionized firms with a high (above-median) SGA labor cost share. The estimation sample for Column (5) is unionized firms with a low SGA labor cost share. The estimation sample for Column (6) is unionized firms with a high SGA labor cost share. All regressions include year fixed effects. Parentheses indicate robust standard errors clustered by firm. *** Significant at the 0.01 level. ** Significant at the 0.05 level. * Significant at the 0.10 level.

	Full sample	Full sample	Low SGA labor cost & nonunionized	High SGA labor cost & nonunionized	Low SGA labor cost & unionized	High SGA labor cost & unionized
	(1)	(2)	(3)	(4)	(5)	(6)
Diversification dummy	-0.012 ***	-0.061 ***	-0.033 ***	0.000	0.007 **	0.032 ***
	(0.004)	(0.005)	(0.005)	(0.004)	(0.003)	(0.004)
SGA labor cost share	0.014 ***	0.008 *				
	(0.004)	(0.004)				
Diversification * SGA labor cost	0.045 ***	0.069 ***				
	(0.006)	(0.006)				
Union dummy		-0.010 ***				
		(0.003)				
Diversification * Union		0.061 ***				
		(0.004)				
Internal experience	0.073 ***	0.068 ***	0.048 ***	0.060 ***	0.114 ***	0.159 ***
	(0.003)	(0.003)	(0.007)	(0.004)	(0.009)	(0.007)
External experience	0.047 ***	0.052 ***	0.021 *	0.100 ***	0.069 ***	0.081 ***
	(0.005)	(0.005)	(0.012)	(0.010)	(0.007)	(0.010)
Logged value added/employee	0.118 ***	0.118 ***	0.136 ***	0.109 ***	0.147 ***	0.091 ***
	(0.003)	(0.003)	(0.006)	(0.005)	(0.006)	(0.004)
Tobin's Q	0.008 ***	0.007 ***	0.011 ***	0.005 *	0.008 *	0.004
	(0.003)	(0.003)	(0.003)	(0.003)	(0.005)	(0.005)
R&D intensity	0.461 ***	0.448 ***	0.452 ***	0.644 ***	0.166 **	0.096 *
	(0.038)	(0.038)	(0.074)	(0.077)	(0.078)	(0.054)
Marketing intensity	0.184 ***	0.195 ***	0.264 **	0.320 ***	0.021	0.015
	(0.030)	(0.030)	(0.104)	(0.050)	(0.093)	(0.042)

Table VI continued

Logged total assets	0.040 ***	0.039 ***	0.030 ***	0.035 ***	0.042 ***	0.050 ***
	(0.001)	(0.001)	(0.003)	(0.002)	(0.001)	(0.002)
Leverage	-0.022 ***	-0.022 ***	-0.019 ***	-0.019 ***	-0.025 ***	-0.024 ***
	(0.001)	(0.001)	(0.002)	(0.002)	(0.001)	(0.002)
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
R-squared	0.394	0.400	0.274	0.302	0.433	0.443
# Observations	27,647	27,643	4,348	7,407	9,472	6,426

Table VII: Regressions of excess wage with additional control variables

This table reports the regressions of employment-based excess wages with additional control variables. The subsidiary employment ratio is consolidated employment minus unconsolidated employment divided by consolidated employment. The female employee ratio is the share of female employees in the total workforce. The managerial employee ratio is the share of employees whose title is "*bucho*" (general manager) or higher. The employee treatment index measures the non-pecuniary aspects of employee treatment based on Toyo Keizai's rating. The female employee and managerial employee ratios and the employee treatment index are taken from the CSR database of Toyo Keizai. The estimation sample for Columns (1) and (2) is all firms without missing data. The sample of Columns (2) and (4) is nonunionized firms. The sample of Columns (3) and (6) is unionized firms. All regressions include year fixed effects. Parentheses indicate robust standard errors clustered by firm. *** Significant at the 0.01 level. ** Significant at the 0.05 level. * Significant at the 0.10 level.

	Full sample	Nonunionized	Unionized	Full sample	Nonunionized	Unionized
	(1)	(2)	(3)	(4)	(5)	(6)
Diversification dummy	-0.021 ***	-0.021 ***	0.019 ***	0.018	0.010	0.044 ***
	(0.003)	(0.003)	(0.002)	(0.011)	(0.012)	(0.007)
Union dummy	-0.010 ***			-0.029 ***		
	(0.003)			(0.010)		
Diversification * Union	0.048 ***			0.028 **		
	(0.004)			(0.013)		
Subsidiary employee ratio	0.029 ***	0.053 ***	0.000	0.009	0.057 **	-0.013
	(0.004)	(0.007)	(0.005)	(0.013)	(0.024)	(0.014)
Internal experience	0.065 ***	0.052 ***	0.137 ***	0.098 ***	0.068 ***	0.175 ***
	(0.003)	(0.004)	(0.005)	(0.013)	(0.017)	(0.019)
External experience	0.054 ***	0.063 ***	0.085 ***	0.106 ***	0.114 ***	0.129 ***
	(0.005)	(0.008)	(0.006)	(0.016)	(0.029)	(0.020)
Female employee ratio				-0.133 ***	-0.165 ***	-0.086 *
				(0.036)	(0.052)	(0.047)
Managerial employee ratio				0.652 ***	0.451 ***	0.675 ***
				(0.097)	(0.135)	(0.126)
Employee treatment index				0.028 ***	0.019 **	0.033 ***
				(0.004)	(0.009)	(0.005)
Logged value added/employee	0.121 ***	0.119 ***	0.122 ***	0.096 ***	0.106 ***	0.091 ***
	(0.003)	(0.004)	(0.003)	(0.007)	(0.016)	(0.007)
Tobin's Q	0.007 ***	0.005 **	0.006	0.023 ***	0.023 **	0.018
	(0.002)	(0.002)	(0.004)	(0.008)	(0.011)	(0.013)

Table VII continued

R&D intensity	0.423 ***	0.559 ***	0.177 ***	-0.002	0.248	-0.185
	(0.038)	(0.057)	(0.045)	(0.101)	(0.164)	(0.119)
Marketing intensity	0.256 ***	0.350 ***	0.164 ***	0.494 ***	0.813 ***	0.309 ***
	(0.030)	(0.045)	(0.039)	(0.077)	(0.157)	(0.090)
Logged total assets	0.037 ***	0.030 ***	0.044 ***	0.034 ***	0.038 ***	0.033 ***
	(0.001)	(0.002)	(0.001)	(0.003)	(0.006)	(0.003)
Leverage	-0.021 ***	-0.018 ***	-0.025 ***	-0.018 ***	-0.016 **	-0.023 ***
	(0.001)	(0.001)	(0.001)	(0.004)	(0.007)	(0.005)
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
R-squared	0.395	0.296	0.430	0.539	0.496	0.509
# Observations	27,653	11,755	15,898	2,256	650	1,606

Table VIII: Fixed effects regressions of excess wages

This table reports regressions of employment-based excess wages with firm fixed effects. All regressions also include year fixed effects. In Columns (5) and (6), the diversification dummy is instrumented by the lagged share of diversified firms in the same 3-digit industry. The estimation sample for Column (1) is all firms. The sample of Columns (2) and (5) is nonunionized firms, while the sample of Columns (3) and (6) is unionized firms. Parentheses indicate standard errors. *** Significant at the 0.01 level. ** Significant at the 0.05 level. * Significant at the 0.10 level.

	Fixed effects regressions			Fixed effects IV regressions	
	Full sample	Nonunionized	Unionized	Nonunionized	Unionized
	(1)	(2)	(3)	(5)	(6)
Diversification dummy	-0.013 ***	-0.012 ***	0.011 ***	-0.067 **	0.047 **
	(0.003)	(0.004)	(0.003)	(0.027)	(0.022)
Union dummy	-0.025 ***				
	(0.007)				
Diversification * Union	0.021 ***				
	(0.005)				
Internal experience	0.104 ***	0.080 ***	0.141 ***	0.085 ***	0.145 ***
	(0.004)	(0.006)	(0.007)	(0.006)	(0.007)
External experience	0.056 ***	0.106 ***	0.038 ***	0.106 ***	0.041 ***
	(0.006)	(0.011)	(0.007)	(0.011)	(0.007)
Logged value added/employee	0.052 ***	0.051 ***	0.054 ***	0.048 ***	0.053 ***
	(0.002)	(0.003)	(0.002)	(0.003)	(0.002)
Tobin's Q	0.002 ***	0.001 **	0.006 ***	0.002 *	0.007 ***
	(0.001)	(0.001)	(0.002)	(0.001)	(0.003)
R&D intensity	0.101 **	0.043	0.266 ***	0.024	0.292 ***
	(0.049)	(0.063)	(0.084)	(0.067)	(0.086)
Marketing intensity	0.030	0.072	-0.068	0.048	-0.058
	(0.047)	(0.068)	(0.065)	(0.071)	(0.065)
Logged total assets	0.046 ***	0.038 ***	0.059 ***	0.051 ***	0.059 ***
	(0.002)	(0.004)	(0.003)	(0.005)	(0.004)

Table VIII continued

Leverage	-0.006 ***	-0.003 **	-0.010 ***	-0.003 ***	-0.010 ***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Year fixed effects	Yes	Yes	Yes	Yes	Yes
Firm fixed effects	Yes	Yes	Yes	Yes	Yes
R-squared	0.8929	0.8737	0.9016	-	-
# Observations	27,653	11,755	15,898	11,043	15,753

Table IX: Two-step selection models of excess wages

This table reports two-step regressions of employment-based excess wages. Column (1) reports the first-step probit estimation, in which the dependent variable is the dummy for unionized firms. Negative net income is a dummy for firms with negative net income. Share of unionized firms is the share of unionized firms in the 3-digit industry. All repressors of the probit are lagged by one year. Columns (2) and (3) estimate the second-step regressions of excess wages for nonunionized and unionized firms, respectively. The inverse Mills ratio is as defined in the text and based on the probit estimation result. Parentheses indicate standard errors. *** Significant at the 0.01 level. ** Significant at the 0.05 level. * Significant at the 0.10 level.

Dependent variable	Union dummy	Excess wage	Excess wage
Sample	Full	Nonunionized	Unionized
	(1)	(2)	(3)
Diversification	-0.006	-0.012 ***	0.020 ***
	(0.022)	(0.003)	(0.003)
Negative net income	0.117 ***		
	(0.029)		
Share of unionized firms	2.141 ***		
	(0.044)		
Internal experience	1.068 ***	0.063 ***	0.227 ***
	(0.040)	(0.004)	(0.007)
External experience	-0.319 ***	0.064 ***	0.083 ***
	(0.049)	(0.007)	(0.006)
Logged value added/employee	-0.003	0.119 ***	0.124 ***
	(0.023)	(0.003)	(0.002)
Tobin's Q	0.057 ***	0.011 ***	-0.001
	(0.010)	(0.002)	(0.003)
R&D intensity	-2.692 ***	0.548 ***	0.199 ***
	(0.356)	(0.052)	(0.050)
Marketing intensity	-0.597 **	0.350 ***	0.159 ***
	(0.281)	(0.047)	(0.040)
Logged total assets	0.230 ***	0.036 ***	0.053 ***
	(0.010)	(0.002)	(0.001)
Leverage	-0.003	-0.019 ***	-0.025 ***
	(0.008)	(0.001)	(0.001)
Inverse Mills ratio		-0.015 ***	0.105 ***
		(0.006)	(0.005)
Year Dummies	Yes	Yes	Yes
Log Likelihood	-9477.1	-	-
Psuedo R-square/R-square	0.421	0.301	0.452
# Observations	24,083	10,067	14,016