

*Foreign Ownership and the Structure of Wages in Japan*

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ABSTRACT

We examine differences in the structure of wages between domestic establishments and foreign-owned establishments in Japan. Our empirical analysis uses high-quality wage datasets from the Japanese government. We construct a large employer-employee matched database consisting of 50,000 establishments matched with a sample of approximately 1 million workers in the year 1998.

Our results confirm that foreign-owned establishments in Japan pay higher wages than domestic establishments even after accounting for human capital and industry composition. We estimate that a one percentage increase in foreign ownership share of equity raises wages by 0.3 percent.

Our results also highlight the distinction in the structure of wages between domestic and foreign-owned establishments. Tenure effects on wages are considerably weaker among foreign-owned establishments, where wages are determined more by general skills as observed by the higher returns to education and work experience. These effects become more pronounced among establishments with a higher share of foreign ownership.

Women in foreign-owned establishments earn more than women in domestic establishments, resulting in a smaller gender wage gap among foreign-owned establishments. Given the high degree of gender segregation and the lack of long-term prospects for women in Japan, foreign-owned establishments may be one source of "brain-drain" for highly-skilled women in the Japanese labor market.

Keywords: foreign ownership, structure of wages, gender wage gap  
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## **Introduction**

Inward foreign direct investment (FDI) and the operations of foreign firms in Japan has long been a subject of debate among economists, policymakers and the media. While some protectionists perceive inward FDI as a threat to the domestic industry, proponents view the infusion of foreign capital as an effective force in restructuring the Japanese economy (Blomström, Konan and Lipsey 2001). Furthermore, the Japanese government's renewed pledge to increase FDI levels in the future suggests that policymakers are now focusing more on the benefits of FDI rather than its costs.

This paper examines the interactions between FDI and wages in the Japanese labor market. One of the benefits of FDI for the host economy suggested by earlier studies is that foreign firms may pay higher wages than do domestic firms. However, these studies have been confined mostly to developing countries, and their findings have been limited due to data and methodological limitations. Although there is abundant circumstantial evidence, our knowledge regarding the various links among FDI, human capital, and wage formation is still sketchy, particularly among the developed countries. Our research aims to fill this void by examining the structure of wages among foreign-owned establishments in Japan. Our empirical analysis uses high-quality wage datasets from the Japanese government. We construct a large employer-employee matched database consisting of 50,000 establishments matched with a sample of approximately 1 million workers in the year 1998. Detailed information concerning individuals and firms allows us to isolate the impact of foreign ownership on wages.

This paper addresses the questions: Do foreign firms pay higher wages than domestic firms in Japan? How are wages determined among foreign firms, and how do they differ from domestic firms? If wage premiums exist, to what extent are they explained by the so-called

unique features of the Japanese labor market such as seniority and lifetime employment, and high degrees of gender segregation?

Our results indicate that workers in foreign-owned establishments earn higher wages than workers in domestic establishments in Japan, even accounting for human capital and employer characteristics. Our results also highlight the distinction in the structure of wages between domestic and foreign-owned establishments. The determinants of wages among foreign-owned establishments deviate from those of domestic establishments, and this deviation becomes greater among establishments with a higher share of foreign ownership. Wages are conditioned more by general skills, and less by firm-specific skills, suggesting that seniority effects are weaker among foreign-owned establishments.

In Japan, inward FDI remains relatively low, especially accounting for the scale of the economy and high income levels (Urata 1996). Foreign affiliates account for approximately six percent of Japan's output (Blomström, Konan and Lipsey 2001); the proportion of the labor force employed in foreign-owned establishments is estimated to be merely two percent (JETRO 2002). However, FDI penetration has been increasing since the early 1990's and is expected to increase in the future in light of the undergoing deregulations, government incentives to induce foreign capital (JETRO 2002), and the Koizumi Cabinet's pledge to double inward FDI by the year 2008 (Fukao and Amano 2003; JETRO 2003).

### **Inward FDI and wages**

Previous studies in international economics have established that in every host country, foreign firms pay higher wages than domestic firms (Lipsey 2001). This pattern is observed in both developed and developing countries, although the evidence is more abundant in the latter. Less known is the reason why. Accounting for differences in human capital and industry composition can explain some but not all of the difference in wages.

One possible explanation for why foreign firms pay higher wages concerns the latecomer disadvantage. By default, foreign firms face a latecomer disadvantage of competing against local firms that have superior knowledge of local markets, consumer preferences, and business practices (Blomström and Kokko 2003; Fukao and Ito 2003). There is an information problem in which foreign firms lack knowledge of the local labor market, and job candidates do not have sufficient information about foreign employers. Foreign firms may have to pay higher wages to attract better workers, while domestic firms may be in a better position to identify and attract good workers without paying a wage premium (Lipsey and Sjöholm 2001). Similarly, workers may prefer local firms over foreign firms, simply because they have better information about local firms. Workers must therefore be compensated to overcome this lack of information.

Another possibility is that foreign firms may pay “efficiency wages” to reduce worker turnover. Foreign firms make considerable investments in the physical capital and human capital of the host economy, and they may wish to prevent their proprietary knowledge or technology from leaking out to domestic rivals (Lipsey 2002). The efficiency wage explanation is particularly applicable among developing countries where foreign multinationals may be concerned about their advanced technology leaking out to local markets. It is also relevant to developed countries characterized by high labor mobility such as the U.S., where firms may fear the loss of their proprietary information through labor turnover (Feliciano and Lipsey 1999).

### **Foreign firms and employment in Japan**

There is now a sizeable volume of empirical and theoretical research examining FDI in the Japanese economy. These studies have examined the flow and stock of FDI (Fukao and Amano 2003; Yoshitomi and Graham 1996), determinants of FDI (Ito and Fukao 2003),

assessment of the impediments to FDI in Japan (Urata 1996; Weinstein 1996), and the impact of FDI on the restructuring of the Japanese economy (Blomström, Konan, and Lipsey 2001). However, despite a great deal of circumstantial and anecdotal evidence, we know very little about how FDI affects employment and wages in Japan, and much less about the employment practices undertaken by foreign firms.

Data concerning FDI and employment in Japan come mainly from government statistics. JETRO (2002) estimates that there were approximately one million workers employed by foreign firms in Japan, which represented 2.3 percent of the Japanese labor force in 2002. This is less than half of the proportion reported in the U.S. (5.4 percent) and Germany (5.3 percent). However, employment by foreign firms is expected to expand in the foreseeable future. 80 percent of the foreign firms surveyed by JETRO claimed that they plan to either increase or sustain employment levels in the future, and 95 percent of these firms plan to do so through mid-career intakes of administrative and professional staff. With respect to the establishments' countries of origin, 67 percent of workers in foreign-owned establishments were employed by U.S. firms, 31 percent by European firms, and the remainder by firms representing Asia and other countries (MITI 1999).

Some of the previously discussed reasons why foreign firms may pay higher wages are applicable in the case of Japan, while others are not. For example, it is likely that the latecomer disadvantage and the information problems that ensue will place foreign firms in a position to offer higher wages to attract workers. The proliferation of employment manuals, guidebooks, and niche businesses targeted specifically to provide professional services for employment in foreign-owned establishments is some evidence that there is demand for better information in this sector of the labor market.<sup>1</sup> And while there is some evidence that the foreign firms have gained recognition over the years, the overwhelming majority of university

graduates still prefer employment in domestic firms.<sup>2</sup> Hence it is sensible to assume that foreign firms must pay higher wages to overcome workers' preferences for local firms.

Another possibility for foreign firms to pay higher wages in Japan concerns compensating wage differentials. Efficiency wage is not a plausible explanation provided that the Japanese labor market is *de facto* characterized by strong levels of employee attachment. While the much celebrated practices of lifetime employment and seniority are arguably declining, job separation rates in the Japanese labor market are still low by international standards (Auer and Cazes 2000).<sup>3</sup> Workers must be offered a risk premium and/or a retainer fee for trading-off their relatively secure employment with the local firms. As such, foreign firms in Japan may pay higher wages than their domestic counterparts, but they may do so for reasons that are unique to Japan.

Securing a high quality labor force is a key priority among foreign firms in Japan (JETRO 2001, 2004; METI 2002). The majority do so by poaching workers from other firms, mainly to minimize their recruiting, training and search costs, and to overcome their latecomer disadvantage in the local market. In 1999, 74 percent of the workers in foreign firms were hired through mid-career intakes (MHLW 1999). This is a considerably higher proportion than in their domestic counterparts, who predominantly recruit new graduates in place of mid-career hires.<sup>4</sup>

Foreign firms confront a number of disadvantages in recruiting human resources in Japan. First, mid-career job changes are still inherently difficult under an employment system that presumes long-term commitment. The seniority system, whereby earnings rise automatically with respect to tenure, is not unique to Japan, and studies have shown that the seniority effect on wages declined throughout much of the 1980s (Clark and Ogawa 1992; Genda 1998). However, comparative studies have established that this effect is stronger among Japanese employers than in the U.S. (Hashimoto and Raisian 1985; Kawashima and

Tachibanaki 1986; Mincer and Higuchi 1987). The high returns to tenure reflect in part the importance of firm-specific skills in the Japanese labor market. Workers accumulate firm-specific skills by receiving considerable on-the-job training, which in turn becomes a disincentive for them to change employers. Pension portability is another frequently cited problem that is tied into the long-term employment system; the corporate pension scheme pays off at an increasing rate with respect to tenure. The possibility of being made worse off through the loss of their pensions and returns to seniority remain two of the top reasons why workers do not change jobs in Japan (Recruit Works Institute 2001).<sup>5</sup>

And second, foreign firms are often associated with the reputation of low employment security. In contrast to the implicit long-term employment contracts that characterize Japanese firms, foreign firms are more likely to hire workers under explicit short-term employment contracts that require renegotiation on an annual basis.<sup>6</sup> This notable distinction in the employment contract is one explanation behind the lack of trust towards their employers among the workers employed by foreign firms (Ono 2003). Foreign firms, in turn, claim that the greatest problem they confront in hiring is that the job candidates are deterred by their reputation for unstable employment (FIND 1999).

Perceptions of low employment security may be associated with the frequency of entry and exit, and the short-sighted behavior of foreign-owned firms. Foreign firms make considerable upfront investments to overcome their latecomer disadvantage, but less experience and knowledge of local markets may prevent them from making long-term investments. Unfavorable market conditions or exogenous shocks may compel them to “cut their losses short” and exit the host economy. Fujii and Kimura (2001), for example, show that foreign firms in Japan had a higher propensity to exit than their domestic counterparts during the economic downturn of the 1990s.

One area in which foreign firms may have a comparative advantage over domestic firms is their relative attractiveness for women in the Japanese labor market. An employment system that presumes long-term commitment favors men relative to women, especially in Japan where women are expected to take on a disproportionate share of non-market activities. If men in Japanese firms benefit from implicit long-term contracts that are generally not available to women, one would expect well-educated women to be drawn to employment in foreign-owned firms where returns to seniority are presumably weaker. Ono and Piper (forthcoming) explain that women with strong career aspirations in Japan are increasingly attracted to foreign firms because they can bypass the institutional barriers that confront them in the Japanese labor market.

## **Hypotheses**

We formulate three research hypotheses that distinguish the determinants of wages between domestic and foreign firms in Japan. First, we expect lower returns to firm-specific skills among foreign firms. The intensity of on-the-job training found in Japanese firms presumes a longer time horizon resembling a gift-exchange relationship; workers receive training during the early phases of their careers in exchange for productivity increases at later stages. The nature of this exchange cannot be sustained if either party is short-sighted. The higher rate of exit and lower employment security associated with foreign firms – whether they are perceived or real – prevents this implicit relationship from evolving in foreign firms.

Our second prediction is related to our first: we expect higher returns to general skills among foreign firms. If foreign firms are less likely to offer on-the-job training, then they must recruit workers who are well endowed with general skills. The recruiting strategy of poaching workers from other firms suggests that foreign firms value education and work experience (or general skills) more than they do firm-specific skills.

And third, we expect a smaller gender gap in wages among foreign firms. The gender wage gap in Japan remains one of the largest among the developed countries (Blau and Kahn 2001), suggesting that women in Japan continue to face unfavorable labor market conditions. Women who are unable to make long-term commitments may be attracted to the short-term employment contracts offered by foreign firms. Foreign firms in turn may offer higher wages to recruit highly-skilled women, and/or women on the margin who are indifferent about their preferences for employers.

## **Data**

Our empirical analysis uses two sets of high-quality microdata from the Japanese government: The *Basic Survey on Wage Structure* (hereafter the Wage Census) administered by the Ministry of Labor in 1998, and the *Establishment and Enterprise Census of Japan* (hereafter the Establishment Census) administered by the Statistics Bureau of the Management and Coordination Agency in 1996. The individual-level data from the Wage Census includes an employer code which allows us to link the employer to the establishments covered in the Enterprise Census. We construct an employer-employee matched database consisting of 50,000 Japanese establishments with at least 10 employees, representing 10,000 firms matched with a sample of approximately 1 million workers. The final sample size used in our estimations is 921,356.

Our analysis based on individual-level data allows us to overcome some of the limitations of previous research in Japan and elsewhere which have relied on either cell-aggregated data, or firm-level data.<sup>7</sup> However, some shortcomings of our dataset should be addressed. First, because the survey years for the two datasets are not the same, our empirical analysis assumes that the establishment-level information remained unchanged between 1996 and 1998. Second, financial information of the establishment is limited to the amount of

capital and the foreign ownership share of capital, and does not include performance figures such as sales and profits. This precludes the possibility, for example, of comparing productivity and wages. And third, we do not know the nationality of the foreign-owned establishments (or establishments who responded that their foreign ownership share of capital was greater than zero). While we cannot clearly delineate establishments across countries, the U.S. may be a reasonable benchmark for foreign-owned establishments in Japan given their majority representation (among the foreign firms in Japan).

In our empirical analysis, we restrict the sample to full-time regular workers, and exclude workers who claimed to be working part-time at the time of the survey. The outcome variable is the hourly wage, defined as the sum of monthly wages plus bonus payments divided by working hours. Remuneration for overtime work is not included. Individual-level control variables include work experience (in years), sex, education, and tenure. Education completed is included as a set of categorical dummies; the baseline category is middle school, and we include categories for high school, junior college, and university. Work experience is defined as age minus the years of schooling minus 6. Tenure is defined as the duration of employment with the current employer. We regress experience ( $x$ ), tenure ( $t$ ) and their respective squared terms, plus a vector of other covariates ( $\mathbf{Xf}$ ) on logged wages ( $\ln w$ ) such that the standard wage regression takes the form:  $\ln w = \alpha + \beta_1 x + \beta_2 x^2 + \gamma_1 t + \gamma_2 t^2 + \mathbf{Xf} + e$ .

Control variables at the establishment-level include foreign ownership ratio, industry sector, regional dummy, head office and branch office dummies, and establishment size in six categories. Foreign ownership ratio is defined as the percentage of capital owned by foreign investors. Industry sector includes separate dummies for finance, retail, transportation and telecom, manufacturing, and construction; the baseline category is the service sector. Summary statistics are provided in the Appendix.

## **Descriptive statistics**

Whether the establishment is foreign-owned or not is determined by the share of equity which is owned by foreign investors. The *OECD Benchmark Definition of FDI* (1999), for example, recommends 10 percent foreign ownership of ordinary or voting shares by a single foreign investor. The proportion of foreign ownership is an important indicator of influence or “voice” by the foreign investor. For example, OECD explains that ownership of at least 10 percent “implies that the direct investor is able to influence or participate in the management of an enterprise (but) it does not require absolute control by the foreign investor” (1999: 8). From the perspective of corporate governance, it is reasonable to assume that the degree of control influenced by foreign investors is proportional to the foreign ownership share of equity, though this relationship may not necessarily be linear. Intuitively, 100 percent foreign ownership implies absolute control by the foreign investor, and 50 percent or above foreign ownership would imply majority control. Foreign ownership ratio may also be determined by government regulations and legal guidelines. One notable example in Japan is at the foreign ownership ratio of one-third. At this level, firms qualify for various subsidies, guarantees, tax breaks and low-interest rates offered by METI and the Development Bank of Japan (METI 2002).

In our dataset, the foreign ownership ratio of capital is available at the tenth of a percentage point, ranging from 0.1 to 100 percent. This information allows us to define foreign-owned establishments at any ownership ratio, and to examine their effects on wages under various specifications. However, we cannot define establishments according to the OECD benchmark because we cannot distinguish whether this ratio is comprised of single or multiple investors.

We first examine the distribution of workers in foreign-owned establishments as a function of the foreign ownership share of capital (Figure 1). The major cutoff points we use

throughout our analysis is 10 percent, 33.3 percent and 50 percent. We use 10 percent and above following the convention of some earlier studies (e.g. Feliciano and Lipsey 1999). At this level, the proportion of workers employed by foreign firms is 7.0 percent.<sup>8</sup> At 33.3 percent and above and 50 percent and above they are 1.1 percent and 0.8 percent, respectively.

Figure 1 about here

## **Analysis and Results**

We begin by examining wage differentials between domestic and foreign-owned establishments. We use three different specifications of foreign ownership – linear, quadratic, and dummies – to examine their effects on wages.<sup>9</sup> All wage regressions control for individual- and employer-level characteristics as previously described. The results are shown in Table 1.

Table 1 about here

Our results clearly show the positive impact of foreign ownership on wages. Our linear specification of foreign ownership indicates that a percentage increase in foreign ownership share of capital increases wages by 0.3%. The coefficient for the quadratic term is small but positive, indicating that the effect of foreign ownership on wages increases at an increasing rate. The results from the dummy specifications show the outcome of three separate wage regressions that include dummies for different cutoff points of foreign ownership ratio. The wage premium at 10 percent foreign ownership is estimated to be 8.6 percent. This finding is comparable to previous estimates reported in the U.S. Feliciano and Lipsey (1999) compare the wages of domestic establishments and establishments at 10

percent or more foreign ownership in the U.S. They find the wage premium to be 5 to 7 percent in manufacturing, and 9 to 10 percent in other industries. At one-third and one-half foreign ownership, the wage premiums are found to be 19.5 percent and 30 percent, respectively.

We now examine our hypotheses outlined earlier, and investigate how the wage differences are generated. How are wages determined in foreign-owned establishments, and how do they differ from domestic establishments? In the wage regressions, the coefficients for tenure and work experience capture the returns to firm-specific and general skills, respectively. All wage regressions control for industry and employer characteristics as described earlier, but they are suppressed from the output. We estimated three separate wage regressions for workers employed by foreign-owned establishments, at the foreign ownership ratio of 10 percent and above, 33.3 percent and above, and 50 percent and above. In each of the three cases, we first estimated the wage regression for workers in domestic establishments, then a separate wage regression for the sample of workers in foreign-owned establishments. A third wage regression with interaction effects was estimated to examine if the coefficients were statistically different between the two samples. The full set of results therefore consists of nine separate regressions (three regressions for each of the three cases). The first column in Table 2 shows the results of wage regressions for workers in domestic establishments when the sample was split at the cutoff point of 10 percent and above. This sample therefore includes all workers in domestic establishments, plus those who were working for establishments with foreign ownership ratio of less than 10 percent. The output for the sample of workers in domestic establishments for the other two wage regressions is not reported here, because there was very little variation in their outcomes. The results shown under the columns “Foreign versus domestic interaction effects” show only the interaction effects. These coefficients report the difference in the effects between foreign and domestic

firms. The actual coefficients for foreign-owned establishments can be easily computed by adding these to their corresponding coefficients in the domestic establishments. For example, the rate of return to university education is 34.4 percent among workers in domestic establishments, and 49 percent ( $= 34.4 + 14.6$ ) among workers in establishments of 10 percent or above foreign ownership.

Our results are generally consistent with the hypotheses. Features of Japanese employment practices are found to be significantly weaker among foreign-owned establishments, and weaker still among establishments with higher share of foreign ownership. First, the returns to tenure are lower among foreign-owned establishments. The tenure effect on wages declines as the foreign-ownership ratio increases; at 50 percent and above foreign ownership, the tenure effect is less than 1 percent and becomes statistically insignificant. Second, returns to general skills are higher in foreign-owned establishments. This is confirmed by the higher returns to work experience, and the higher returns to education. Returns to general skills also increase with the foreign ownership share of capital. And third, the gender wage gap is found to be smaller among foreign-owned establishments, although this pattern is not linear with respect to foreign ownership of capital. Our findings suggest that foreign-owned establishments pay over 10 percent higher wages for their female workers than their domestic counterparts.

Our results highlight the important contribution of work experience and tenure to wage growth for both domestic and foreign-owned establishments. In our final analysis, we estimate separately the wage growth attributable to total work experience and to tenure. We apply a decomposition technique described in Hashimoto and Raisian (1985, 1992) and examine the percentage growth in wages between the year when workers join the firm and various years of tenure. The question of interest is: If workers joined the firm immediately after completing their schooling and remained with the firm until they retire (i.e.  $dt/dx = 1$ ),

how much would their wages grow as they accumulate years of tenure? The total wage growth due to the accumulation of total experience ( $d \ln w/dx$ ) can be decomposed into the component attributable to work experience ( $\partial \ln w/\partial x = \beta_1 + 2 \beta_2 x$ ) and the other attributable to tenure ( $\partial \ln w/\partial t = \gamma_1 + 2 \gamma_2$ ). Table 3 shows the results of our simulations estimated at 5-year intervals of tenure. The results report the contribution of tenure to total work experience estimated as  $(\partial \ln w/\partial t)/(d \ln w/dx)$ .

Our results again highlight the importance of tenure effects on wages in domestic establishments in contrast to foreign-owned establishments. Among domestic establishments, tenure accounts for roughly half of the wage growth.<sup>10</sup> Among foreign-owned establishments, the tenure effects are weaker, and they decline as the share of foreign ownership increases.

## Summary and Conclusions

One of the benefits of FDI for the host economy is that foreign firms pay higher wages than domestic firms. Our paper confirms this in the case of Japan. Workers in foreign-owned establishments earn higher wages than workers in domestic establishments, even accounting for human capital and employer characteristics. We estimate that a one percentage increase in the foreign ownership share of capital raises wages by 0.3 percent.

Our results also highlight the distinction in the structure of wages between domestic and foreign-owned establishments. In general, we confirm the persistence of Japanese employment practices and their effects on wages among workers in domestic establishments. On the contrary, we find very little evidence of the influence of Japanese employment practices in foreign-owned establishments. The higher wage growth associated with tenure among domestic establishments confirms in part the implicit contract that characterizes long-term employment and backloaded wages in the Japanese labor market. In contrast, tenure effects on wages are considerably weaker among foreign-owned establishments, where wages

are determined more by general skills, as observed by the higher returns to education and work experience. These effects become more pronounced among establishments with higher proportions of foreign ownership.

Women in foreign firms earn more than women in domestic firms, resulting in a smaller gender wage gap among foreign firms. These results are consistent with earlier studies indicating the higher propensity for educated women to seek employment in foreign firms (Ono and Piper, *forthcoming*). Given the high degree of gender segregation and the lack of long-term career prospects for women in Japan, foreign establishments may be one source of “brain-drain” for highly-skilled women in the Japanese labor market.

FDI may benefit the host country directly through the transfer of knowledge, technology and skills. It may also do so through indirect transfers or spillovers of intangible assets (Blomström, Konan and Lipsey 2001). Statements by the Japanese government expressing interest in the “qualitative forms” of foreign capital including the experience, know-how, and innovative management techniques of foreign companies, and how they will stimulate change in Japanese society and business (Pilling 2004) indicate a renewed interest in such spillover benefits. Specifically, the Japan Investment Council, chaired by the Prime Minister and composed of relevant government ministers, aims to create a favorable employment system through increased FDI; they expect to reform the Japanese labor market by introducing diverse ways of working (JETRO 2003). Employment practices among foreign-owned establishments, whether they be recruiting, contracting, or compensation, clearly differ from those observed and practiced among the domestic establishments in Japan. If fluidity and flexibility are desired labor market features as suggested by Japanese policymakers, then the Japanese labor market may benefit from the spillover effects of short-term employment practices observed among the foreign-owned establishments.

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## Notes

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<sup>1</sup> There are numerous manuals and handbooks that are targeted specifically for those who seek employment in foreign firms. Go to any of the search engines among Japan's major book stores, e.g. Kinokuniya or Amazon, and search using the keywords in Japanese, *gaishi* (foreign) and *shushoku* (employment).

<sup>2</sup> See Recruit Works Institute, *Saiyo Brand Chosa* (Recruitment Brands Ranking), in Japanese, various years.

<sup>3</sup> The empirical evidence on the decline of lifetime employment is mixed. See for example, Kato (2001) and Rebeck (2001) who argue that there were little signs of change in the Japanese employment system during the 1990s.

<sup>4</sup> In 2001, mid-career hires as a proportion of all hires was less than 10 percent among one-third of all firms, and less than 30 percent among half of all firms in Japan (MHLW 2003).

<sup>5</sup> See Ono and Rebeck (2003) for an extensive review of the barriers to mobility in the Japanese labor market.

<sup>6</sup> 52 percent of foreign firms had adopted the annual salary system (METI 2002), in contrast to 12.3 percent among Japanese firms (Ministry of Labor 1999). The Ministry of Health, Labor and Welfare (MHLW)'s definition of an annual salary system (*nenposei*) is "a system under which wages are decided on an annual basis and is determined primarily by ability and performance." However, in practice, the annual salary system involves the re-negotiation of the employment contract and not just wages. Hence the system is taken to be synonymous with short-term contract and characterizes an employment relationship which contrasts greatly from the implicit long-term contract representative of Japanese firms.

<sup>7</sup> Abe (2000), for example, presents econometric issues associated with estimating wage equations from cell mean data as opposed to micro data, and illustrates the bias arising from cell averaging.

<sup>8</sup> Odaki (2000), using the Establishment Census of 1996, estimates this percentage to be 5.9 percent. This difference is most likely attributable to differences in survey weights. He also estimates the distribution of firms, establishments, and employees as a function of foreign ownership share of capital.

<sup>9</sup> Wage premiums using various categories of foreign ownership percentage were also estimated but produced similar results and are not reported here.

<sup>10</sup> This result can be interpreted to mean that the effect of work experience and tenure are roughly the same in domestic establishments. In fact, the coefficients for work experience and tenure for domestic establishments reported in Table 2 are not statistically different from each other.

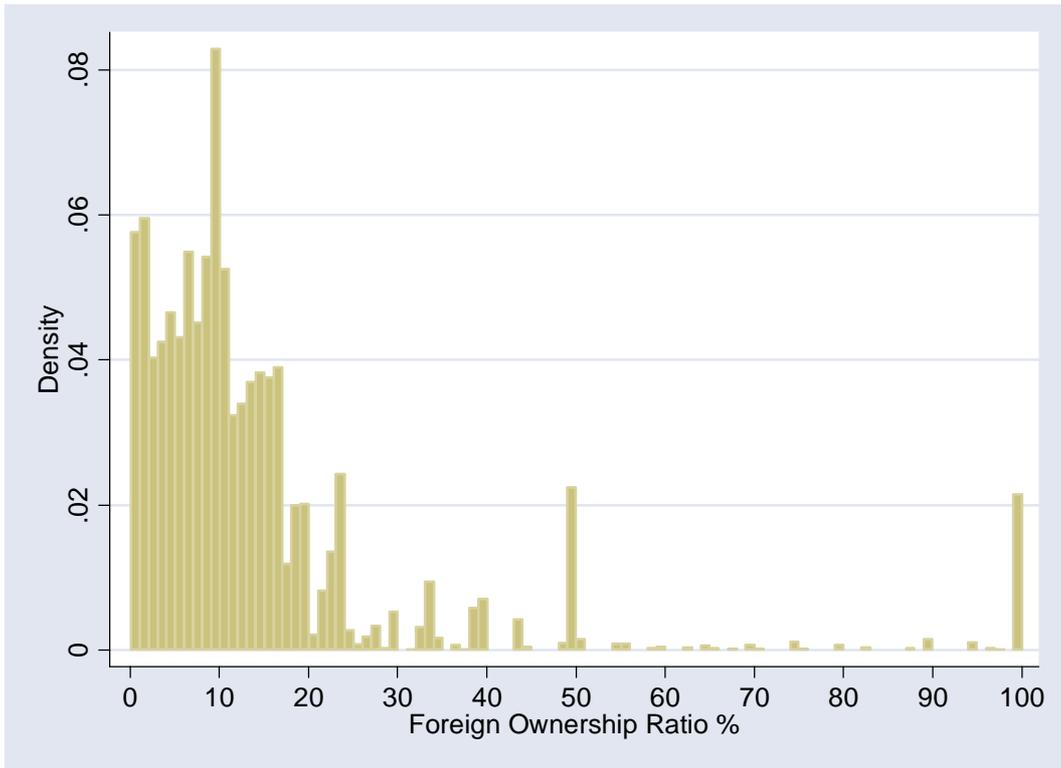


Figure 1 Distribution of workers among foreign-owned establishments

Table 1 Wage premium for employment in foreign establishments

	Coef	S.E.
<i>1. Linear</i>		
Foreign ownership % <sup>1</sup>	3.34E-03 **	(1.57E-04)
<i>2. Quadratic</i>		
Foreign ownership % <sup>1</sup>	2.68E-03 **	(2.08E-04)
Foreign ownership % squared <sup>1</sup>	8.85E-07 *	(3.81E-07)
<i>3. Dummies</i>		
10% and above	0.086 **	(0.003)
33.3% and above	0.195 **	(0.009)
50% and above	0.300 **	(0.012)

\*  $p < .05$ , \*\*  $p < .01$ . Robust standard errors reported in parentheses.  
 $R^2$  is 0.647 for all three regressions.

<sup>1</sup> Coefficients and standard errors adjusted to 100 units.

All regressions control for individual, industry and employer characteristics (see text for details).

Table 2 Wage comparisons between domestic and foreign establishments

	Domestic establishments	Foreign vs domestic interaction effects		
		$\geq 10\%$	$\geq 33.3\%$	$\geq 50\%$
Experience	2.86E-02 ** (2.45E-04)	1.95E-02 ** (1.36E-03)	3.78E-02 ** (2.83E-03)	3.81E-02 ** (3.97E-03)
Experience squared	-5.74E-04 ** (5.20E-06)	-3.14E-04 ** (2.79E-05)	-5.17E-04 ** (7.60E-05)	-4.70E-04 ** (1.19E-04)
Tenure	2.95E-02 ** (2.75E-04)	-6.56E-03 ** (1.37E-03)	-1.69E-02 ** (2.72E-03)	-2.35E-02 ** (3.55E-03)
Tenure squared	-2.34E-04 ** (7.67E-06)	1.59E-04 ** (3.08E-05)	1.70E-04 * (7.70E-05)	3.27E-04 ** (1.16E-04)
University graduate	0.344 ** (0.003)	0.146 ** (0.009)	0.185 ** (0.025)	0.187 ** (0.041)
Junior college graduate	0.232 ** (0.003)	0.060 ** (0.011)	0.083 ** (0.028)	0.095 * (0.045)
High school graduate	0.097 ** (0.002)	0.042 ** (0.007)	0.082 ** (0.023)	0.095 * (0.038)
Female	-0.322 ** (0.002)	0.113 ** (0.006)	0.159 ** (0.015)	0.133 ** (0.020)
Constant	2.304 ** (0.004)	0.242 ** (0.036)	-0.004 (0.045)	0.063 (0.055)
R <sup>2</sup>	0.623	0.648	0.647	0.647

\*  $p < .05$ , \*\*  $p < .01$ . Robust standard errors reported in parentheses.

All regressions control for industry and employer characteristics (see text for details).

Table 3 Percent growth in wages attributable to tenure

Tenure (years)	Domestic establishments	Foreign establishments (as % of foreign ownership)		
		10% and above	3.33% and above	50% and above
5	50.2	31.7	14.9	8.6
10	49.3	30.7	13.9	8.7
15	49.4	30.4	13.3	9.0
20	50.5	31.1	13.3	9.6
25	52.8	32.9	13.7	10.6
30	56.7	36.1	14.9	12.1
35	62.8	41.2	16.9	14.3
40	71.9	49.2	20.5	17.8
Average	54.3	34.5	14.9	10.8

## Appendix

Table A.1 Descriptive statistics (N=921,356)

Variable	Mean	S.D.
Experience	20.544	13.232
Tenure	12.090	10.519
University graduate	0.216	0.411
Junior college graduate	0.106	0.307
Middle school graduate	0.130	0.337
Firm size >5000	0.165	0.371
Firm size 1000 to 4999	0.159	0.366
Firm size 500 to 999	0.083	0.276
Firm size 300 to 499	0.073	0.261
Firm size 100 to 299	0.156	0.363
Tokyo regional dummy	0.113	0.316
Real estate	0.013	0.112
Utilities	0.031	0.173
Finance	0.058	0.234
Retail	0.091	0.287
Transportation & telecom	0.097	0.295
Manufacturing	0.435	0.496
Construction	0.094	0.291
Head office dummy	0.301	0.459
Branch office dummy	0.432	0.495
Female	0.256	0.436