What determines work hours?: who you work with or where you work?

March 2011

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Abstract

By using a unique dataset on managerial-level employees who were transferred from Japan to European branches of the same global firms, we examine what would happen to work hours when a worker moves from a long-hour-working country to relatively shorter-hour countries. Even after controlling for business cycles, unobserved individual heterogeneity, job characteristics, and work hour regulations, we find a significant decline in Japanese work hours after their transfer to Europe, resulting from working-behavior influences of locally hired staff. We also find that the reduction in hours worked highly depends on the extent of the workers' interactions with local peers.

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Data used in this paper are taken from a survey we administered to workers of global Japanese companies operating either in the UK or Germany, and the longitudinal data from the *Keio Household Panel Survey* (KHPS). The authors deeply appreciate Reiko Aoki, Shunichiro Bessho, Chun Chung, Yuji Genda, Peter Haan, Masahiro Hori, Toshihiro Ihori, Seiichi Inagaki, Yoshihiro Kaneko, Akira Kawaguchi, Daiji Kawaguchi, Katsuyuki Kubo, Wataru Kureishi,Ryo Nakajima, Keisuke Nakamura, Haruko Noguchi, Fumio Ohtake, Takashi Oshio, Hideo Owan, Takuji Saito, Kazuharu Sakamoto, Shinpei Sano, Dan Sasaki, Hiroki Sato, Yoko Takahashi, Noriyuki Takayama, Ryuichi Tanaka, Atsuhito Toda, Emiko Usui, Kengo Yasui, and participants of 32nd Conference of the International Association for Time Use Research for their valuable comments. This research is supported by the Japanese government's Grants in aid for young scientists (Japan Society for the Promotion of Science; Research No. 22730188 <Kuroda> and Research No. 20730164 <Yamamoto>), Program for Promoting Social Science Research Aimed at Solutions of Near-Future Problems "Creation of Employment System that enables Lifelong Growth for All People" (commissioned by the Ministry of Education, Culture, Sports, Science and Technology) and Program of Intergenerational Equity (the grants from the Ministry of Education, Culture, Sports, Science and Technology).The remaining errors are solely of our own.

I. Introduction

The total time spent for market work differs substantially from country to country. In 2008, the average annual hours worked per person in employment were 1,792 in the US, 1,653 in the UK, 1,542 in France, and 1,432 in Germany (OECD [2009]). These countries' annual work hours were almost the same 40–50 years ago.

Several seminal studies have sought to explain such divergences of work hours among countries, in other words, why work hours of Europeans have declined sharply over the last few decades.[1] Prescott (2004) suggests that this is due to the increase in tax distortions in European countries during the 1970s and 1980s, whereas Blanchard (2004) attributes this to the differences in preferences and income effects among nationalities. However, Alesina, Glaeser, and Sacerdote (2006) contend that neither tax distortions nor differences in preferences fully explain the divergences. On the other hand, they emphasize the presence of positive complementarities in either consumption or leisure.[2] This paper empirically examines whether such positive complementarities in leisure exist by using a unique panel dataset on managerial-level employees who were transferred from Japan to the European branches of the same global companies.

In competitive markets where all workers act individually, competition with other workers would probably lead to an equilibrium in which everybody works longer hours (a long-hour equilibrium).[3] However, as Alesina, Glaeser, and Sacerdote (2006) argue, once some kind of coordination succeeds in achieving an environment where most people work shorter hours, positive complementarities in leisure may induce many people to decrease their

[1] However, Nickell (2006) maintains that there is yet no clear, simple theory which consistently explains the cross-country pattern of labor inputs. Alesina, Glaeser, and Sacerdote (2006) and Faggio and Nickell (2007) both point out that tax rates alone can explain only a small amount of the differences in hours worked. They are also skeptical of cultural differences since Europeans worked more or less the same as, or even somewhat longer than, Americans before the 1970s.

[2] Alesina, Glaeser, and Sacerdote (2006) call the effect a *social multiplier*. They suggest that both high taxes and direct pressure to work less brought about by a combination of strong unions, generous welfare benefits, and social democratic governments during the 1970s and 1980s served as a coordination device to work less in European countries. See also Glaeser, Sacerdote, and Scheinkman (2003].

[3] See, for example, Landers, Rebitzer, and Taylor (1996). Investigating two large law firms, they show that, under a certain organizational setting, associate lawyers are required to work long hours inefficiently because of competition.

work hours, and hence, a short-hour equilibrium is achieved. In other words, in an environment where most people—colleagues, staffs, bosses, clients, friends, families, and neighbors—work less (or take long vacations), an individual's utility from not working (or taking long vacations) may increase, further inducing him/her to work less. This is, of course, an intriguing idea, but empirically identifying such an effect on hours worked is not easy.

This brings us to an interesting question. What would happen to individual behavior if people are shifted from a long-hour to a short-hour equilibrium environment? Specifically, how would the work hours be affected when a worker moves from a country where most people work long hours (Japan) to countries where people work relatively shorter hours (European countries)? If workers are influenced by their peers and/or neighborhood, their work attitudes and work hours would converge to those of the group they belong to. This paper tries to examine such positive complementarities in leisure, or what we call *group interaction effects*, using the previously mentioned datasets. Specifically, we assess whether, and to what extent, an individual's work behavior would be affected by the group interaction effects when the person's working environment changes drastically, other things being equal. When estimating the group interaction effect, we consider possible differences in job and HRM characteristics, business cycles, and work hour regulations. Furthermore, since the Japanese workers we assess in this paper are required by their employers to move from Japan to Europe (i.e., they do not move voluntarily as migrant workers do), our datasets are basically free from the endogeneity problem.

Our paper is related to a growing body of literature on group interaction effects as determinants of individual behavior. Among these volumes of studies, Ichino and Maggi's (2000) work is the closest to ours, besides that of Alesina, Glaeser, and Sacerdote (2006).[4]

[4] Ichino and Maggi (2000) estimated the prevalence of shirking in a large Italian bank, and suggested that episodes of absenteeism and misconduct, more prevalent by far in the south of Italy, can be partially explained by group interaction effects. Regarding other related studies, Glaeser, Sacerdote, and Scheinkman (1996) estimate the extent of neighborhood effects on criminal behavior in US cities, finding that such effects are stronger for less serious crimes. Using the confidential information of National Longitudinal Survey of Youth, which can identify the street addresses of respondents, Weinberg, Reagan, and Yankow (2004) found that the social characteristics of a neighborhood increased annual work hours. Falk and Ichino (2006) conducted an experiment in which subjects were asked to fill letters into envelopes with remuneration independent of output, and found that productivity increased when two persons worked at the same time in the same room, rather than each person in a different room, suggesting the importance of peer influence on productivity.

Their approach is similar to ours in the sense that both focus on individual behavior changes using information on movers within the same firm. Our paper basically endorses their findings, but differs from them at least in the following respects. First, movers in our analysis are transferred from one country to another where the working environment differs substantially. Second, we mainly consider the number of hours worked, focusing especially on workers at relatively higher levels in each firm's hierarchy.[5] Third, our datasets contain information on persons with whom the worker mainly interacts. This information is particularly important to estimate the group interaction effects on movers since, even after moving to other countries, some workers may spend most of their time communicating and dealing with workers in his/her home country. Fourth, we measure how Japanese staff's work hours would be adjusted to those of locally hired staff over time, using information on the number of years passed since the worker's transfer to Europe. In other words, we measure how the group interaction effects would evolve in a relatively longer time span.

The major findings of this paper can be summarized as follows. We find that the hours worked by Japanese staff have declined significantly after a shift to Europe, possibly because of peer influence. On average, hours worked per week declined by more than 4 percent merely as a result of a transfer to European branches, after we controlled for aggregate demand shocks, unobserved individual heterogeneity, and job characteristics as well as work hour regulations. It is also shown that the degree of influence highly depends on the extent of a worker's interactions with local colleagues or clients. In addition, our results suggest that peer behavior non-monotonically influences Japanese workers over time. Specifically, for the first two years in Europe, hours worked by Japanese workers gradually decline, and remained relatively constant for the next several years. After five years, however, the hours worked decline further, converging to a level close to those of local peer workers.

This paper is organized as follows. In Section II, we present the basic fact that Japanese staffs' work hours declined after they were transferred to Europe and introduce the conceptual framework behind the phenomenon. In Section III, we explain our datasets. In Section IV, we show our empirical results on how work hours would change when a worker

[5] Most of the literature that analyzes the externalities of worker effort on coworkers' behavior study either non-managers or blue-collar workers. For example, Mas and Moretti (2010) study the productivity of cashiers in a national supermarket chain, and Bandiera, Barankay, and Rasul (2010) analyze the behavior of workers in the fruit-picking division of a leading UK farm producer.

moves from a long-hour-working country to relatively shorter-hour countries. In Section V, we conduct some robustness checks and interpret our results. Section VI concludes the paper.

II. Overview and conceptual framework

(1) Overview: change in hours worked

Our main data source is a survey we administered to workers of global Japanese companies operating either in the UK or Germany. The two countries were chosen because the UK and Germany are the two top countries in terms of the number of Japanese firms operating in Europe.[6] The survey was conducted within a two-month period from December 2009 through January 2010 by computer-assisted telephone interviews (CATI) with the online questionnaire link forwarded to the respondents' colleagues.[7]

The targeted respondents were (1) Japanese staff in the managerial level aged 30–50 years, originally hired in Japan and transferred to European branches and (2) locally hired staff equivalent to the Japanese staff working in the same establishment in managerial positions. The research agency was directed to collect a minimum of four samples per company (two Japanese and two locally hired staffs). Our sample consisted of 344 Japanese and 531 non-Japanese who worked in the UK (201 and 261, respectively) and Germany (143 and 270, respectively). Industry composition differs between the UK and Germany. Manufacturing, financial, and wholesale and retail sectors account for 34, 19, and 15 percent, respectively, in the UK and 59, 24, and 2 percent, respectively, in Germany. The descriptive statistics are shown in Table 1 for Japanese respondents, whom we mainly focus on in this paper. We limit our sample to those who were transferred to Europe after 2004. The following paragraphs provide brief explanations and an overview of our datasets.

Both Japanese and non-Japanese respondents were asked to provide the following two measures of labor supply: total hours worked per week and the amount of paid leave taken per year. Japanese respondents were also required to provide this information for the

[6] According to the Japan Chamber of Commerce in Dusseldorf (Japanische Industrie- und Handelskammer zu Düsseldorf e.V.), the 2009 membership of Japanese firms was 566 in Germany and 316 in the UK, whereas that of France was 263 and Italy, 191.

[7] The online survey was intended to collect information from workers not able to respond to the phone survey because they were either busy or would not be in the office during daytime.

time they were in their previous positions before being transferred to Europe.

Figures 1(1) to 1(3) compare hours worked by Japanese workers before (horizontal axis) and after (vertical axis) moving to Europe. Looking at weekly hours worked in Figure 1(1), we observe a large number of observations are plotted below the 45-degree line, indicating hours worked before moving to Europe were much longer than after. Those who used to work around 60 hours a week in Japan tended to decrease their work hours to about 50 hours. This trend is more evident for the paid leave taken per year shown in Figure 1(2). We see most workers increased paid leave after moving to Europe. For those workers who used to take only 10 to 15 days in Japan, for example, the leave is likely to be twice as much in Europe. As a result, annual hours worked, calculated from weekly hours worked and paid leave, also decreased as shown in Figure 1(3).

Figure 2 compares distributions of weekly hours worked across countries and nationalities. In Figure 2, "J before" is the distribution of hours worked by Japanese workers while in Japan, "J after" is that in Europe (the UK or Germany), and "EU" is that of locally hired managers.[8] In the UK, as shown in Figure 1, weekly hours worked by Japanese workers decrease after moving to the UK. Similarly, in Germany, hours worked by Japanese workers seem to converge to those by locally hired managers. It seems that Japanese' work hours are influenced by locally hired managers whose work time is considerably shorter.

(2) Conceptual framework

We assume that the hours worked by Japanese workers after they moved to Europe decreased substantially because of the interaction with European workers whose work hours are relatively shorter on average. In this section, we provide a conceptual framework that explains how a worker reacts to his/her coworker's work time in the presence of group interaction effects.

Suppose worker i chooses hours worked h_i and efficiency level (productivity or effort) per work hour e_i, given his/her marginal product per efficiency hour, w_i. We assume that both h_i and e_i are observable by worker i's employer. Without the group interaction

[8] Most of the Japanese respondents of our survey were managers, while non-Japanese respondents comprised both managers and non-managers. Therefore, the comparisons are basically conducted between Japanese and locally hired managers.

effects, worker *i*'s problem is to maximize the standard utility function, $U(w_i h_i e_i) - C^h(h_i) - C^e(e_i)$, in terms of hours worked and efficiency levels, where $U(\bullet), C^h(\bullet), \text{and } C^e(\bullet)$ are increasing functions.

When worker *i* interacts with other coworkers in the workplace, however, the worker maximizes the following utility function taking account of his/her coworkers' work hours and efficiency levels.

$$U(w_i h_i e_i) - C^h(h_i) - C^e(e_i) - D^h(h_i, h_j) - D^e(e_i, e_j)$$
$$, \; j = 1, \cdots, i-1, i+1, \cdots, N \; ,$$

where $-D^h(h_i, h_j)$ and $-D^e(e_i, e_j)$ indicate possible disutility arising from the deviations of worker *i*'s hours worked and efficiency levels from those of the other workers in the group that he/she belongs to (*N* is the number of workers in the group). Here, we assume complementarities in hours worked and efficiency levels, and therefore similar work hours and efficiency levels with other coworkers would increase worker *i*'s utility.

This setup is very similar to the ones proposed in other studies[9] considering how workers' productivity is affected by that of other workers in the team production process. Here, we do not necessarily limit the phenomenon to team work but extend it to all the jobs that require interaction with coworkers in some way or another. We also explicitly incorporate the group interaction effects in terms of both hours worked and efficiency levels. Suppose that everybody works shorter, then worker *i* would incur more disutility from overtime work. One of the reasons for this is a complementarity for work; that is, it becomes less productive to work alone after most of the coworkers leave the office. The other reason is loneliness or a sense of isolation when the worker spends his/her time in overtime work while coworkers and friends enjoy leisure time. Similarly, when the worker's efficiency level is far below the coworkers' average, his/her disutility would increase since he/she would feel ashamed to be considered clumsy by his/her colleagues.

Under this setup, it is possible to explain how group interaction with European coworkers would affect the working habits of Japanese workers transferred to Europe. Those Japanese workers would typically face large work hour deviations from European coworkers

[9] See, for example, Kandel and Lazear (1992), Falk and Ichino (2006), Mas and Moretti (2009), and Bandiera, Barankay, and Rasul (2010). Kandel and Lazear theoretically describe how peer pressure operates and how factors such as profit sharing, shame, guilt, norms, mutual monitoring, and empathy interact to create incentives in the firm.

($h_i > h_j$). Thus, they tend to reduce their hours worked so that they minimize the disutility from work hour deviation from European coworkers. Likewise, Japanese workers would find the European way of working more efficient ($e_i < e_j$) and feel ashamed of their own inefficient work style. Thus, Japanese workers would likely learn the efficient work style of European coworkers to reduce the disutility from deviations in the efficiency level. As a result, their work hours would decrease and/or efficiency levels increase to the level of their coworkers'; this occurs as a result of the group interaction effects.

It is often the case that hours worked and efficiency levels are closely related. When worker *i*'s labor supply on an efficiency basis is expressed by $y_i = h_i e_i$ and it is fixed as $\bar{y}_i$, h_i and e_i become interdependent. For example, in a case where a worker is employed by the firm under an implicit contract to supply the fixed amount of labor service $\bar{y}_i$, the worker could reduce his/her work hours only if his/her efficiency levels were increased. In other words, work hour reductions are possible when a worker finds more efficient ways of working so that the amount of labor supply on an efficiency basis remains unchanged. Furthermore, since we focus on white-collar workers in the managerial level who are exempted from work hour regulation, we assume fixed salary ($\bar{S}_i = (S(\bar{y}_i) = S(h_i e_i))$ to produce $\bar{y}_i$. Under these circumstances, the worker's utility can be expressed as follows:

$$U[\bar{S}_i(\bar{y}_i)] - C(h_i) - D(h_i, h_j) \quad where \quad \bar{y}_i = h_i e_i .$$

In this case, the labor supply function of worker *i* would include coworkers' work hours. Therefore, the group interaction effects should be observed so that worker *i*'s work hours are affected by his/her coworkers', other things being equal.

III. Identification strategy

The changes in hours worked which we saw in Section II may have been brought about by factors other than the group interaction effects, such as the changes in job and HRM characteristics or aggregate demand shock. Thus, when identifying the group interaction effects, how we control for other factors is of paramount importance. To determine which factors we must control for, we take into account the insights from interviews with Japanese

managers working for UK and German branches of global Japanese companies, conducted prior to the above survey. For the details of the manager interviews, see Appendix.

From the manager interviews, we assume that the annual after-tax net incomes, employment conditions such as paid leave before and after the transfers from Japan to Europe are not significantly different.[10] This is because the transfers are not of the workers' choice but at the firm's behest, and therefore the transferred workers are guaranteed the same conditions, including salary and paid leave, as if they had continued to stay in Japan.

On the other hand, we find it important to control for the differences in job and HRM characteristics (such as workload or performance assessment systems), work hour regulations, and business cycles since these factors would have changed after the transfer to Europe. To control for these factors, we designed our survey to ask several questions concerning job and HRM characteristics as well as the group interaction between Japanese managers and European coworkers.

(1) Control variables: job and HRM characteristics

First, to control for possible changes in job characteristics, we asked each respondent in the survey whether the following four conditions had changed (increased / decreased / stayed the same) after moving to Europe: (a) I have a lot of work, (b) I have a certain amount of discretionary power, (c) my job mostly involves team working,[11] (d) I have a clear job description. Using the answers, we control for the changes in job characteristics.

Second, in order to adjust for possible changes in the performance assessment systems in European branches, we asked each respondent whether "people who work overtime or during holidays are valued highly" at one's workplace and whether such conditions had changed (increased / decreased / stayed the same) compare with one's previous workplace in Japan. We take this information as a change in performance

[10] Regarding income, we also assume that there is no income effect on hours worked since this paper focuses managerial level employees.

[11] Bell and Hart (1999) suggest that team work is one of the possible factors that explain the existence of unpaid work. Hamilton, Nickerson, and Owan (2003) find that the adoption of team piece rates at a plant improved worker productivity by 14 percent on average. We therefore take into account whether a worker works in a team or not, although we do not necessarily limit our interest to workers who work as a team.

assessment practices at workplace, and incorporate it in the analysis below.

Third, we asked a unique question to measure respondents' coordination costs within firms, which we call *nemawashi*.[12] Specifically, we asked the respondents the following question: "When you need to get an approval or sign off for an important decision or a new project, how many of your colleagues or managers do you have to talk to, on average, in order to get the approval (or get a consensus/reach an agreement)?" We expect that the more people one has to talk to, the longer his/her work hours become. Since Japanese respondents are asked to indicate the number of persons for *nemawashi* in the current position, as well as before moving to Europe, we are able to measure the change in coordination costs and use it as one of the control variables.

Lastly, since most Japanese managers were exempt from overtime regulations in Japan even as they are after moving to Europe, the differences in working hour regulations for most workers would not affect their working behavior. However, some workers in our survey were promoted as managers after moving to Europe, while some were covered by the regulations both before and after moving to Europe. Regarding these workers, we will control for the changes in the exemption status.

(2) Group interaction variables

In order to explicitly capture the group interaction effects, we ask the Japanese respondents to indicate (a) the number of years since they moved to Europe, (b) the number of non-Japanese local friends and acquaintances outside the workplace, and (c) proportion of time spent dealing with local non-Japanese staff and clients. The number of years since relocation is intended to assess how the group interaction effect evolves over time. The number of non-Japanese local friends and proportion of time spent with non-Japanese local staff and clients are used to examine whether those who interact more with local people inside and outside the workplace tend to change their ways of working. We assume that the more local

[12] In Japan, when making an important decision or starting a new project, workers tend to spend quite a lot of time for in-advance negotiations behind the scenes, talking to many colleagues or superiors to reach a consensus or to get approvals. This practice is called *nemawashi* in Japanese. The term *nemawashi* means laying the ground work, which originally comes from the practice where one must dig around the roots a year or two before transplanting a tree.

friends one has, the more fun one feels by hanging out with them rather than working late in the office. In this paper, we call this the *neighborhood effect*. Similarly, the more a person works with local staff and clients, the more he/she would find it comfortable to adjust to Europeans' working habits. We call this the *peer effect*. Even after moving to Europe, if a person mostly spends his/her time at office dealing either with his/her colleagues in head office or local Japanese staffs, the person would be no different from one who works in Japan. We especially focus on this peer effect variable since it enables us to distinguish peer effects at the workplace from other factors. This is because the institutional factors specific to a certain workplace or region may induce worker behavior in the same direction even if the peer effect is not present (Manski, 1993). For example, if there is a strict shop-opening-hour legislation in the region, it may urge workers to finish work quickly in order to shop for groceries on their way home. Our peer effect variable enables us to identify the genuine group interaction effect among workers. In addition, in order to control for institutional differences between the UK and Germany, we also incorporate country fixed effects in the estimation below. Both neighborhood and peer effects are considered as types of group interaction effects.

IV. Group interaction effects on hours worked

In what follows, we conduct three types of analysis to measure group interaction effects.

(1) Difference-in-difference estimation

To assess the group interaction effects, we first take the difference-in-differences regression approach to control for aggregate year-specific effects. Our survey was conducted from December 2009 through January 2010. Therefore, the observed changes in hours worked after Japanese workers moved to Europe most likely include the effect of aggregate demand shocks such as the financial crisis of 2008. To isolate these effects from the group interaction effects that may arise after the relocation to Europe, we construct a control group in which workers were not transferred to Europe but stayed in Japan before and after the financial crisis. For the control group, we use the *Keio Household Panel Survey* (KHPS), which is the

broadest household longitudinal survey in Japan.[13] From KHPS dataset, we limit our samples to managerial workers who have been transferred from one establishment to another within the same company.[14] Although these control group workers were transferred within the same company, they continued to work in Japan even after the financial crisis. Thus, by subtracting the change in the work hours of the control group from that of the treatment group, we are able to identify the group interaction effects.

With the indices $(n_1,\cdots,n_N)$ for our survey data and $(m_1,\cdots,m_M)$ for KHPS data, the estimation equation is expressed as follows:

$$h_{it} = \alpha(\Omega_{it})EU_{it} + \lambda_t + f_i + X_{it}\beta + u_{it}$$
$$,i = \{(n_1,\cdots,n_N),(m_1,\cdots,m_M)\},\ t = 2004,\cdots,10, \qquad (1)$$

where h_{it} is the log of weekly hours worked by individual i in year t;[15] EU_{it}, an indicator variable that takes 1 if an individual works in Europe and 0 in Japan; Ω_{it}, the group interaction variables such as the number of non-Japanese friends; λ_t, the aggregate year-specific effects; f_i, the unobserved individual-specific effects; X_{it}, the observed individual characteristics (the number of years since transfer and occupation dummies); and u_{it}, the error term. The fixed-effect estimation of equation (1) yields the estimates of the group interaction effects $\alpha(\Omega_{it})$, as well as aggregate year-specific effects λ_t.

Table 2 shows the estimation results of equation (1). Case (1) of Table 2 shows that hours worked by those who had been transferred to Europe decreased significantly—by 8.4 percent—after moving to Europe. In case (2), where we control for year-specific effects, on

[13] The KHPS, sponsored by the Japanese government, is a longitudinal survey of individuals conducted by Keio University every January since 2004. It has a broader coverage than any such survey in Japan. The survey selects 4,000 individuals at random from the entire Japan-resident population (male and female) aged 20 to 69 years using two-stage sampling. According to Kimura (2005), who made a detailed analysis of the KHPS sample characteristics, no significant differences are found in the distribution of major variables compiled from the KHPS survey questions compared with other official statistics of Japan, including the Population Census and the Labor Force Survey, both of which are taken by the Statistics Bureau of the Ministry of Internal Affairs and Communications.

[14] Using only movers in the KHPS as a control group also accounts for the possibility that hours worked by the movers would increase until they get accustomed to the new environment. However, with non-movers of the KHPS included in our sample, we get very similar results.

[15] As mentioned above, our survey was conducted from December 2009 through January 2010 by CATI. For convenience, we assume the survey year is 2010, even for the surveys conducted in December 2009.

the other hand, the decrease in hours worked is 7 percent, which indicates that a 1.4 percent decrease should be attributable to the aggregate year-specific effects. It is shown, however, even if we control for the aggregate demand shocks such as the financial crisis, we still observe significant group interaction effects, that is, a 7 percent decrease in hours worked by Japanese who are transferred from Japan to Europe.

Cases (3) to (6) of Table 2 show the regression results, which took group interaction variables into account. A proportion of work time with non-Japanese staff and clients is significantly negative, while the number of years since their transfer to Europe and the number of non-Japanese friends are both insignificant. These results indicate that group interaction effects are mainly brought about by peer effects of the workplace. It is shown from the estimated parameter that those who interact with local staff and clients for 80 percent of the total work time show a decrease of about 10.7 percent in hours worked.

(2) Controlling for job and HRM characteristics: hours worked and presenteeism

One of the limitations of the above estimation is that we have not so far controlled for the possible changes in job characteristics after the worker moves to Europe. However, the KHPS data do not contain such information. Therefore, in the rest of the analysis, we use only our survey data, which contain rich information on job and HRM characteristics.

As shown in Table 2, however, it is important to control for the aggregate demand shocks. Hence, we explicitly include the aggregate year-specific effects estimated in Table 2 as follows:

$$h_{it} = \alpha(\Omega_{it})EU_{it} + \hat{\lambda}_t + f_i + Z_{it}\gamma + u_{it} \quad ,i = (n_1, \cdots, n_N), t = 2004, \cdots, 10 , \qquad (2)$$

where Z_{it} is a set of variables for job characteristics and other individual characteristics and $\hat{\lambda}_t$,a set of the estimated aggregate year-specific effects from equation (1). Since our survey data relate to two periods of time, before (EU_{it} = 0) and after (EU_{it} = 1) moving to Europe, the equation to be estimated is simplified as follows:

$$h_{i,10} - h_{i,\tau} = \alpha(\Omega_{i,10}) + (\hat{\lambda}_{10} - \hat{\lambda}_{\tau}) + (Z_{i,10} - Z_{i,\tau})\gamma + \varepsilon_i \quad ,i = (n_1, \cdots, n_N) , \qquad (3)$$

where τ indicates a year before the move to Europe. In the estimation, we use weekly hours worked as the dependent variable as in Table 2.

Weekly hours worked

Table 3 shows the estimation results for weekly hours worked. Looking at case (1), where we do not include any year-specific effects, the group interaction effects are estimated as -7.9 percent. Once we include the estimated year-specific effects in case (2), those effects reduce to -4.1 percent.

As for the effects of the changes in job and HRM characteristics, we see significant results of the workload, performance assessment practices and coordination costs within the firm. It is interesting to note that the performance assessment (whether overtime is highly valued) and the coordination cost (the number of persons laying the groundwork; *nemawashi*) has positive effects on hours worked as we expected. It should be noted here that a firm's performance assessment practices and coordination costs might be both closely related to the work habits of peers. For instance, workers transferred to Europe might reduce in-advance coordination, getting to know from their peers that excess consultation with bosses and colleagues when carrying out a project is considered inefficient. If this is the case, the estimated coefficients for a firm's performance assessment practices and coordination costs would include group interaction effects. We may regard -4.1 percent as the minimum of the average group interaction effects. Furthermore, although not shown in the table, for those who worked very long hours while in Japan, we found that the longer they worked in Japan, the greater was the downward adjustment after the transfer. Specifically, for those who worked more than 60 hours per week in Japan, the group interaction effects were -16.0 percent, compared to -7.9 percent for those who worked 50 to 60 hours per week.

Looking next at the group interaction variable in cases (4)–(6), the proportion of work time with non-Japanese staff and clients is significantly negative, as is the case in Table 2. Even after controlling for job and HRM characteristics and year-specific effects, we can confirm the significant group interaction effects through peer effects of the workplace.

Table 3 also shows the effects of working-hour regulations. As stated above, most of the workers in our sample are exempt from working-hour regulations. However, for those

who are subject to the regulations, both in Japan and Europe, the hours worked declined significantly. This indicates that stronger regulation on work hours would serve in reducing hours worked by non-exempt workers.[16] Lastly, we see that other variables in Table 3 such as family (living with spouse and/or child) and region (the UK or Germany) are not significant as a determinant of the changes in hours worked.

Annual hours worked and paid leave taken

We next see how group interaction affects the workers' choice on annual hours worked and paid leave. In Tables 4(1) to 4(3), we see that annual hours worked decrease by 5.2 percent due to the group interaction effects—an amount greater than the weekly hours worked. In addition, peer effects (the coefficient of the proportion of work time spent with non-Japanese staff and clients) of annual hours worked are greater than those of weekly hours worked. Tables 4(5) to 4(8) show a significant increase in the days of paid leave taken after a worker moves to Europe. It is also worth noting that for paid leave not only the peer variable but also the number of years since the move to Europe and the number of non-Japanese local friends are significantly positive. These results indicate that workers tend to take more paid leave as their stay in Europe becomes longer or the number of non-Japanese friends increases.

Attitude to work: presenteeism and customer-first mentality

In addition, we use the indicator variables of workers' sentiments to see the changes in work attitude that is closely related to hours worked. In the survey, we asked the respondents the following two questions: (a) Is it difficult to leave if other people are still in the office? (b) If you received an urgent request from an important client, which of the following most closely describes your response in your current situation? The answer to the former question ("yes" or "no") was intended to determine whether an attitude of *presenteeism*[17] exists in the

[16] Overtime regulations are stricter in European countries compare to that of Japan.

[17] In general, the term *presenteeism* is used to describe the problems faced when employees come to work in spite of illness, which can have negative repercussions on business performance. The term is also used to imply the expectation on the part of employers that their employees be present at work regardless of whether any work is available or

respondent's workplace. For the latter question, the following two choices were indicated: (1) even if it was unreasonable, you would rearrange things at the office to respond to their request, or (2) you would give the client a possible time frame for a response based on the current situation in the office. This question was intended to see whether a *customer-first* mentality, that is, the tendency to choose (1), exists in the workplace. It has long been said that many Japanese firms invest great efforts to forge such a corporate culture among employees. Since these variables are closely related to hours worked, the group interaction effects should be observed in terms of not only the actual hours worked but also the attitude to work.

Table 5 shows the group interaction effects on worker attitudes: presenteeism and the customer-first mentality. Probit estimates in Table 5 partially endorse such effects on attitudes, indicating that both presenteeism and customer-first mentality decreased after workers moved to Europe. As for presenteeism, the group interaction effects evolve as the residence in Europe becomes longer. Regarding the customer-first mentality, on the other hand, the peer effects at the workplace seem to be important.

(3) Convergence to neighbor and peer worker levels

We have confirmed significant decreases in hours worked by Japanese workers after their move to Europe. However, we have not considered how close the hours worked would converge to their neighbor and peer worker levels. To examine this, we estimate the following adjustment function for hours worked:

$$h_{i,10} - h_{i,\tau} = \theta(\Omega_{i,10})(\bar{h}_i^r - h_{i,\tau}) + (Z_{i,10} - Z_{i,\tau})\gamma + \varepsilon_i \quad , i = (n_1, \cdots, n_N) \quad (4)$$

where $\bar{h}_i^r$ is the reference level of hours worked by Japanese worker i (i.e., log of hours worked by the neighbor and peer workers) and the parameter θ indicates the degree of convergence, which ranges from 0 (no group interaction effects) to 1 (large group interaction effects and complete convergence). If the group interaction effects are large enough so that hours worked by those who are transferred from Japan to Europe are wholly influenced by

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accomplished. In this paper, we assume the latter implication.

their neighbor and peer workers in Europe, the work hours by Japanese should converge to the level of comparable Europeans, with other factors being equal. By estimating θ, we assess the degree of convergence of hours worked as a result of the group interaction effects. In the estimation, we assume that the degree of convergence is a cubic function of the number of years since the workers moved to Europe and a linear function of other group interaction variables.

As for the reference level of hours worked, we use three types of $\bar{h}_i^r$, estimated as follows:

$$\bar{h}_i^{r_1} = \frac{1}{N_{L_i}} \sum_{k \in L_i} h_k \quad \text{where} \quad L_i = \{UK, Germany\}, k = 1, \ldots, N_{L_i},$$

$$\bar{h}_i^{r_2} = \hat{h}_i = Z_i \hat{\delta}_k \quad \text{where} \quad \hat{\delta}_{L_i} \text{ is an estimate from } \quad h_k = Z_k \delta_{L_i} + \nu_k, \; k \in L_i,$$

$$\bar{h}_i^{r_3} = \frac{1}{\# J_M(i)} \sum_{l \in J_M(i)} h_l \quad \text{where} \quad J_M(i) = \{l = 1, \ldots, N_{Li} \mid \|Z_l - Z_i\| \le d_M(i)\},$$

where N_L is the number of observations for locally hired managers in country L_i= {*UK, Germany*} where worker *i* is working, $J_M(i)$ is the set of indices for the matches for worker *i* that are at least as close as the *M*th match, $\#J_M(i)$ is the number of elements of $J_M(i)$, and $d_M(i)$ is the distance of the *M*th-closest characteristic.

The first reference hours worked, $\bar{h}_i^{r_1}$, is the sample average of log hours worked by locally hired UK (German) managers if worker *i* is working in the UK (Germany). Second, $\bar{h}_i^{r_2}$ indicates the counterfactual hours worked by worker *i*, derived on the assumption that worker *i* is a locally hired manager. More specifically, we first estimate the hours-worked regressions $h_k = Z_k \delta_L + v_k$ by using the observations of locally hired UK (German) managers *k*. By using the estimates $\hat{\delta}_{L_i}$, we next derive the predicted hours of worker *i* by substituting his/her individual characteristics Z_i into $Z_i \hat{\delta}_{L_i}$. Third, $\bar{h}_i^{r_3}$ is the nearest neighborhood-matching estimate of counterfactual hours worked. We first collect locally hired UK (German) managers whose individual characteristics Z_i are close to those of worker *i*. Then, taking the sample average of similar workers, we derive the counterfactual hours worked for worker *i*. Regarding individual characteristics to estimate second and third reference hours, we used tenure at the current firm, years of experience, age, occupation, whether exempt from the overtime regulation, main business (industry) of the firm, number of regular employees at the

workplace, marital status, and number of children living with the respondents, which are queried to both Japanese and non Japanese respondents.

Tables 6(1) to 6(3) summarize the estimation results of equation (4) on annual hours worked when $\bar{h}_i^{r_1}$, $\bar{h}_i^{r_2}$, or $\bar{h}_i^{r_3}$ is used as the reference hours worked. All the tables show that the degree of convergence to the reference level is significantly affected by the group interaction variables: the number of years since the transfer to Europe has a nonlinear effect on the degree of convergence, while the proportion of work time spent with non-Japanese staff and clients (peer effects) has a positive effect.

On the basis of the estimation results of Table 6(3), we plot in Figure 3 the estimated degrees of convergence θ for different values of group interaction variables to see how the group interaction effects evolve. It is shown in Figure 3 that hours worked converge only to a level in the range of 15 to 40 percent of the reference hours worked when the number of years since the transfer to Europe is less than one. However, hours worked converge to a level in the range of 35 to 60 percent of the reference after the first year and remained relatively the same for the next several years. When the number of years since the transfer to Europe exceeds five, the hours worked converge to 55 to 80 percent of the reference level. This pattern of work hour change implies that with more time spent in Europe, Japanese workers seem to adjust more to European ways of working. However, our results indicate that neighbor and peer worker influences do not affect Japanese working habits linearly, but rather non-monotonically. The reason for the large convergence after five years is not clear. According to a survey conducted by the Japan Institute for Labour Policy and Training among Japanese workers who worked outside Japan (JILPT [2008]), those transferred to European countries stay 4.5 years on average (standard deviation = 1.3). This implies that almost half of the workers return to Japan within five years. If this is the case, the chances of further staying in Europe become 50 percent after four years in Europe, which might serve as the threshold period for a change in work habits. One interpretation is that the non-monotone convergence after the fifth year in our analysis may reflect this change for those who stay longer than the expected period.

We shall also emphasize that the degree of convergence is affected by the proportion of work time spent with non-Japanese staff and clients. For those who spend 80 percent of their work time with non-Japanese staff and clients, the degree of convergence becomes

nearly 80 percent of the reference hours within five years. It remains about a half of the reference level for those who spend only 40 percent of their time with non-Japanese workers. This finding stresses the importance of interaction with local colleagues and clients as a factor contributing to group interaction effects.

V. Robustness check and interpretations

(1) Robustness check

In this section, we check whether the group interaction effect described in Section IV can still be observed even after adjusting for the several institutional changes and individual heterogeneity.

First, we adjust for the difference in the number of national holidays. In Japan, there are fifteen national holidays per year, while the UK and Germany have only eight and ten days, respectively. Therefore, the increase in the days of paid leave taken after the workers move to Europe might be offset by the decrease in the number of national holidays. To take this into account, we recalculate the annual work hours of each subject, adjusting the national holidays of the country where the person actually works. The estimation result, using equation (3), is shown in Table 7. Cases (1) and (2) in the table show the results when the left-hand side variables are the annual hours worked ignoring the difference in national holidays (case (1) is the same result shown in Table 3). Although the result obtained in case (3) in Table 7 is not significant, case (4) suggest that even after taking into account the differences in national holidays, the group interaction effect can be still observed for Japanese workers transferred to Europe especially for those who interact with locally hired staffs.

Second, we adjust for the institutional changes that occurred to a large number of Japanese respondents after moving to Europe: sick leave. In Japan, workers are expected to take sick leave as part of their annual entitlement of paid leave. According to our survey, however, almost 60 percent of respondents answered that they no longer need to take sick leave from the annual entitlement as long as they work in Europe. Cases (5) and (6) are the results adjusted for institutional changes with regard to sick leave, indicating that the group interaction effect still holds after the adjustment.

Third, we incorporate three variables to control for individual heterogeneity in order

to take account of the possible selection bias that might influence the results obtained above: (a) the total number of years the person lived overseas since starting work (excluding the number of years since his/her moving to Europe at the time of the survey), (b) age group dummies, and (c) motivation for promotion. In our survey, some respondents answered that this was not their first stint working abroad. We check whether such overseas experience in the past might influence the group interaction effect. In addition, we also consider the possible difference in the adjustment by age. One may think that if preference toward leisure is different among ages the adjustment of hours worked may differ by age even with the same environmental changes. We also take into account whether differences in one's motivation for promotion (individual preferences) will affect the order of the group interaction effect. Specifically, we ask the respondents, "How concerned are you about lack of career progression or colleagues being promoted ahead of you?" and respondents are asked to choose from four choices: highly concerned, fairly concerned, not very concerned, and not at all concerned. We take 1 when a respondent chooses highly concerned for the answer in order to see whether differences in the aggressiveness toward promotion would affect one's behavior.

Table 8 shows the results based on these three variables. As can be seen from the table, even after controlling for individual heterogeneity, the findings shown in Section IV still hold.

(2) Interpretations

The above estimation results tell us that the number of hours worked by Japanese workers declined significantly after moving to Europe from the influence of peer working behavior. Then, why are Japanese workers affected by their peer workers? While explaining complementarities in hours worked in Section II, we considered two possible channels through which other people's work hours may influence one's choice of labor supply. One is the *technical channel,* typical of team production. When a person's job involves team work, production is not possible if his/her coworkers leave office early. In such a case, the person has to reduce the work time even if he/she does not want to. Another is the *mental channel*; a person may feel lonely or a sense of isolation when he/she spends long hours alone at the workplace while coworkers and friends enjoy leisure time. In addition, the person may feel

ashamed to be considered a clumsy worker, always the last to leave office. Therefore, both cases urge the person to speed up his/her work. Which was the channel through which the Japanese workers in our study were more likely to be influenced? Our estimates in Table 5 suggest that the Japanese workers' sentiments toward work had changed after moving to Europe. We also confirmed that our estimation results in Tables 3, 4, and 6 do not change even when we control for a dummy variable that takes 1 if a worker answered that "my job mostly involves team working." Both evidences suggest the importance of the mental channel. In addition, the following episodes obtained during the manager interviews also endorse the relevance of the mental channel.

During the interviews with Japanese managers working in the UK or Germany, many of them described several common features of European ways of working quite different from Japanese. One feature is the attitude toward risk taking. Many Japanese managers mentioned that in European workplaces people who occasionally produce great results are highly estimated even if they have made some mistakes or errors (merit system). On the other hand, they note that the typical attitude in workplaces in Japan is such that people who make few mistakes or errors are highly valued even if they have not produced any great results (demerit system). Furthermore, they mentioned that such merit-based system in European workplaces induces workers to take risks, and consequently decisions are likely to be made quite promptly. In addition, even though their own performance assessment does not change after moving to Europe, many managers feel that this attitude at the workplace influences their own way of thinking and attitudes toward taking risks to some extent. This expedites their own decision making after moving to Europe.

Another feature concerns work efficiency. Many managers point out that the Japanese tend to pursue 100 percent quality in every task, while Europeans are more likely to think about cost effectiveness. For example, one manager mentioned that "Japanese sales representatives prepare five to ten patterns of presentation materials before visiting a client. This is to get ready for any type of inquiry that may occur from a client. This practice is actually appreciated by many clients, but employees have to take quite an amount of time to prepare them, which consequently leads them to work long hours. On the other hand, from my casual observation, locally hired sales representatives seem to prepare just a very simple presentation material beforehand, get information of clients' needs during meetings, and

respond to the client's needs only when they are required. It seems that the latter style saves a lot of time." Another manager said, "To make 80 percent of quality in your work you only need to take 20 percent of your energy, but to further raise the quality from 80 to 100 percent, you need to spend 80 percent of energy. In Japan, all tasks are implicitly required to get done with 100 percent quality—even internal meeting materials just for inside staff. I think it is very inefficient to take a long time to make internal materials look nicer, and I believe many people also feel the same way, but people just chicken out from changing such culture. I would say this quality-seeking attitude in Japanese firms is one of the major reasons for Japanese to work long hours."

Lastly, let us present the result from the following survey question to Japanese workers: "Assuming that your work hours were flexible, do you think you would increase, decrease, or keep your work hours the same given your current hourly rate of pay?" According to our data, only 10 percent of workers who reduced their actual hours worked after moving to Europe answered that he/she wants to increase work hours. The several episodes and results presented above show that the mental channel seems to be the dominant path that influenced and changed the work habits of Japanese workers.

VI. Conclusion

This paper uses information on Japanese workers who were transferred to European branches of the same global companies to determine how hours worked would be affected when an individual was moved from a country where most people work long hours (Japan) to countries where people work relatively shorter hours (the UK and Germany), holding other things constant. Our findings imply that group interaction effects are of paramount importance in determining one's labor supply, suggesting another feature that may explain the cross-country differences of work hours besides tax distortions or differences in preferences among nationalities.

Since this paper focuses on hours worked, our findings cannot exactly determine whether a decrease in one's work hours after moving to Europe is the outcome of positive or negative externalities. If a worker's incentive to shirk is stronger when his/her coworkers shirk more, a decrease in hours worked can be simply considered as a negative outcome of

the productivity decline. However, since the workers we focus on are mostly middle- to senior-level managers in a more or less successful career track, such shirking behavior is unlikely. Instead, we interpret the decrease in hours worked after the workers moved to Europe as an increase in their per hour productivity due to the influence of colleagues (locally hired managers) who work more efficiently in less time, as described in Section V. The fact that the base productivity per hour is much higher in the UK and Germany than in Japan supports this interpretation (OECD [2008]).[18]

It would be interesting to see how the work hours of those who have been influenced by European ways would change after they move back to Japan, where more than 20 percent of prime-age full-time male workers work more than 60 hours a week. It would also be interesting to see how one's behavior would be affected in the opposite case—when a worker is shifted from a short-hour to a long-hour equilibrium environment. Furthermore, one would like to know if the same group interaction effects can be observed in workers of other nationalities, since Japanese are sometime considered to be a nation prone to collective action. These are areas for further study.

Appendix. Insights from manager interviews

Prior to the above survey, we conducted interviews with fourteen Japanese managers who worked in eleven global Japanese firms operating either in the UK or Germany: six firms in manufacturing sector and five firms in the service sector (three firms in finance or insurance, one in wholesale, and one in information and telecommunications). Each interview took about 1.5 to 2 hours. The following is an overview of the common issues we heard from the interviews.

Transfer system and HRM

In general, the transfers to overseas branches are assigned by the personnel department[19] at

[18] Blanchard (2004) suggests in the US over the period 1970 to 2000, GDP per hour increased by 43 percent whereas in France, over the same period, GDP per hour increased by 80 percent, indicating a much higher rate of growth in productivity per hour in European countries than in the US.

[19] In general, the personnel department in Japanese firms has a great deal of power and influence compared with that of western firms. Regarding the general practices of the

headquarters in Japan, and therefore workers are less likely to move of their own choices.[20] Although the length of appointment depends on each firm's personnel policy, most of the managers answered the average is about three to five years. There are some workers who are transferred from one country to another other than Japan, but most of workers are transferred from Japan and are transferred back after several years.

Since the transfers are not made by workers' wish but assigned by the firm, transferred workers are guaranteed the same conditions, including salary, managerial practices, and paid leave as if they stayed in Japan. Specifically, firms basically assure those workers the same level of annual after-tax net income, which indicates that we do not necessarily have to consider the differences in salary, tax rates, and other social insurance system between Japan and the UK/Germany.[21] Similarly, the managerial practices and other labor conditions (such as the number of paid leave given to workers) are essentially the same with the workers in Japan. Thus, we do not basically take account of the differences in HRM system before and after the transfer to the UK/Germany. Regarding performance assessment, however, many firms employ a dual system in European branches; each worker's performance is first assessed and reported to the personnel office at the headquarters by his/her boss in the same establishment, and the final assessment is made by the personnel office. In order to take account for the possible changes at the first-tier assessment practices by bosses in the European branches, we employ information that denotes whether practices of performance assessment at workplace have changed after moving to Europe in the analysis below. Detailed description is stated in Section III (2).

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personnel department in Japan, see Jacoby (2005). He points out that the number of people working in the personnel department of Japanese firms per 100 employees is, on average, almost double that of American firms.

[20] This is the typical practice, established in the 1960s and 1970s, for Japanese firms. Initially, the practice of transferring workers without their consent was started during the economic downturn by relocating workers from a bad-performing section/department/establishment to a good-performing one to adjust personnel costs and avoid redundancy. Furthermore, in order to relocate workers from one place to another efficiently, many firms gradually adopted such practices on a routine basis. By the mid-1980s, such practices came to be endorsed by the Supreme Court (July 14, 1986), which decreed against an employee who was dismissed from a firm for refusing the firm's command to move establishments and ruled the dismissal effective.

[21] Even if there were some changes in net income after being transferred to Europe (such as additional oversea allowances), we assume that the income effects on hours worked are negligible since our main focus is workers in managerial levels.

Workload, miscellaneous job characteristics, and business cycle

Hours worked would differ if the worker's workload itself changed after moving to Europe. In fact, some managers mentioned that their workload had increased compared to their previous position in Japan, while others stated it had decreased. We control for such changes in the workload in our analysis.

Besides workload, many managers mentioned one factor that had increased significantly after moving to Europe: discretionary power. The major reason for gaining discretionary power seems to be related to the size of the establishment. Since discretionary power has a lot to do with the speed of decision making, and therefore strongly related to hours worked, we also control for this factor in our analysis.

Furthermore, many Japanese managers mentioned that in Japan, when making an important decision or starting a new project, workers tend to spend quite a lot of time for in-advance negotiations behind the scenes, talking to many colleagues or superiors to reach a consensus or to get approvals. This practice is called *nemawashi* in Japanese, and we regard this as a sort of coordination cost for a firm that would result in long work hours. In interviews, many managers state that the *nemawashi* cost has decreased after moving to Europe. Thus, we also control for this change in our analysis.

In addition, most Japanese managers stated that they were exempt from overtime regulations in Japan and it does not change even after moving to Europe. Thus, for most workers, the differences in working hour regulations such as maximum work hours or overtime premium would not affect their way of working. However, some workers in our survey were promoted as managers after moving to Europe, and therefore became exempt from work hour regulations such as the EU Working Time Directive. On the other hand, some workers were not exempt from the regulations both before and after moving to Europe, and thus would be affected by the difference in work hour regulations between Japan and the UK/Germany. Regarding these workers, we control for the changes in the status of exemptions from working hour regulations in the analysis.

Lastly, many managers mentioned that work hours have recently decreased significantly with the financial crisis of 2008. This implies that the observed decline in hours worked in Figure 1 might have been brought about by the aggregate shocks from the financial crisis of 2008.

Although we control for the change in workload after moving to Europe, we also explicitly account for the effect of business cycles on hours worked by Japanese managers. This is done by using the difference-in-differences analysis in Section IV.

Reference

Alesina, Alberto, Edward Glaeser, and Bruce Sacerdote, "Work and Leisure in the United States and Europe: Why So Different?" *NBER Macroeconomics Annual 2005*, 2006, pp.1-64.

Bandiera, Oriana, Iwan Barankay, and Imran Rasul, "Social Incentives in the Workplace," *The Review of Economic Studies*, 77, 2010, pp.417-458.

Bell, David N. F. and Robert Hart, "Unpaid Work," *Economica*, 66, 1999, pp.271-290.

Blanchard, Olivier, "The Economic Future of Europe." *Journal of Economic Perspectives*, 18(4), 2004, pp.3-26.

Faggio, Giulia and Stephen Nickell, "Patterns of Work across the OECD," *The Economic Journal*, 117, 2007, pp.F416-F440.

Falk, Armin and Andrea Ichino, "Clean Evidence on Peer Effects," *Journal of Labor Economics*, 24(1), 2006, pp.39-57.

Glaeser, Edward L., Bruce L. Sacerdote, and Jose A. Scheinkman, "Crime and Social Interactions," *The Quarterly Journal of Economics*, 111(2), 1996, pp.507-548.

Glaeser, Edward L., Bruce L. Sacerdote, and Jose A. Scheinkman, "The Social Multiplier," *Journal of the European Economic Association*, 1(2-3), 2003, pp.345-353.

Hamilton, Barton H., Jack A. Nickerson, and Hideo Owan, "Team Incentives and Worker Heterogeneity: An Empirical Analysis of the Impact of Teams on Productivity and Participation," *Journal of Political Economy*, 111(3), 2003, pp. 465-497.

Ichino, Andrea and Giovanni Maggi, "Work Environment and Individual Background: Explaining Regional Shirking Differentials in a Large Italian Firm," *The Quarterly Journal of Economics*, 115(3), 2000, pp.1057-1090.

Jacoby, Sanford, *The Embedded Corporation: Corporate Governance and Employment Relations in Japan and the United States*, Princeton University Press, New Jersey, USA, 2005.

The Japan Institute for Labour Policy and Training (JILPT), "The 7th Survey on Career and Life of Workers Sent Abroad," The Japan Institute for Labour Policy and Training, Tokyo, Japan, 2008 (in Japanese).

Kandel, Eugene and Edward P. Lazear, "Peer Pressure and Partnerships," *Journal of Political Economy*, 100(4), 1992, pp.801-817.

Kimura, Masakazu. "2004 nen Keiogijuku Kakei Paneru Chosa no Hyouhon Tokusei" (Characteristics of the 2004 Keio Household Panel Survey Sample), in Yoshio Higuchi eds., *Nihon no Kakei Kodo no Dainamizumu II* (*Dynamism of Household Behavior in Japan*), Keio University Press, Tokyo, Japan, 2005 (in Japanese).

Landers, Renee M., James B. Rebitzer, and Lowell J. Taylor, "Rat Race Redux: Adverse Selection in the Determination of Work Hours in Law Firms," *American Economic Review*, 86(3), 1996, pp.329-348.

Manski, Charles. F., "Identification of Endogenous Social Effects the Reflection Problem," *Review of Economic Studies*, 60(3), 1993, pp.531-542.

Mas, Alexandre and Enrico Moretti, "Peers at Work," *American Economic Review*, 99(1), 2010, pp.112-145.

Nickell, Stephen, "Are Europeans Lazy? Or American Crazy?" the final remarks given at the annual conference of the Fondazione Rodolfo DeBenedetti at Portovenere, la Spezia, 27 May, 2006.

OECD, *Employment Outlook*, OECD, 2009.

OECD, *Compendium of Productivity Indicators*, OECD, 2008.

Prescott, Edward, "Why do Americans Work So Much More than Europeans?" *Quarterly Review*, 28(1), Federal Reserve Bank of Minneapolis, 2004, pp.2-13.

Weinberg, Bruce A., Patricia B. Reagan, and Jeffery J. Yankow, "Do Neighbors Affect Hours Worked? Evidence from Longitudinal Data," *Journal of Labor Economics*, 22(4), 2004, pp.891-924.

Table 1 Descriptive statistics

	Mean	Std. Dev.	Min	Max
Hours worked and paid leave taken				
Weekly hours worked in EU	50.48	8.59	35.00	90.00
Weekly hours worked in Japan	55.78	9.64	35.00	90.00
Changes in hours worked (%)	-9.89	17.79	-71.91	58.78
Annual hours worked in EU	2480.45	439.09	1677.43	4602.86
Annual hours worked in Japan	2777.66	490.71	1755.00	4566.86
Changes in hours worked (%)	-11.28	18.57	-80.59	58.78
Paid leave taken in EU (days)	15.20	7.34	0.00	42.00
Paid leave taken in Japan (days)	11.78	6.74	0.00	40.00
Difference in paid leave taken (days)	3.41	6.33	-15.00	30.00
Attiude toward work				
Presenteeism (Increased or no change =1)	0.05	0.21	0.00	1.00
Priority of client (Increased or no change =1)	0.78	0.42	0.00	1.00
Group interaction /peer /neighborhood variables				
Number of years since moving to Europe	2.15	1.40	0.00	5.00
Number of non-Japanese local friends (More than 10 people=1)	0.29	0.46	0.00	1.00
Proportion of work time with non-Japanese	0.52	0.19	0.00	0.98
Job and HRM characteristiscs				
Workload (Increased=1, no change =0, decreased=-1)	-0.02	0.80	-1.00	1.00
Discretionary power (1, 0, -1)	0.73	0.57	-1.00	1.00
Element of team working (1, 0, -1)	-0.06	0.79	-1.00	1.00
Clarity of job description (1, 0, -1)	0.02	0.77	-1.00	1.00
Performance accessment (work overtime is valued highly: 1, 0, -1)	-0.51	0.55	-1.00	1.00
Δ(Coordination cost inside a firm (number of persons laying groundwork; nemawashi))	-1.21	2.75	-15.00	5.00
Occupation dummies				
Specialist/ Technical	0.14	0.35	0.00	1.00
Management	0.58	0.49	0.00	1.00
Clerical	0.08	0.27	0.00	1.00
Sales/Marketing	0.13	0.33	0.00	1.00
Sales representative (sales calls, etc.)	0.04	0.21	0.00	1.00
Services and others	0.02	0.13	0.00	1.00
Manager dummy	0.87	0.33	0.00	1.00
Work hour regulation dummies				
Exempt both in Japan and the EU	0.75	0.43	0.00	1.00
Non-exempt both in Japan and the EU	0.12	0.33	0.00	1.00
Now exempt in the EU	0.13	0.34	0.00	1.00

Notes: Japanese respondents. Although 344 respondents were selected, only those who answered all questions were considered for the analysis of weekly hours worked.

Table 2 Difference-in-difference estimation of group interaction effects

	(1)	(2)	(3)	(4)	(5)	(6)
Group interaction /peer /neighborhood variables						
EU Movers (from Japan to EU =1)	-0.084**	-0.070**	-0.058*	-0.066**	0.002	0.012
	(0.014)	(0.019)	(0.025)	(0.021)	(0.035)	(0.038)
EU Movers x Number of years since moving to Europe			-0.007			-0.005
			(0.010)			(0.010)
Number of non-Japanese local friends (More than 10 people=1)				-0.014		-0.010
				(0.023)		(0.023)
Proportion of work time with non-Japanese (0, 0.1, 0.2, … , 0.9 or 1.0)					-0.138*	-0.134*
					(0.058)	(0.057)
Year dummies						
2005		-0.033	-0.032	-0.033	-0.032	-0.032
		(0.024)	(0.024)	(0.025)	(0.025)	(0.025)
2006		0.002	0.004	0.002	0.003	0.004
		(0.024)	(0.024)	(0.024)	(0.024)	(0.024)
2007		-0.018	-0.015	-0.018	-0.018	-0.016
		(0.025)	(0.026)	(0.025)	(0.025)	(0.026)
2008		-0.045	-0.042	-0.045	-0.043	-0.041
		(0.029)	(0.029)	(0.029)	(0.029)	(0.030)
2009		-0.062*	-0.060+	-0.063*	-0.062*	-0.060+
		(0.031)	(0.032)	(0.031)	(0.031)	(0.032)
2010		-0.067*	-0.067*	-0.067*	-0.067*	-0.067*
		(0.031)	(0.031)	(0.031)	(0.031)	(0.031)
Number of years after transfer	-0.008+	0.005	0.007	0.005	0.005	0.007
	(0.004)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)
R-squared	0.135	0.151	0.152	0.152	0.159	0.160

Notes: The sample size is 1,139. Occupation dummies are included. Numbers in parentheses are robust standard errors. +, *, and ** indicate statistical significance at 10%, 5%, and 1 %, respectively.

Table 3 Group interaction effects on weekly hours worked

	Dependent variable = Δ(Log weekly hours worked)				
	(1)	(2)	(3)	(4)	(5)
Group interaction /peer /neighborhood variables					
Constant term	-0.079**	-0.041+	-0.034	-0.039	0.004
	(0.024)	(0.024)	(0.025)	(0.024)	(0.037)
Number of years since moving to Europe			-0.003		
			(0.007)		
Number of non-Japanese local friends (More than 10 people=1)				-0.007	
				(0.020)	
Proportion of work time with non-Japanese (0, 0.1, 0.2, … , 0.9 or 1.0)					-0.090+
					(0.053)
Job and HRM characteristics					
Workload (Increased=1, no change =0, decreased=-1)	0.101**	0.103**	0.103**	0.103**	0.101**
	(0.015)	(0.014)	(0.014)	(0.014)	(0.014)
Discretionary power (Increased=1, no change =0, decreased=-1)	-0.003	-0.004	-0.004	-0.004	-0.007
	(0.019)	(0.019)	(0.019)	(0.019)	(0.019)
Element of team working (Increased=1, no change =0, decreased=-1)	-0.010	-0.010	-0.010	-0.010	-0.009
	(0.013)	(0.013)	(0.013)	(0.013)	(0.013)
Clarity of job description (Increased=1, no change =0, decreased=-1)	-0.028*	-0.027+	-0.027+	-0.027+	-0.026+
	(0.014)	(0.014)	(0.014)	(0.014)	(0.014)
Performance assessment (work overtime is valued highly: Increased=1, no change =0, decreased=-1)	0.039*	0.041*	0.041*	0.041*	0.036+
	(0.019)	(0.019)	(0.019)	(0.019)	(0.019)
Δ(Coordination cost inside a firm (number of persons laying groundwork; nemawashi))	0.007+	0.007+	0.007+	0.007+	0.007*
	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)
Δ(Occupation and manager dummies)	yes	yes	yes	yes	yes
Work hour regulation dummies (base=exempt both in Japan and the EU)					
Non-exempt in both Japan and the EU	-0.067+	-0.070*	-0.070*	-0.070*	-0.067*
	(0.034)	(0.034)	(0.034)	(0.034)	(0.033)
Now exempt in the EU	-0.041	-0.034	-0.034	-0.035	-0.030
	(0.029)	(0.029)	(0.029)	(0.029)	(0.029)
Family					
Living with spouse	-0.001	0.006	0.006	0.007	0.005
	(0.027)	(0.027)	(0.027)	(0.027)	(0.027)
Living with child	0.023	0.023	0.023	0.023	0.026
	(0.025)	(0.024)	(0.025)	(0.025)	(0.025)
Region (Germany=1, UK=0)	0.023	0.022	0.021	0.022	0.026
	(0.020)	(0.020)	(0.020)	(0.020)	(0.020)
Estimated year-specific effects	no	yes	yes	yes	yes
R-squared	0.295	0.308	0.309	0.309	0.317

Notes: The sample size is 252. The numbers in parentheses are robust standard errors. +, *, and ** indicate statistical significance at 10%, 5%, and 1 %, respectively.

Table 4 Group interaction effects on annual hours worked and paid leave

	Dependent variable							
	△(Log annual hours worked)				Δ(days of paid leave taken)			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Group interaction /peer /neighborhood variables								
Constant term	-0.052*	-0.040	-0.048+	0.008	2.398*	1.333	1.880+	-1.070
	(0.025)	(0.027)	(0.025)	(0.038)	(1.064)	(1.147)	(1.099)	(1.335)
Number of years since moving to Europe		-0.006				0.681**		
		(0.007)				(0.216)		
Number of non-Japanese local friends (More than 10 people=1)			-0.017				1.897*	
			(0.021)				(0.880)	
Proportion of work time with non-Japanese (0, 0.1, 0.2, … , 0.9 or 1.0)				-0.122*				6.840**
				(0.055)				(1.793)
Job and HRM characteristics	yes	yes	yes	yes	yes	yes	yes	yes
Work hour regulation	yes	yes	yes	yes	yes	yes	yes	yes
Family	yes	yes	yes	yes	yes	yes	yes	yes
Region	yes	yes	yes	yes	yes	yes	yes	yes
Estimated year specific effects	yes	yes	yes	yes	no	no	no	no
R-squared	0.328	0.329	0.329	0.342	0.123	0.147	0.140	0.165

Notes: The sample size is 251 for columns (1)–(4) and 302 for columns (5)–(8). The numbers in parentheses are robust standard errors. +, *, and ** indicate statistical significance at 10%, 5%, and 1 %, respectively.

Table 5 Group interaction effects on work attitudes

	Dependent variable					
	Presenteeism (Increased or no change =1)			Priority of client (Increased or no change =1)		
	(1)	(2)	(3)	(5)	(6)	(7)
Group interaction /peer /neighborhood variables						
Number of years since moving to Europe	-0.006*			0.009		
	(0.003)			(0.016)		
Number of non-Japanese local friends (More than 10 people=1)		-0.013			-0.063	
		(0.010)			(0.055)	
Proportion of work time with non-Japanese (0, 0.1, 0.2, … , 0.9 or 1.0)			0.019			-0.254*
			(0.028)			(0.125)
Job and HRM characteristics	yes	yes	yes	yes	yes	yes
Work hour regulation	yes	yes	yes	yes	yes	yes
Family	yes	yes	yes	yes	yes	yes
Region	yes	yes	yes	yes	yes	yes

Notes: The sample size is 303. The numbers are marginal effects from probit estimates. The numbers in parentheses are robust standard errors. +, *, and ** indicate statistical significance at 10%, 5%, and 1 %, respectively. Presenteeism takes 1 if a respondent answered “yes” to the question “If other people are still in the office, is it difficult to leave?” and 0 otherwise. Priority of client takes 1 if a respondent answered “yes” to the question “Even if it was unreasonable, would you rearrange things at the office to respond to an important client’s urgent request?” and 0 otherwise.

Table 6 Adjustment of annual hours worked due to neighborhood effects

(1) Reference hours worked = average hours worked by local managers

	Dependent variable = Δ(Log annual hours worked)			
	(1)	(2)	(3)	(4)
Θ				
Θ_0	0.227+	0.212+	-0.054	-0.049
	(0.115)	(0.114)	(0.134)	(0.134)
Θ_1 (Number of years since moving to Europe)	0.462**	0.451**	0.506**	0.499**
	(0.175)	(0.172)	(0.168)	(0.166)
Θ_2 (Number of years since moving to Europe^2)	-0.229**	-0.228**	-0.257**	-0.255**
	(0.086)	(0.084)	(0.082)	(0.081)
Θ_3 (Number of years since moving to Europe^3)	0.032**	0.032**	0.036**	0.036**
	(0.012)	(0.011)	(0.011)	(0.011)
Θ_4 (Number of non-Japanese local friends)		0.090		0.042
		(0.072)		(0.069)
Θ_5 (Proportion of work time with non-Japanese)			0.549**	0.527**
			(0.158)	(0.159)
Job characteristics, Work hour regulations	yes	yes	yes	yes
R-squared	0.492	0.495	0.517	0.518

(2) Reference hours worked = counterfactual hours worked

	Dependent variable = Δ(Log annual hours worked)			
	(1)	(2)	(3)	(4)
Θ				
Θ_0	0.122	0.111	-0.128	-0.119
	(0.104)	(0.102)	(0.115)	(0.114)
Θ_1 (Number of years since moving to Europe)	0.404**	0.381*	0.448**	0.429**
	(0.152)	(0.148)	(0.143)	(0.140)
Θ_2 (Number of years since moving to Europe^2)	-0.181*	-0.176*	-0.210**	-0.204**
	(0.073)	(0.070)	(0.070)	(0.068)
Θ_3 (Number of years since moving to Europe^3)	0.024*	0.024*	0.028**	0.027**
	(0.010)	(0.009)	(0.009)	(0.009)
Θ_4 (Number of non-Japanese local friends)		0.115+		0.077
		(0.063)		(0.058)
Θ_5 (Proportion of work time with non-Japanese)			0.498**	0.465**
			(0.136)	(0.135)
Job characteristics, Work hour regulations	yes	yes	yes	yes
R-squared	0.451	0.457	0.481	0.484

(3) Reference hours worked = matched hours worked

	Dependent variable = Δ(Log annual hours worked)			
	(1)	(2)	(3)	(4)
Θ				
Θ_0	0.160+	0.148	-0.090	-0.086
	(0.097)	(0.094)	(0.113)	(0.112)
Θ_1 (Number of years since moving to Europe)	0.376*	0.362*	0.379**	0.370**
	(0.148)	(0.144)	(0.143)	(0.142)
Θ_2 (Number of years since moving to Europe^2)	-0.175*	-0.173*	-0.184**	-0.183**
	(0.073)	(0.071)	(0.070)	(0.069)
Θ_3 (Number of years since moving to Europe^3)	0.024*	0.024*	0.025*	0.025**
	(0.010)	(0.010)	(0.010)	(0.010)
Θ_4 (Number of non-Japanese local friends)		0.097		0.057
		(0.067)		(0.062)
Θ_5 (Proportion of work time with non-Japanese)			0.564**	0.540**
			(0.148)	(0.148)
Job characteristics, Work hour regulations	yes	yes	yes	yes
R-squared	0.457	0.461	0.492	0.493

Notes: The sample size is 251. The numbers in parentheses are robust standard errors. *, **, and *** indicate statistical significance at 10%, 5%, and 1 %, respectively.

Table 7 Robustness check: Accounting for institutional changes

	Dependent variable : Δ(Log annual hours worked)					
	Base		National holiday		Sick leave	
	(1)	(2)	(3)	(4)	(5)	(6)
Peer/neighborhood variables						
Constant term	-0.052*	0.017	-0.023	0.047	-0.054*	0.021
	(0.025)	(0.038)	(0.025)	(0.038)	(0.026)	(0.038)
Number of years after moving to Europe		-0.004		-0.004		-0.004
		(0.007)		(0.007)		(0.007)
Number of non-Japanese local friends (More than 10 people=1)		-0.013		-0.013		-0.012
		(0.021)		(0.021)		(0.021)
Proportion of work time with non-Japanese (0, 0.1, 0.2, … , 0.9 or 1.0)		-0.116*		-0.118*		-0.126*
		(0.055)		(0.055)		(0.056)
Job and HRM characteristics	yes	yes	yes	yes	yes	yes
Estimated year specific effects	yes	yes	yes	yes	yes	yes
R-squared	0.328	0.344	0.328	0.344	0.328	0.346

Notes: 1. The sample size is 251.
2. The numbers in parentheses are robust standard errors.
3. *, **, and *** indicate statistical significance at 10%, 5%, and 1 %, respectively.

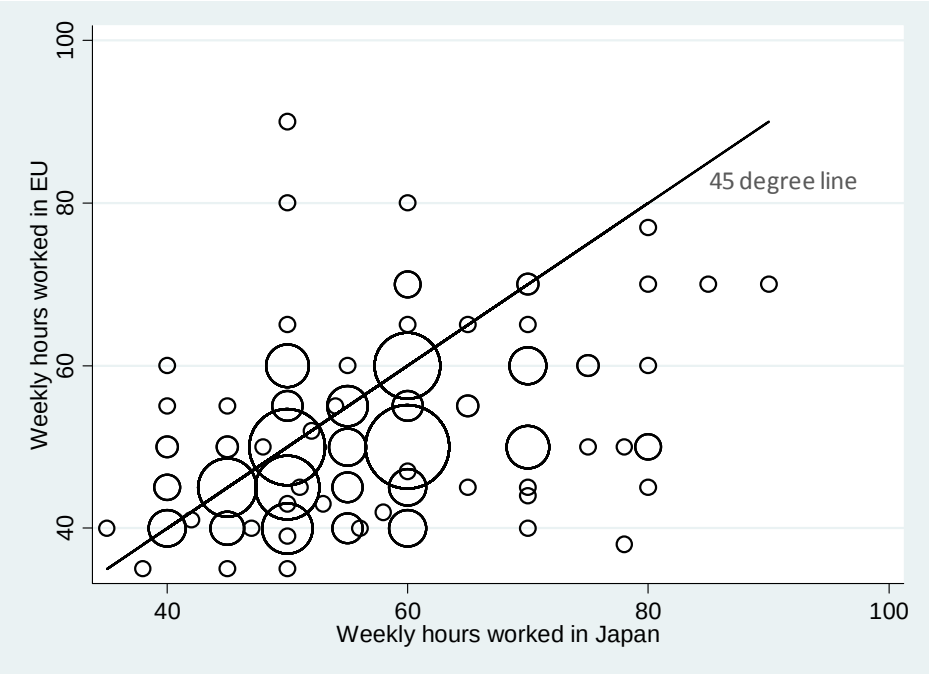
Table 8 Robustness check: Accounting for heterogeneity

	Dependent variable : Δ(Log annual hours worked)					
	oversea exp.		age dummy		career progression	
	(1)	(2)	(3)	(4)	(5)	(6)
Peer/neighborhood variables						
Constant term	-0.051*	0.009	-0.049+	0.005	-0.055*	0.019
	(0.025)	(0.040)	(0.026)	(0.045)	(0.026)	(0.041)
Number of years after moving to Europe		-0.004		0.002		-0.006
		(0.008)		(0.008)		(0.007)
x (cross term)		-0.000		-0.024		0.031
		(0.003)		(0.015)		(0.032)
Number of non-Japanese local friends (More than 10 people=1)		-0.000		-0.015		-0.017
		(0.022)		(0.026)		(0.021)
x (cross term)		-0.013		-0.003		0.070
		(0.008)		(0.046)		(0.081)
Proportion of work time with non-Japanese (0, 0.1, 0.2, … , 0.9 or 1.0)		-0.111+		-0.112+		-0.110+
		(0.060)		(0.068)		(0.057)
x (cross term)		-0.001		-0.031		-0.143
		(0.027)		(0.117)		(0.213)
Number of years in total lived overseas since starting work	-0.002	0.003				
	(0.004)	(0.014)				
Age dummy (under 40=1)			-0.025	0.032		
			(0.023)	(0.066)		
Sentiment of career progression (highly concerned=1)					0.049	0.031
					(0.036)	(0.102)
Job and HRM characteristics	yes	yes	yes	yes	yes	yes
Estimated year specific effects	yes	yes	yes	yes	yes	yes
R-squared	0.328	0.350	0.331	0.355	0.332	0.353

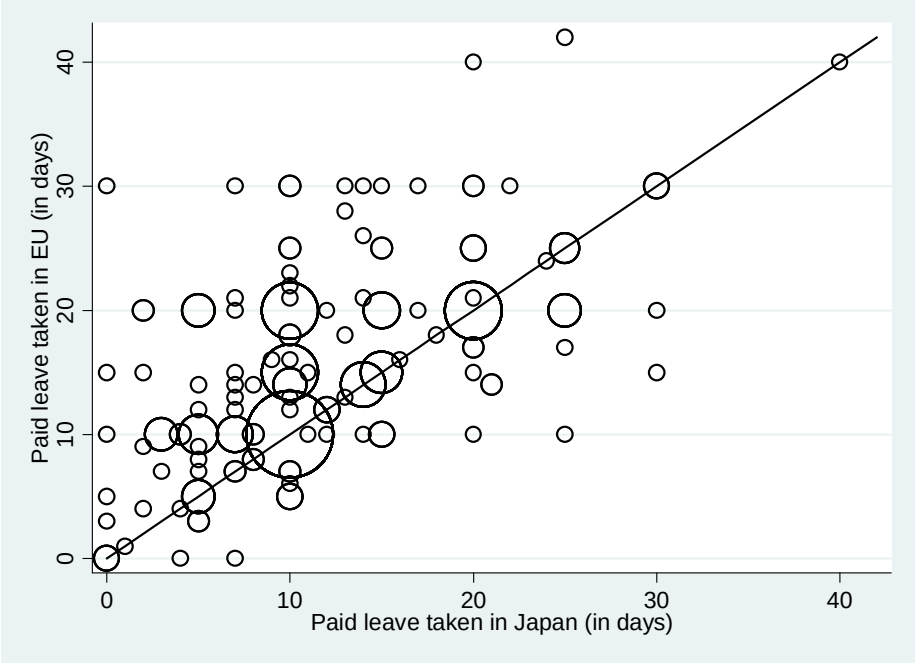
Notes: 1. The sample size is 251.
2. The numbers in parentheses are robust standard errors.
3. *, **, and *** indicate statistical significance at 10%, 5%, and 1 %, respectively.

Figure 1 Hours worked and amount of paid leaves taken before and after moving to Europe

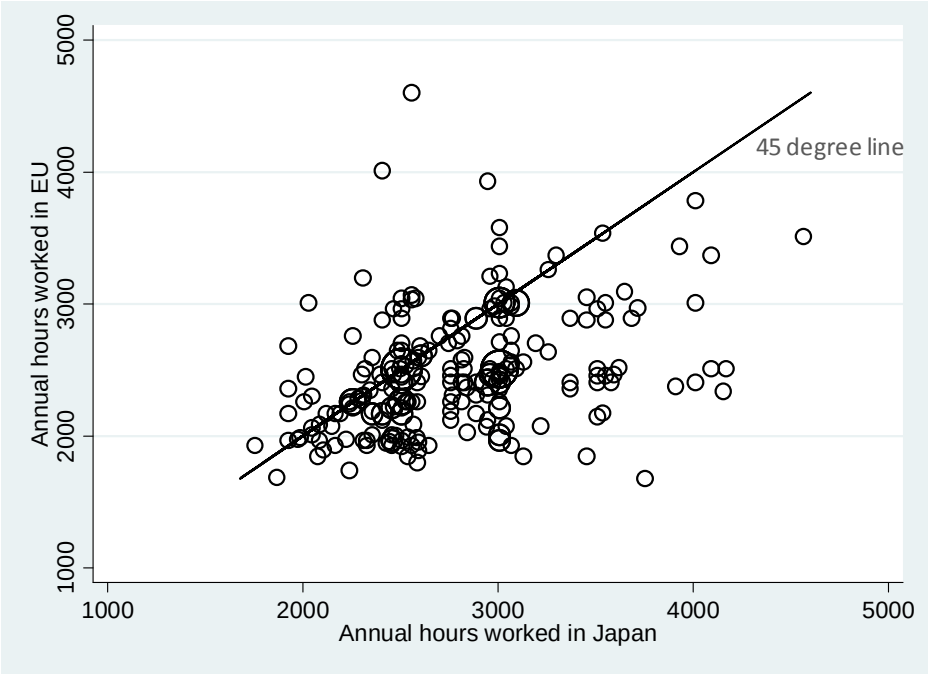
(1) Weekly hours worked



(2) Amount of paid leaves taken

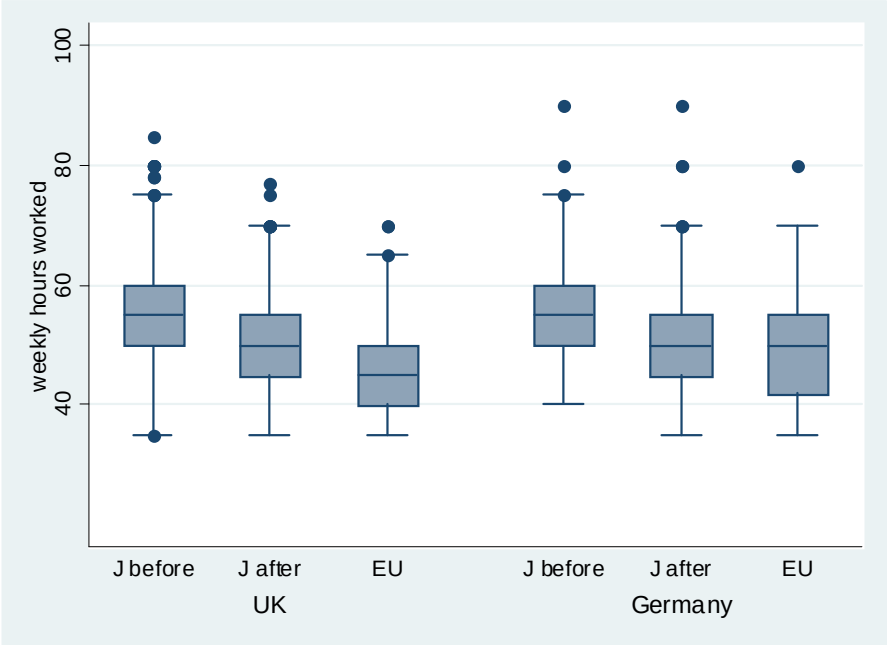


(3) Annual hours worked



Notes: The size of the circles indicates the frequency. The curve is a 45-degree line.

Figure 2 Distributions of weekly hours worked across countries and nationalities



Notes: The lower, middle, and upper line in the boxes indicate the 25th, 50th, and 75th percentile, respectively. The dots indicate outliers.

Figure 3 Adjustment of annual hours worked over time (evolution of the estimated Θ)