Peer Effects in Human Capital Investment Decisions and Gender Differences

WANG, Liya
Waseda University

KAWATA, Yuji
Waseda University

TAKAHASHI, Kohei
Waseda University

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Liya Wang (Waseda University)

Yuji Kawata (Waseda University)

Kohei Takahashi (Waseda University)

Abstract

In recent years, as workers' career aspirations have become increasingly diverse, it is essential to encourage them to invest autonomously in their human capital. Coworkers (peers) play important roles in affecting attitudes in a real workplace with social interactions. This study examines the influence of coworkers' human capital accumulation on employees' willingness to invest (as a peer effect). We focus on overseas assignment, which is one aspect of job assignments, as an indicator of autonomous human capital investment decision-making. Specifically, utilizing unique personnel data from a large trading firm, we investigate the effect of peers' overseas experiences on focal workers' willingness to work overseas and whether the effect differs by gender. A peer group is defined as the cohort of workers who enter the firm in the same year and which feel a strong sense of membership and a have competitive relationship with other members. In order to mitigate potential endogeneity problems, we employ a model in which the overseas work experience of bosses of peers at different workplaces from focal workers is an instrument variable . Our results show that overseas experience of male peers has significantly positive effects on human capital investment decisions of male employees: the more male peers experienced working overseas, the more willing male workers became to undertake similar assignments. On the other hand, we do not detect the peer effects on female workers. This implies that the underlying mechanism of peer effects may be competitive rivalry. The findings of this study have managerial implications for designing competition in firms.

Keywords: human capital, peer effects, gender, competitive rivalry, career

JEL classification: J16, J24, M50, M54

1 Introduction

The rise of rapid technological innovations such as digital transformation and artificial intelligence (AI) have contributed significantly to the improvement of productivity.[1] There also remain concerns of job loss and economic disparity due to labor substitutability[2], but technological development such as computerization is complementary with laborers who are performing non-routine tasks (Autor, Levy and Murnane, 2003). Training employees to acquire high skills to adapt the social changes would lead to high benefits for the firm in a society where innovations are rapidly advancing. Firms certainly need to consider human capital investment strategies based on the latest skills and knowledge that laborers should acquire for further growth. The importance of these firm strategies has also been the focus of global attention, as World Economic Forum (2018) reported.

Job assignment strategies have an important role in human capital investment strategies. For example, assignment to a position where the newest technologies are needed to accomplish business will make the assigned worker learn the skills. The same applies to management positions, e.g., assignments to work overseas, which is the focus of our study, can help employees improve not only their foreign language but also cultivate skills of negotiation with foreigners and cultural understanding. Doing business in foreign countries has more significant uncertainty and risks, which can accumulate the human capital required in managerial positions.

Since career concerns nowadays are much diversified, it is essential for firms to understand how workers make decisions when they make job assignment strategies. The number of females who participate in the labor market is increasing, and there exist workers whose career concerns are more family-oriented, whereas there also exist workers who think that progressing their career is the first priority. As the matching between workers and firms is smoother today, workers can now easily transition to other companies if they perceive their expected utility to be higher elsewhere, which causes losses to firms because they lose not only valuable human resources but also firm-specific human capital. If a firm can commit to providing opportunities for human capital investment for the rewarding career that employees hope to pursue, this leads to the selection of talented workers. The understanding of and commitment to autonomous career development should be a strategy consistent with the current frictionless labor market. Hence, encouraging workers to establish their own career goals and autonomously investing in their human capital can be an effective approach to retaining workers and fulfilling their career aspirations within the organization. One real-world example is the retraining program by AT&T, a large firm that utilizes information technology Kerr, Fuller and Kreitzberg (2019). This firm-wide initiative addresses potential skill shortages in the rapidly changing telecommunications industry, one of whose objectives is encouraging workers to retrain in the careers they highly demand. However, few studies investigate human capital investment as a worker-level career concern. Particularly, there are even fewer empirical studies within the firm on the human capital investment that corresponds to job assignment, which is often determined by the firm rather than the workers themselves.

The literature on job assignments often focuses on human capital related to higher job ranks, which is assigned by the promotion, namely vertical moves within an organization. The difference in these opportunities explains the large part of gender pay gaps. Lazear and Rosen (1990) demonstrated that females are assigned to jobs requiring less human capital, resulting in assigning lower-paying jobs and less promotion probability than males. However, within the same job, a reduced gender pay gap is observed. The study indicated that the promotion gap contributes to a large part of the gender pay gap. Lazear and Rosen (1990) also showed that females are required to have a higher ability for promotion due to the higher expectations of separation. Pema and Mehay (2010) empirically tested these findings, confirming that job assignments strongly predict promotions. Additionally, Pema and Mehay (2010)

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[1]See Autor (2001); Autor, Katz and Krueger (1998); Bloom, Garicano, Sadun and Van Reenen (2014); Viete and Erdsiek (2020), which discusses the advantages of information technology and communication technology for firms and workers. According to Kanazawa, Kawaguchi, Shigeoka and Watanabe (2022), AI utilization for taxi drivers improves their productivity only for low-skilled drivers, leading to a 14% reduction in the productivity gap between high- and low-skilled drivers.

[2]In the estimation by Frey and Osborne (2017), approximately 47% of total US employment is at a high risk of being substituted by computerization in a decade or two. In the average OECD country, 9% of jobs are estimated as automatable jobs (Arntz, Gregory and Zierahn, 2016). In terms of the economic gap caused by technological changes, Autor (2015) revealed the mechanism—the investment in information technology replaced middle-skill work (i.e., routine task-intensive work such as administrative or operatives works) with machines. Thus, middle-skill workers who lost jobs entered low-skill occupations, while high-skilled workers highly benefited from computerization.

revealed promotion dynamics among females, in which prior promotions and job assignments with more human capital increase the likelihood of future promotions, while those not previously promoted have a lower probability of future promotions. However, comparatively less research focuses on the job application, which is the demand side of the job assignment in the internal labor market.[3]

Although job assignment is often discussed as the literature of promotion, there is smaller but increasing literature that discusses the importance of lateral moves and the related human capital. Gibbons and Waldman (2004) discussed the idea of "task-specific human capital," and the set of these human capitals and skills have significant effects on managerial positions and the worker's career progression (also see Lazear (2005, 2012); Frederiksen and Kato (2018); Jin and Waldman (2020)). A representative example of lateral moves within a firm is job rotation. Job rotation is the system in which employees are transferred to different locations or different roles within a firm. The system is actually introduced by firms; previous research argues that both employee learning for human capital investment and employer learning for a firm's understanding of employees are the factors in adopting job rotation (Eriksson and Ortega, 2006). To sum up, although lateral moves within a firm are an important firm strategy for workers to acquire a wide range of skills and firms actually take the strategy, there are even fewer empirical studies on the topic, particularly based on a worker-level career concern.

In our study, we focus on the job assignment to work overseas as a lateral move, which makes the worker's human capital broader required in managerial positions. Using firm personnel data, we examine what motivates decision-making related to human capital accumulation, considering the role of peers. Peers play important roles in affecting workers' attitudes in a real workplace with social interactions. There are an increasing number of studies about the peer effects of productivity within individual workers and among workers, including research on a laboratory experiment (Falk and Ichino, 2006), fruit pickers (Bandiera, Barankay and Rasul, 2010), and workers in a supermarket chain (Mas and Moretti, 2009). Cornelissen, Dustmann and Schönberg (2017) studied peer effects at the local labor market level; they found only small peer effects on wages, which implies that peer effects observed in the literature do not carry over to the external labor market. Peer outcomes and characteristics also affect other outcomes as well as productivity, including program participation (Duflo and Saez, 2002, 2003; Dahl, Løken and Mogstad, 2014), financial investment(Bursztyn, Ederer, Ferman and Yuchtman, 2014), misconduct in the army(Murphy, 2019), adaptation to new agricultural technologies(Conley and Udry, 2010; Bandiera and Rasul, 2006), and entrepreneurial decisions(Lerner and Malmendier, 2013; Eesley and Wang, 2017). Chan, Li and Pierce (2014) presented evidence of knowledge spillover among the salespeople in the cosmetic department of a department store through teaching and observing peers, which had a significantly larger effect on productivity than learning by doing. Therefore, our study explores the peer effects on workers' decision-making processes in shaping their careers.

However, there is a dearth of literature addressing gender-specific peer effects in the workplace. An exception is Beugnot, Fortin, Lacroix and Villeval (2019), which used a real-effort laboratory experiment to study whether peer effects at work differ by gender and whether the differences depend on work organizations. They found men are influenced by their peers regardless of network structure, whereas women do not respond to their peers' performance in the network they perceive as competitive. The authors also identified that competitive rivalry is the basic mechanism underlying peer effects in their design. Nevertheless, the external validity of laboratory experiments should be carefully considered when generalizing the findings to real-world settings. Recent studies largely focus on the effects of peer gender composition on men's and women's college major choices, performance, or degree completion.[4] In addition to gender peer effects in schools, one study examines how individuals' early

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[3]Hospido, Laeven and Lamo (2022) revealed the application gaps between genders in the economists in a central bank. The application gap, caused by the fear of competition, explains the gender wage gap and working as a positive selection. Haegele (2023) also used a firm's job application record, finding that female workers tend to avoid applying for leadership jobs. Related research by Babcock, Recalde and Vesterlund (2017), although not about job applications, showed that females tend to receive more requests for tasks unrelated to promotion and are more likely to accept them.

[4]For example, Dustmann, Ku and Kwak (2018) argued that pupils in single-sex schools outperform their counterparts in coed schools. Switching to coed schools harms academic outcomes for both genders, with boys affected by school-level exposure to mixed-gender peers and girls by class-level exposure to mixed-gender peers. Anelli and Peri (2019) found that men graduating from classes with a large majority of male peers tend to choose "prevalently male" college majors, while they did not find significant effects of high school class gender composition for females. Mouganie and Wang (2020) concluded that exposure to high-performing female peers in mathematics increases the likelihood that female students choose a science track in high school, whereas a higher proportion of high-performing female peers has no effect on men. Zölitz and Feld (2021) showed that when there are more female peers in business school, women are less likely to choose male-dominated majors and, conversely, men are more likely to choose those majors. Bostwick and Weinberg (2022) highlighted that female students in cohorts without many female peers are less likely to graduate on time than their

career entrepreneurship after graduation is influenced by existing entrepreneurship among their peers (Markussen and Røed, 2017). The authors identify significant gendered peer effects, suggesting men are more affected by other men while women are more affected by other women. They think this may be because people tend to look for same-sex role models or learn from same-sex peers. In short, most of the literature investigates gender peer effects in education, while empirical evidence on gender peer effects at work is rather scant. Furthermore, there is no consensus on the findings and mechanisms behind them. The mixed results indicate it is important to focus on the specific context in which peer effects are studied. Thus, in this study, we focus on the context of a real workplace that has not yet been completely studied to examine gender peer effects.

To summarize, we propose two research questions. First, we investigate how peers affect an individual's human capital investment in the real workplace. Second, whether there are gender heterogeneous peer effects at work. In this study, we address these issues by using the unique personnel data of a trading company. As proxies for intention to invest in human capital accumulation, we examined how the willingness of workers to take on working abroad as lateral moves, is affected by the experience of their peers. In order to account for any potential biases, we used fixed-effects models with the work experiences of the peers' bosses as instrumental variables. As a result, we found that the peer effect on willingness to work overseas is statistically significant and has an economically meaningful magnitude of influence. The finding indicates that the experiences of peers working overseas positively influence the focal worker's aspiration to work abroad. More interestingly, we discovered that male workers benefit from peers while female worker do not receive any effect from peers. This may imply that the mechanism of gender heterogeneity of peer effects is male workers' competitive rivalry that they want to win a career competition, particularly against fellow male workers. As a result, we found that the peer effect on willingness to work overseas is statistically significant and has an economically meaningful magnitude of influence. The finding indicates that the experiences of peers working overseas positively influence the focal worker's aspiration to work abroad. More interestingly, we discovered that the impact of male peers on male focal workers explains the effect. This may imply that the mechanism of gender heterogeneity of peer effects is male workers' competitive rivalry that they want to win a career competition, particularly against fellow male workers.

This paper makes several contributions to the literature. First, our study emphasizes the impact of peers' experience on the accumulation of workers' human capital. Hence, it is advantageous for organizations to establish peer groups to foster social engagement and share beneficial information, thereby facilitating competition among peers. This approach would help firms to efficiently encourage autonomous human capital development by workers. The literature has discussed how to reach the efficient level of human capital investment(Becker, 1962, 1994; Acemoglu and Pischke, 1999a,b); our study contributes to the literature by adding the implication of peers' importance in human capital development. Second, by empirically studying gender-specific responses to peers' working experiences, our paper fills the research gap on the gender peer effects in the real workplace. More generally, the literature on human capital accumulation is usually associated with promotion(Baker, Gibbs and Holmstrom, 1994; Gibbons and Waldman, 1999), and our work contributes to a few pieces of literature on lateral moves (Gibbons and Waldman, 2004; Lazear, 2005, 2012; Frederiksen and Kato, 2018; Jin and Waldman, 2020), focusing on gender gaps. Third, we propose the potential mechanism—competitive rivalry—underlying our results. The peer group, consisting of workers entering the firm in the same year, serves as a convenient comparison group for seniority-based promotion decisions, creating a good competitive setting. Specifically, we find that female workers are not influenced peers, which may be because females shy away from competition (Gneezy, Niederle and Rustichini, 2003; Niederle and Vesterlund, 2007; Hogarth, Karelaia and Trujillo, 2012). Other mechanisms such as social learning, conformity, and family reasons explain only part of our results but contradict other parts of the results. In this sense, our study also provides evidence of gender gaps in competition. Finally, the finding that only male workers are motivated by peers while female workers are not because they tend to shy away from competition with males. This difference in the benefit from the peer effect may lead to the gender difference in human capital accumulation, which may also result in the promotion and wage gap.

The remainder of the paper proceeds as follows. Section 2 describes the data used in this paper and shows summary statistics. In Section 3, we present the potential challenges, propose solutions, and then describe the empirical specifications. Section 4 provides the empirical results. Section 5 discusses

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male counterparts, but their probability of on-time graduation increases as the percentage of female students in cohorts increases.

the underlying mechanisms. Section 6 concludes.

2 Data description

2.1 Data

To investigate peer effects on human capital investment decisions, we used unique personnel data from a large-sized general trading company in Japan, which is hereafter referred to as J-trading. With diverse business fields and numerous domestic and international establishments, J-trading relies on effective coordination among its managers to drive revenue. Consequently, acquiring both general and firm-specific human capital is important for the workers, especially to win their promotion tournaments and become managers. Therefore, J-trading has implemented several personnel policies to support workers' human capital investment. Workers frequently transfer between workplaces and gain experience across various jobs. This transferring system includes various types. The workers experience not only different teams or departments within J-trading but also transfer to the overseas branch office of J-trading and to domestic but outside J-trading offices, such as in the subsidiaries or the business investment firms. The set of these skills is also related to firm-specific human capital. To encourage workers to invest in firm-specific human capital, J-trading ensures job security for its employees. Furthermore, J-trading conducts career plan interviews to ensure job assignments align with workers' aspirations and goals. These measures highlight the firm's commitment to human capital development and help investigate peer effects in human capital investment decisions.

We define the peer group in this study as the cohort that entered J-trading in the same year. J-trading's recruitment practices, which involve hiring workers annually and forming cohorts, provide an ideal framework for studying peer effects within the firm. First, members within each peer group share similar career concerns. J-trading follows a common practice in large-sized Japanese firms by hiring new graduates at one time each year. Furthermore, the firm primarily recruits top-level university students, resulting in cohort members having comparable ages, education levels, and so on. To make sure that they have similar human capital, we restricted the samples to new graduates and dropped the mid-career workers, who may have higher general human capital than new graduates. As a result, the cohort members serve as peers and rivals, sharing similar career concerns and goals.

Second, J-trading's new employee group training further strengthens the connections within peer groups. Prior to their allocation in each workplace, workers get together in one place and join a comprehensive two- to three-week training program. Although they will be assigned to different divisions, the cohort members usually establish meaningful connections and communication during this training period, which persist throughout their careers.

To measure workers' human capital investment, we created a dataset by combining two data sources. First, we utilized the assignment record, which contains workers' characteristics and job information, including their recruitment dates and assigned workplaces within the firm. This data provides comprehensive information on worker characteristics. Second, we incorporated the annual career aspiration interview data for non-managerial workers.[5] Employees receive advice from their supervisor and reveal their desired career paths and workplace preferences over three years. The recorded employee preferences were categorized into various options: remaining in the same place, working overseas, and working outside. These preferences serve as valuable indicators of workers' aspirations and career directions.

Using the dataset, we create a variable corresponding to the willingness to invest, particularly in broad human capital. We focus on an assignment as a key variable that may benefit workers, but they have to pay high costs in the short term: willingness to work overseas. Working overseas in the context of the study refers to working in the overseas branch office or overseas business investment firms of J-trading. In our data, among workers who have worked abroad, the average age at which they first experienced working abroad is 35. Comparing the workers ages assigned to overseas jobs, 40.1%, the largest is the workers in their 40s, 30.3% in their 30s, 22.7% in their 50s, and 6.7% in their 20s. Consistently, the percentage of workers with at least one overseas work experience is 53.5% among employees in their 30s and 69.9% among workers in their 40s, while the percentage is as low as 7.7% among employees in their 20s, indicating that in this company, overseas work assignments

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[5]The career aspiration interview is conducted for only regular full-time workers whose careers are with the prospect of managerial position. Thus, workers who have the interview are assumed to have the same career ladder.

are primarily made to workers older than 30s and less frequent in their early careers. By capturing workers' preferences, we can gain insights into their demands for opportunities that enhance their broader skill set. Integrating these two data sources allowed us to examine whether peers' experiences influence the workers' career preferences and human capital investment decisions.

2.2 Summary statistics

Table 1 shows the summary statistics for our sample. The observation period is between 2010 and 2020 due to the source of the interview data, but earlier career history is traceable through the assignment records. We make cumulative variables that are equal to 1 if the worker has ever worked overseas or outside till the arbitrary year and 0 otherwise. We restricted the analysis sample to non-managerial workers because of the eligibility requirements for the career aspiration interview.[6] There are 5,220 worker-year observations in our sample. Around 28% of the observations are female, and 82% have graduated from university with a bachelor's degree (98% have graduated from university with some degree). More than 30% of observations desire to work overseas, and there is a significant difference between males and females. The average peer group size is 75 workers. The maximum size of the peer group reflects the number of peers in their earliest career; the size reduces when the tenure increases. Workers have 30% of the peer observations who have experienced overseas posts more than once. In our analysis, we excluded the workers who already experienced overseas assignments from the sample for two reasons: (1) peer effects may diminish after the worker experienced overseas assignments, and (2) to mitigate the concerns of reverse causality, which will be discussed in detail in section 3.1.

Furthermore, we also have data on the characteristics of a worker's boss. Usually, they are section managers, which we exploit as the instrumental variable. On average, 73.0% of the workers work with bosses who have been posted overseas at least once.

3 Econometric methodology

3.1 Challenges in identifying peer effects

Several well-established econometric problems exist in identifying peer effects (Manski, 1993). First, to confront concerns that workers with similar characteristics may belong to the same peer group, we control for the worker-fixed effects in our models. The second concern is that the correlated behaviors that arise within groups are not due to actual peer effects but are the results of unobservable factors that are common to the group. However, we define the peer group as the collection of workers who enter the firm in the same year in this study. Workers in the same peer group are assigned to different divisions after entering the firm and receiving a group training program for new entrants. Shocks are more likely to be common to the division rather than to the peer group, as defined in the study, such as changes in division managers or divisional objectives. Hence, the definition of the peer group helps us alleviate some degree of concern that the observed associations are driven by common unobservable shocks.

Finally, the third concern is whether the behavior of the peer group influences individual behavior or is merely a mechanical reflection of the behavior of its members, which is essentially a reverse causality concern. To mitigate this problem, we focus on the relationship between the overseas experiences of peers and the willingness of focal workers who have not yet worked abroad. In this way, peers who have worked abroad may affect the behaviors of workers who have not, but not vice versa. Furthermore, workers indicate their willingness to work overseas in a career plan survey conducted by the firm every year. The survey contains the workers' private information and cannot be officially observed by their peers.[7] In addition, and perhaps most importantly, the firm finally determines the actual overseas work assignment. Therefore, the willingness of the focal individuals may not influence the work experiences of their peers.

In summary, we take several approaches to address the above-mentioned concerns. However, these may not perfectly solve the endogeneity issues. Hence, an instrumental variable (IV) strategy is applied to identify causal peer effects. We use the overseas work experiences of the peers' bosses as instruments. Bosses who have prior overseas experience may share the relevant information with or encourage their

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[6]In other words, in our analysis, we exclude managerial workers who are ineligible for an interviewee's career plan.

[7]However, the actual job assignments of workers can be observed by others.

subordinates to work abroad but are less likely to influence the behaviors of workers not under their management. Thus, our IVs are likely to satisfy the exclusion restriction and affect the focal workers' willingness only through the impacts on the work experiences of their peers. Our exclusion requires that bosses' experience is not correlated with the focal worker's unobserved characteristics absorbed in the error term. To satisfy this, firstly, we exclude some peers' bosses from IV if a focal worker and a peer share the same boss. When workers work under the same boss (in the same team), boss characteristics can affect both the peers' and focal worker's error terms. Secondly, although we cannot test whether the exclusion restriction is satisfied directly, we tested whether the worker's observed characteristics predict the ability of bosses who were assigned to a focal worker. In Table 2, we separate workers into two groups: those with a relatively low-ability boss and those with a relatively high-ability one.[8] There are no differences in the evaluation scores of workers in the previous year, the willingness to work overseas in the previous year, gender, and education levels between the two groups.[9]

3.2 Regression specification

3.2.1 The baseline model

To begin to estimate peer effects, we first set up a linear probability model of the following form:

$$Y_{it} = \alpha_1 Peer_{it} + \boldsymbol{X'_{it}}\psi + \delta_t + \gamma_i + \epsilon_{it} \tag{1}$$

where i and t index the individual worker and t J-trading fiscal year (hereafter referred to as "year"), respectively. The outcome variable Y_{it} denotes the worker i's willingness to work overseas in year t. $Peer_{it}$ represents the proportion of worker i's peers who have overseas experience up to year t. To better understand the definition of $Peer_{it}$, let us assume that worker i's peer group, N_i, comprises n_i individuals (excluding worker i). For each worker i, his/her work experience up to year t is represented by the dummy variable, E_{it}, which is equal to 1 if i has overseas experience up to t, and 0 otherwise. Therefore, $Peer_{it} = (1/n_i) \sum_{j \in N_i} E_{jt}$. $\boldsymbol{X_{it}}$ is a set of control variables, including the worker i's age, marital status, number of children, and peer group size.[10] δ_t captures year-fixed effects. Unobservable worker time-invariant characteristics, γ_i, are controlled for through fixed-effects (FE) estimation.

While the fixed-effects estimation can mitigate the endogeneity issues only caused by time-invariant confounders, we use an IV approach to rule out any lingering concerns, as discussed in detail in Section 3.1. Specifically, the first stage equation is as follows:

$$Peer_{it} = \theta_1 PeerBoss_{it-1} + \boldsymbol{X'_{it}}\phi + \delta_t + \gamma_i + \xi_{it} \tag{2}$$

where $PeerBoss_{it-1}$ is the instrument for $Peer_{it}$, representing the overseas experience rate in year $t-1$ for the previous-year bosses of worker i's peers.[11] Again, assume that worker i's peer group, N_i, comprises n_i individuals. For each worker i, the work experience in year $t-1$ of i's previous-year boss (B^{t-1}) is denoted as $E_{it-1}^{B^{t-1}}$ which equals to 1 if i's boss in year $t-1$ has worked abroad before year $t-1$, and 0 otherwise. Hence, $PeerBoss_{it-1} = (1/n_i) \sum_{j \in N_i} E_{jt-1}^{B^{t-1}}$. We assume that the boss may influence the worker's career aspiration through their communication with subordinates. $\boldsymbol{X_{it}}$ is the same set of control variables. δ_t and γ_i capture year- and worker-fixed effects, respectively.

Let $\widehat{Peer_{it}}$ be the prediction from the FE estimation of Eq.(2). Then, the second stage equation becomes:

$$Y_{it} = \alpha_1 \widehat{Peer_{it}} + \boldsymbol{X'_{it}}\psi + \delta_t + \gamma_i + \zeta_{it} \tag{3}$$

where Y_{it} is the worker i's willingness in year t. $\boldsymbol{X_{it}}$ is the same set of control variables. Year- and worker-fixed effects are captured by δ_t and γ_i, respectively. All standard errors are clustered by worker and cohort level.

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[8]Evaluation scores range from 1 to 6. If a boss's evaluation score is above 3, we define the boss as a high-ability boss.

[9]The only difference is the age and tenure, which we control in the following regression specification.

[10]Age in this study is measured as category variables.

[11]We take a one-year lag of $PeerBoss$ because the timing for workers to answer the interview is not detectable. For instance, if a worker answers the interview sometime in year t and this worker gets a new boss after that, the new boss does not affect the employee's answer in year t. However, the boss in year $t-1$ will influence the subordinates' decisions in year t through interaction in year $t-1$. Additionally, the overseas assignment occurs at the beginning of the year, so peers' overseas experience up to year t affect the focal worker's answer to the career aspirations interview in year t. Thus, no need exists to take a one-year lag of peers' overseas experience.

3.2.2 Peer effects considering gender heterogeneity

To see the gender heterogeneity of peer effects, we analyze the Eqs. (1), (2), and (3) with subsample divided by the gender of focal workers, females and males. We also estimate the heterogeneous peer effects in combination with the gender of focal workers and the gender peers. According to Markussen and Røed (2017), the linear probability model is set up as follows, which allows individuals to respond differently to peers of each gender:

$$Y_{it}^g = \beta_1^g MalePeer_{it}^g + \beta_2^g FemalePeer_{it}^g + \boldsymbol{X_{it}^{g'}}\boldsymbol{\tau^g} + \delta_t + \gamma_i^g + \mu_{it}^g \tag{4}$$

where g indexes the gender of worker i, $g \in \{m, f\}$ (i.e., male or female). Y_{it}^g is the willingness of type-g worker i in year t. $MalePeer_{it}^g$ and $FemalePeer_{it}^g$ represent the proportion of type-g worker i's male peers and female peers who have overseas experience up to year t, respectively. Assume that type-g worker i's peer group, $(N_i)^g$, comprises $(n_i)^g$ individuals. In each peer group $(N_i)^g$, there are $(n_i^m)^g$ males in male peer group $(N_i^m)^g$ and $(n_i^f)^g$ females in female peer group $(N_i^f)^g$, with $(n_i^m)^g + (n_i^f)^g = (n_i)^g$. Worker i's work experience is denoted as E_{it}. Thus, $MalePeer_{it}^g = [1/(n_i^m)^g] \sum_{j \in (N_i^m)^g} E_{jt}$ and $FemalePeer_{it}^g = [1/(n_i^f)^g] \sum_{j \in (N_i^f)^g} E_{jt}$. $\boldsymbol{X_{it}^g}$ captures a set of control variables of type-g workers. β_1^m measures the effect of male peers' work experience on male workers, whereas β_2^m measures the effect of female peers on male workers. Similarly, β_1^f represents the effect of male peers on female workers and β_2^f represents the effect of female peers on female workers. δ_t are year-fixed effects, and γ_i^g are the individual-fixed effects of type-g worker i.

Next, we specify the two-stage least squares (2SLS) model. As the boss may influence male and female subordinates differently, this gives us two instruments for the two endogenous variables—namely, overseas rates among bosses to male subordinates and bosses to female subordinates. The first stage equations take the following form:

$$MalePeer_{it}^g = \eta_1^g MalePeerBoss_{it-1}^g + \eta_2^g FemalePeerBoss_{it-1}^g$$
$$+ \boldsymbol{X_{it}^{g'}}\boldsymbol{\kappa^g} + \delta_t + \gamma_i^g + \nu_{it}^g \tag{5}$$

$$FemalePeer_{it}^g = \sigma_1^g MalePeerBoss_{it-1}^g + \sigma_2^g FemalePeerBoss_{it-1}^g$$
$$+ \boldsymbol{X_{it}^{g'}}\boldsymbol{\pi^g} + \delta_t + \gamma_i^g + \omega_{it}^g \tag{6}$$

where $MalePeerBoss_{it-1}^g$ denotes the overseas experience rates in year $t-1$ for the previous-year bosses of male peers of type-g worker i, whereas $FemalePeerBoss_{it-1}^g$ represents the overseas experience rates in year $t - 1$ for the previous-year bosses of type-g worker i's female peer group. Assume that type-g worker i's peer group, $(N_i)^g$, includes $(n_i)^g$ individuals. In each peer group $(N_i)^g$, the male peer group, $(N_i^m)^g$, contains $(n_i^m)^g$ males and the female peer group, $(N_i^f)^g$, contains $(n_i^f)^g$ females, where $(n_i^m)^g + (n_i^f)^g = (n_i)^g$. The work experience of i's previous-year boss (B^{t-1}) in year $t - 1$ is denoted as $E_{it}^{B^{t-1}}$. Therefore, $MalePeerBoss_{it-1}^g = [1/(n_i^m)^g] \sum_{j \in (N_i^m)^g} E_{jt}^{B^{t-1}}$ and $FemalePeerBoss_{it-1}^g = [1/(n_i^f)^g] \sum_{j \in (N_i^f)^g} E_{jt}^{B^{t-1}}$. Note that there is a concern that some bosses have both male and female subordinates, which makes the peer effect we estimate more complicated and leads to collinearity between the two IVs and thus poses an under-identification issue in the analysis To solve this problem, we removed the workers from the peer group if the male (female) peer is sharing the same boss with another female (male) peer. In other words, the type-g worker i's peer group satisfies that $\forall j \in (N_i^m)^g$ and $\forall k \in (N_i^f)^g$ do not share the same boss. We expect that bosses to male subordinates are most important for worker i's male peer group, while bosses to female subordinates are most important for the female peer group. However, we include both male and female instruments in each first-stage equation because peers may also have been influenced by each other (Markussen and Røed, 2017).

Let $\widehat{MalePeer}_{it}^g$ and $\widehat{FemalePeer}_{it}^g$ be the predictions from the first stage estimations. Then, the second stage equation is proposed as follows:

$$Y_{it}^g = \beta_1^g \widehat{MalePeer}_{it}^g + \beta_2^g \widehat{FemalePeer}_{it}^g + \boldsymbol{X_{it}^{g'}}\boldsymbol{\tau^g} + \delta_t + \gamma_i^g + \mu_{it}^g \tag{7}$$

where Y_{it}^g is the willingness of type-g worker i in year t. $\boldsymbol{X_{it}^g}$ is a set of control variables of type-g workers. δ_t are year-fixed effects, and γ_i^g are the worker-fixed effects of type-g worker i.

4   Results

4.1   Peer effects on career aspiration

Table 3 presents the findings concerning the influence of peer effects on the willingness of focal workers to pursue overseas employment. Column (1) represents the outcomes obtained from the FE model. The estimated coefficient of the ratio of peers' experience in working overseas indicates a positive and statistically significant relationship with the focal workers' aspiration to work overseas within a span of 3 years. This result suggests that the observed effects persist even after accounting for unobservable and time-invariant variables. Nevertheless, as discussed in the previous section, it should be noted that this model does not fully address the influence of time-varying confounding factors. To address this concern, we further employ the 2SLS model with peers' boss experience as instrumental variables. Columns (2) and (3) depict the outcomes of the first and second stages of the model, respectively. In the first stage, the coefficient of peer boss is significantly positive at the 1% level. A high and statistically significant F-statistic of 17.6 also supports that the instrument variable is not weak. In the second stage, the coefficient is positive, and the significance level is 5%. This implies that it is evident that the peers' overseas experience pushes up the focal workers' willingness to work overseas in the full sample. The magnitude of the coefficient, 0.988, is relatively large compared to the results of basic models; by simple calculation, a 10 percentage point increase in the ratio of peers who have experience working overseas leads to a 9.9 percentage point increase in the focal worker's aspiration to work overseas. Thus, there is economic significance between the peer effects and willingness to work overseas as a proxy of autonomous intention to invest human capital.

4.2   Gender heterogeneity in peer effects

In order to identify gender-specific variations in peer effects, we conduct a subsample analysis, dividing the sample into two worker types: female and male. We use two kinds of key explanatory variables in this analysis: (1) the proportion of work experience of overall peers and (2) that of female and male peers separately, which we can examine the influence of both same-gender and different-gender peers on workers' career motivation.

Table 4 presents the results pertaining to the influence of overseas working experience by the subsamples of workers' gender. In the FE-IV model depicted in Columns (1) and (2), we observe a statistically significant positive association with regard to intentions to pursue an overseas career path for male focal workers. F statistics in the first stage of male peer experience are large, implying the non-weakness of the instrumental variable. However, Columns (3) and (4) show insignificant coefficients of peer effects for female workers. The value of F statistics in the case of female workers is relatively low. The effect of peers on female workers might be neither evident nor very reliable. These findings suggest that the career experiences of peers are more likely to influence male workers as opposed to female workers.

In terms of gender-specific peer effects, Tables 5 and 6 provide the results of the gender-subsample analysis with female and male peers' overseas experiences separately. Column (1) in Table 5, we observe a statistically significant positive association with regard to intentions to pursue an overseas career path for male peers' overseas experience to male focal workers. In the FE-IV model depicted in column (4), the positive relationship of male peer effects still remains statistically significant with a large magnitude of the coefficient. F statistics in the first stage of male peer experience in column (2) are large, implying the non-weakness of the instrumental variable. These findings suggest that the career experiences of males are more likely to influence male workers, as opposed to the different genders. In contrast, our analysis reveals no significant coefficients in the female subsample (see Table 6). Both male and female peer workers may not influence female workers to work in overseas firms.

5   Mechanisms

In this section, we identify one of at least four mechanisms underlying peer effects that is most consistent with our findings.

The first one is knowledge spillover. That is, peers with overseas work experience can transfer the skills they learned in such job assignments to the focal worker through interaction. If the knowledge

spillover is a potential mechanism, the focal worker's motivation to invest in human capital may be reduced because he or she has already acquired the skills from peers without having to work abroad.

Second, we assume that workers who have not experienced overseas assignments may not know its actual cost and benefit, but they can update their beliefs through interactions with others who have worked abroad. Workers who share similar characteristics may have similar utility functions and feelings about the assignment. Thus, they tend to refer to and learn more from peers who have similar characteristics, such as the same gender. Indeed, the learning effect tends to be larger when the information is sparse (Dahl et al., 2014) and when peers are of the same gender (Markussen and Røed, 2017). Therefore, peer effects should be positive among same-sex workers. However, we do not find significant peer effects among same-sex workers.

Third, conformity is considered. Conformity refers to social preference in that the utility of an individual increases when the outcome is close to that of the individual's peers, which may not be an appropriate mechanism to interpret our results. This is because, first, some studies show that conformity pressures are most prominent in childhood and early adolescence (Carver, Yunger and Perry, 2003; Horn, 2007), which suggests conformity pressures may become less prevalent in the workplace. Second, women are more likely to exhibit a greater amount of conformity than men (Nord, 1969; Eagly and Wood, 1991), but we do not find significant peer effects of female workers in this study.

Last, we consider the mechanism of competitive rivalry. We define the peer group as the collection of workers who enter the firm in the same year. The same cohort, whose gender balance is skewed in favor of men, is a convenient comparison group for seniority-based promotion decisions. Thus, the same peer group serves as a competitive setting. If a worker wants to win the competition, it is more likely that the worker will invest in human capital when more workers in the same cohort accumulate the human capital. In terms of gender, females tend to shy away from the competition even when they are not less capable than men (Gneezy et al., 2003; Niederle and Vesterlund, 2007) and especially when the majority of rivals are male (Hogarth et al., 2012). This is perhaps why we do not find that women respond to their peers in our design.[12] Furthermore, we find men respond positively only to their male peers but not to their female peers. This may be because males perceive their female peers somehow do not pose threats to their competition, whereas other male peers do. Females face many barriers to winning the competitions including, but not limited to, overt discrimination (Oakley, 2000) and social pressure leading to unintentional discrimination by colleagues(Altonji and Blank, 1999). Women need to be "that much better" to overcome barriers to winning the competition (Lazear and Rosen, 1990; Dezsö and Ross, 2012), implying that only those women of higher quality than their male counterparts may have a chance of winning. However, females and males who experience overseas assignments will accumulate equal human capital. Therefore, male focal workers may perceive male peers as a greater threat in competition than their female peers.

Taken together, the competitive rivalry explanation is most consistent with our empirical results.[13] Our findings also suggest that the gender of focal workers, rather than their peers, plays a significant role.

6 Discussion and conclusion

This study examined how peers influence workers' motivation for human capital investment. Specifically, we examine the effect of peers' overseas experiences on the focal worker's career aspirations, and whether the effect differs by gender. In this study, we define peer group as the cohort of workers who enter the firm in the same year. Our findings offer valuable insights into the social influences, particularly the role of peers, in shaping workers' career goals and ambitions.

Using comprehensive personnel data from a trading company, we conducted regression analyses to examine the relationship between the focal worker's willingness to undertake challenging assignments, such as working overseas or working outside the firm, and the average value of peers with relevant work experience. To address concerns about endogeneity, we employ fixed-effects models with peers'

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[12]The avoidance of competition by many females may arise from the increased salience of family identity (Cadsby, Servátka and Song, 2013). However, it is noteworthy that married females constitute only 27.9% of the female subsample. Furthermore, in unreported analyses, we conducted separate regressions for single and married females, but found nonsignificant peer effects.

[13]We cannot say that the other mechanisms are completely ruled out because we have not done other analyses to test these channels directly, except for the analysis of gendered peer effects so far.

bosses' work experience serving as instrumental variables. The results revealed a positive effect of peers' overseas work experience on the willingness of focal workers to pursue overseas work. Notably, we found that the influence of male peers on male focal workers was more pronounced compared to other peer effects. We interpret the mechanism as a competitive rivalry.

However, we should take some limitations into account. First, the external validity of our findings remains uncertain due to the utilization of data from a single large trading firm. Nonetheless, our results may hold for other firms, particularly those in Japan, given the specific characteristics of such firms. The employment and training system in typical Japanese firms fosters not only peer affiliation but also a sense of competitiveness among individuals. Thus, we may observe similar results with this study for other Japanese firms when we focus on the effect of peer groups as workers who have entered in the same year. Additionally, our implications could be applicable to contexts beyond Japan if we conceptualize peers as a similarly well-connected and highly competitive group beyond in-house peers. The second limitation pertains to the identification of specific mechanisms underlying the observed effects. As discussed, the pronounced peer effect on male workers suggests competitive rivalry as a compelling mechanism. However, we do not completely rule out other mechanisms. Future research should empirically explore these mechanisms to gain a deeper understanding of how peer effects operate.

Finally, our finding that peers influence others' aspirations of human capital investment provides a significant implication for managerial practice. First, firms may leverage the positive peer effects and accelerate human capital accumulation. Our findings suggest that peer groups work as a device to encourage human capital investments through social interaction and competition. Firms can take advantage of the peer effects without additional costs rather than assigning capable and experienced bosses to all workers to encourage their human capital investments. Second, our results do not show any evidence of an "externality" on female workers because females shy away from competition especially when they have to compete with males. The heterogeneity of peer effects between genders explains the gap in human capital accumulation, resulting in promotion or career gaps between genders. Therefore, stimulating the peer effects among female workers can be a possible resolution to reduce gender gaps within a firm.

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Tables

Table 1: Descriptive statistics

	Full sample			Male			Female		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
VARIABLES	N	mean	sd	N	mean	sd	N	mean	sd
Panel A: Worker characteristics									
Age	5,220	32.72	8.872	3,764	31.96	7.765	1,456	34.68	11.00
Tenure	5,220	8.707	9.141	3,764	7.725	7.874	1,456	11.25	11.42
Oversea aspiration	5,220	0.302	0.459	3,764	0.379	0.485	1,456	0.102	0.303
Number of child	5,220	0.483	0.850	3,764	0.571	0.909	1,456	0.255	0.622
Size of peer group	5,220	75.45	28.80	3,764	73.57	28.08	1,456	80.31	30.05
Education									
high school	5,220	0	0	3,764	0	0	1,456	0	0
undergraduate	5,220	0.816	0.388	3,764	0.804	0.397	1,456	0.844	0.363
graduate	5,220	0.166	0.372	3,764	0.196	0.397	1,456	0.0893	0.285
others	5,220	0.0186	0.135	3,764	0	0	1,456	0.0666	0.249
Status of oversea experience among peer									
Peer oversea ratio	5,220	0.310	0.290	3,764	0.299	0.279	1,456	0.337	0.314
Male peer oversea ratio	5,219	0.361	0.328	3,764	0.350	0.315	1,455	0.391	0.357
Female peer oversea ratio	5,156	0.0472	0.0845	3,711	0.0477	0.0824	1,445	0.0459	0.0896
Instrumental variables									
Peer bosses oversea ratio	4,498	0.736	0.0751	3,353	0.732	0.0724	1,145	0.747	0.0812
Male peer oversea ratio	4,718	0.717	0.0873	3,447	0.710	0.0875	1,271	0.737	0.0836
Female peer oversea ratio	4,656	0.677	0.133	3,395	0.664	0.136	1,261	0.712	0.119
Panel B:Boss information									
Oversea experience	4,719	0.730	0.444	3,447	0.712	0.453	1,272	0.780	0.414
Age	4,728	46.68	3.914	3,454	46.55	3.871	1,274	47.04	4.006
Tenure	4,728	21.78	5.193	3,454	21.57	5.197	1,274	22.37	5.141
Female	4,728	0.0226	0.149	3,454	0.0139	0.117	1,274	0.0463	0.210
Number of child	4,728	1.385	0.937	3,454	1.387	0.941	1,274	1.379	0.928

Units of observations are worker-year level both in Panel A and B. Columns 1 to 3 are the statistics of full sample, columns 4 to 6 are of male workers' sub sample, and columns 7 to 9 are of female workers' sub sample. Panel A illustrates the information of workers, and Panel B explain the information of bosses who work with workers each year.

Table 2: The worker characteristics and boss assignment

| Variables | Assigned low ability boss | | Assigned high ability boss | | |
	N	mean	N	mean	Difference
Evaluation Score	2,246	3.196	1,598	3.218	−0.022
oversea willingness pre	2,105	0.309	1,511	0.310	−0.001
female	2,797	0.246	2,082	0.236	0.010
age	2,797	32.460	2,082	32.981	−0.521**
tenure	2,797	8.442	2,082	8.964	−0.522**
high school	2,633	0.000	1,973	0.000	0.000
undergraduate	2,633	0.827	1,973	0.813	0.014
graduate	2,633	0.158	1,973	0.168	−0.011
others	2,633	0.015	1,973	0.019	−0.004

Evaluation scores range from 1 to 6. A boss is in the high-ability group if his/her evaluation score is larger than 3.
*** $p<0.01$, ** $p<0.05$, * $p<0.1$

Table 3: Baseline Results of Peer Effects on Willingness to Work Overseas

	(1) Baseline	(2) First-stage	(3) Second-stage
Dependent Variables	Willing to work overseas	Peer experience	Willing to work overseas
Peer	0.579***		0.988**
	(0.168)		(0.423)
Peer boss		0.300***	
		(0.071)	
Age group 30s	-0.019	0.064***	-0.043
	(0.038)	(0.014)	(0.046)
Age group 40s	-0.263***	0.030	-0.280***
	(0.064)	(0.030)	(0.058)
Age group 50s	-0.350***	-0.103**	-0.283***
	(0.097)	(0.050)	(0.086)
Age group 60s	-0.216	-0.526**	-0.024
	(0.186)	(0.247)	(0.275)
Married	0.036	0.027***	0.032
	(0.037)	(0.007)	(0.040)
Number of child	0.047	0.028***	0.048
	(0.029)	(0.007)	(0.031)
Size of peer group	-0.011***	-0.003*	-0.010**
	(0.003)	(0.002)	(0.004)
Worker FE	Yes	Yes	Yes
Year FE	Yes	Yes	Yes
Models	OLS	2SLS	2SLS
Observations	5,220	4,615	4,615
F-statistics		17.670	

Standard errors are in parentheses, which are clustered by worker ID and peer groups. The outcome variable denotes the focal worker's willingness to work overseas. *Peer* variable represents the proportion of focal worker's peers who have overseas experiences. The *Peer boss* variable is the instrument for *Peer*, representing the overseas experience rates for bosses of focal worker's peers.
*** $p<0.01$, ** $p<0.05$, * $p<0.1$

Table 4: Subsample analysis of Table 3

Dependent Variables	(1) First-stage Peer experience	(2) Second-stage Willing to work overseas	(3) First-stage Peer experience	(4) Second-stage Willing to work overseas
Peer		1.052**		-0.143
		(0.406)		(1.020)
Peer boss	0.323***		0.198**	
	(0.076)		(0.081)	
Age group 30s	0.055***	-0.043	0.098***	-0.038
	(0.013)	(0.044)	(0.029)	(0.136)
Age group 40s	0.004	-0.320***	0.109**	-0.045
	(0.028)	(0.068)	(0.043)	(0.190)
Age group 50s	-0.160***	-0.356***	0.036	-0.081
	(0.049)	(0.127)	(0.054)	(0.138)
Age group 60s	-0.196***	-0.465***	-0.610***	-0.182
	(0.050)	(0.125)	(0.081)	(0.445)
Married	0.023***	0.058	0.029***	-0.059
	(0.007)	(0.044)	(0.009)	(0.056)
Number of child	0.021***	0.037	0.055***	0.112
	(0.006)	(0.028)	(0.021)	(0.099)
Size of peer group	-0.003*	-0.013***	-0.003	-0.007
	(0.002)	(0.005)	(0.002)	(0.004)
Worker FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Models	2SLS	2SLS	2SLS	2SLS
Observations	3,398	3,398	1,217	1,217
Sub sample	Male	Male	Female	Female
F-statistics	17.997		6.071	

Standard errors are in parentheses, which are clustered by worker ID and peer groups. Sample are separated to subsample by gender; columns 1 and 2 show the result of regression using male subsample, columns 3 and 4 are the results using female subsample. The outcome variable denotes the focal worker's willingness to work overseas. *Peer* variable represents the proportion of focal worker's peers who have overseas experiences. The *Peer boss* variable is the instrument for *Peer*, representing the overseas experience rates for bosses of focal worker's peers.

*** $p<0.01$, ** $p<0.05$, * $p<0.1$

Table 5: Gender Heterogeneity of Peer Effects on Willingness to Work Overseas (Male Subsample)

	(1) Baseline	(2) First-stage	(3) First-stage	(4) Second-stage
Dependent Variables	Willing to work overseas	Male peer experience	Female peer experience	Willing to work overseas
Male peer	0.433***			1.108**
	(0.149)			(0.517)
Female peer	0.045			-0.450
	(0.068)			(0.834)
Male peer boss		0.407***	0.148	
		(0.068)	(0.119)	
Female peer boss		-0.085***	0.056	
		(0.027)	(0.062)	
Age group 30s	-0.041	0.052***	0.028*	-0.050
	(0.042)	(0.013)	(0.015)	(0.053)
Age group 40s	-0.285***	-0.003	0.003	-0.292***
	(0.082)	(0.029)	(0.031)	(0.087)
Age group 50s	-0.430***	-0.164***	-0.040	-0.313**
	(0.135)	(0.053)	(0.045)	(0.150)
Age group 60s	-0.496***	-0.200***	-0.627***	-0.543
	(0.154)	(0.068)	(0.083)	(0.445)
Married	0.056	0.024***	0.010	0.043
	(0.043)	(0.008)	(0.007)	(0.051)
Number of child	0.041	0.027***	-0.008	-0.004
	(0.028)	(0.007)	(0.010)	(0.032)
Size of peer group	-0.017***	-0.006**	0.000	-0.012
	(0.005)	(0.003)	(0.003)	(0.007)
Worker FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Models	OLS	2SLS	2SLS	2SLS
Observations	3,060	2,615	2,615	2,615
F-statistics		37.680	0.981	0.781

Standard errors are in parentheses, which are clustered by worker ID and peer groups. The outcome variable denotes the male focal worker's willingness to work overseas. *Male Peer* (*Female Peer*) variable represents the proportion of focal worker's male (female) peers who have overseas experiences. *Male Peer Boss 1* (*Female Peer Boss 1*) variable is the instrument for *Male Peer* (*Female Peer*), representing the overseas experience rates for bosses of male (female) peers. Kleibergen-Paap rk Wald F statistics is in the F-statistics in column 4 (2nd-stage of 2SLS).

*** $p<0.01$, ** $p<0.05$, * $p<0.1$

Table 6: Gender Heterogeneity of Peer Effects on Willingness to Work Overseas (Female Subsample)

	(1) Baseline	(2) First-stage	(3) First-stage	(4) Second-stage
Dependent Variables	Willing to work overseas	Male peer experience	Female peer experience	Willing to work overseas
Male peer	0.016			0.493
	(0.201)			(0.681)
Female peer	0.359*			2.081
	(0.188)			(1.626)
Male peer boss		0.275***	0.088	
		(0.095)	(0.060)	
Female peer boss		-0.080**	0.056	
		(0.032)	(0.046)	
Age group 30s	-0.087	0.092***	0.011	-0.123
	(0.056)	(0.030)	(0.021)	(0.116)
Age group 40s	0.038	0.066*	-0.058	0.207
	(0.107)	(0.036)	(0.078)	(0.278)
Age group 50s	0.020	-0.015	-0.109	0.327
	(0.113)	(0.051)	(0.080)	(0.296)
Age group 60s				
Married	-0.089*	0.030***	0.026*	-0.229**
	(0.046)	(0.011)	(0.015)	(0.091)
Number of child	0.088	0.061***	-0.046***	0.146
	(0.054)	(0.019)	(0.017)	(0.203)
Size of peer group	-0.008	-0.007***	0.002	-0.012
	(0.005)	(0.002)	(0.003)	(0.009)
Worker FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Models	OLS	2SLS	2SLS	2SLS
Observations	1,181	854	854	854
F-values		7.030	2.251	1.684

Standard errors are in parentheses, which are clustered by worker ID and peer groups. The outcome variable denotes the female focal worker's willingness to work overseas. *Male Peer* (*Female Peer*) variable represents the proportion of focal worker's male (female) peers who have overseas experiences. *Male Peer Boss 1* (*Female Peer Boss 1*) variable is the instrument for *Male Peer* (*Female Peer*), representing the overseas experience rates for bosses of male (female) peers. Kleibergen-Paap rk Wald F statistics is in the F-statistics in column 4 (2nd-stage of 2SLS).
*** $p<0.01$, ** $p<0.05$, * $p<0.1$