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Service Sector Globalization and the Restructuring of Regional Employment*

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Abstract

This study investigates the impact of globalization on domestic urbanization and employment structures in the non-manufacturing sector. Despite its significance, this area has been understudied because of data limitations. Diverse transactions and expansion without capital investments make services difficult to capture in official statistics. However, services comprise 80% of employment in advanced economies. While data constraints remain, this study improves estimation precision by using firm-level data on overseas investments and actual domestic employment, rather than relying on proxy allocations based on regional employment shares. The analysis utilizes Japanese data from 2005 to 2020, examined by employment areas, and employs panel fixed-effects models with instrumental variables. In the information and communications industry, globalization is associated with an increase in employment, especially among female, college-educated, and regular employees, driven by inflows and increased labor participation, indicating job creation accompanied by a reallocation of human resources. Conversely, in the academic research and professional and technical services industry, foreign labor substitutes for domestic labor, resulting in lower wages. Meanwhile, the accommodation and food services sector saw employment growth but a decrease in wages, without labor migration. While the manufacturing sector showed few significant effects, beyond these examples, the non-manufacturing sector exhibited diverse spillover effects on employment, mobility, and wages. The pathways through which globalization affects regional communities—such as through the reallocation of human resources and changes in employment conditions—have not been fully captured by conventional manufacturing-focused perspectives.

Keywords: foreign direct investment, service sectors, globalization, regional employment, labor mobility

JEL classification: J21, J61, R23, F66

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1. Introduction

How does globalization in service industries reshape domestic urban structures and employment patterns? Although this question has attracted increasing attention, the underlying mechanisms remain underexplored. Nearly 80% of workers in developed countries are currently employed in services. As globalization deepens, certain service industries appear to be increasingly drawn to urban areas. This concentration, in turn, attracts population inflows, which subsequently lead to a greater presence of traditional, locally oriented service industries in those same cities.

Despite its growing importance, research has been relatively scarce, partly due to limited data availability and the absence of a robust conceptual framework to guide empirical analysis. The globalization of the service industry is difficult to capture in traditional statistics because it does not involve capital movement in some cases. Unlike the global expansion of manufacturing, which typically entails foreign direct investment (FDI), service industries may take diverse forms such as expansion without a local subsidiary, contracting or licensing arrangements, and digital distribution. These activities often appear in statistics as trade in services or contract outsourcing. From a theoretical perspective, traditional FDI theory, which is rooted in the manufacturing context, assumes that location advantages such as access to resources or cost efficiencies are key drivers of cross-border expansion. By contrast, the globalization of service industries does not necessarily rely on such advantages. Rather, in the case of service industries, some sectors can operate from virtually anywhere owing to remote work, while others are constrained by consumer location.

However, the service sector accounts for a substantial share of employment in many developed countries and incorporating a service-sector perspective is essential for analyzing how and to what extent globalization affects domestic labor markets. Simultaneously, understanding urbanization is particularly important in the context of declining populations in many developed countries. Unlike the globalization of manufacturing, which has often been associated with industrial decline or decentralization, the globalization of service industries may proceed in a manner that reinforces urban concentration.

Therefore, the degree of service industry globalization captured in this study may be underestimated. Recognizing this limitation, the study examines how globalization affects the structure and geographic distribution of the domestic labor market. If statistically significant concentration effects or other patterns are observed despite these limitations, this would indicate the presence of such dynamics. Furthermore, if contrasting patterns emerge when comparing the service and manufacturing sectors, this may suggest distinctive features of the service sector.

The aforementioned point constitutes the first contribution of this study. Another contribution is that it refines the allocation of firm-level overseas activities to local labor markets

compared to previous studies. Service globalization may affect industries differently, depending on how tasks are organized. It increases local labor demand in industries where tasks are highly complementary. By contrast, when services are not tied to a specific location, they may be substituted by foreign labor. Moreover, in some industries, only certain tasks are complementary. In such cases, globalization may partially increase local labor demand, whereas the demand for other types of workers remains unchanged or declines. If complementary tasks benefit from knowledge spillovers, agglomeration economies, or high-quality infrastructure, service globalization may accelerate urbanization. If such tasks depend primarily on consumer location rather than urban characteristics, globalization may not lead to further urban concentration.

To empirically verify these hypotheses, this study uses Japanese data spanning the early 2000s through 2020, measures globalization through annual changes in FDI-related capital investment¹ and estimates its effects on employment and wage outcomes using a panel fixed-effects model with an instrumental variable.

The results support the theory that service globalization expands complementary tasks, boosting domestic labor demand and urbanization in the information and communications industry. Consistent with employment patterns, globalization also raises wages in this industry. In contrast, in the academic research and professional and technical services industry, the results support task substitution: domestic labor is replaced by foreign labor, resulting in lower wages. The increase in employment when firms invest abroad in different industries further reinforces this pattern.

However, the findings also reveal a case not anticipated by the initial hypothesis: when complementary tasks do not benefit from urban conditions, such as knowledge spillovers and agglomeration economies, increased FDI-related capital investment raises employment but does not attract additional labor. This is observed in the accommodation and food services industry, where globalization is associated with lower wages, which may reflect improved efficiency. No notable effects are observed in manufacturing, for either employment or wages.

In the wholesale and retail trade industry, when firms invest in different industries abroad, increased FDI-related capital investment reduces domestic labor and worker inflows and slightly lowers wages. Although this study does not hypothesize this case, it may reflect a way for firms to sustain their businesses amid domestic population decline. This interpretation is consistent with the finding that existing FDI-related capital investment positively affects domestic labor markets.

Therefore, although the data may not capture all relevant factors, service globalization appears to affect domestic labor markets in Japan, a dynamic that is often overlooked by

¹ FDI-related capital investment is measured as subsidiaries' capital expenditure, not outward FDI flows.

perspectives focused on manufacturing. Positive effects on employment are observed in several non-manufacturing sectors; however, an increase in employment, accompanied by higher wages, is notably associated with urbanization.

This study contributes to the literature on globalization and its spatial distortions. A vast body of research has examined the globalization of manufacturing, beginning with international trade in goods and later expanding to include product offshoring (Autor et al., 2013; Helpman et al., 2010; Kiyota et al., 2019; Kiyota et al., 2022). These studies have documented positive effects, such as gains in skills and innovation, and negative consequences, such as job losses and downward pressure on wages.

In particular, a key insight from this literature is that the impact of globalization on labor markets is heterogeneous; it differs depending on workers' skill levels and is also geographically concentrated. Importantly, labor mobility alone has not been sufficient to offset these spatially uneven shocks. This spatial concentration of the impact is closely tied to broader patterns of urban growth, particularly the role of high-skilled labor agglomeration in accelerating regional divergence (Moretti, 2012). Even when focusing solely on the implications for workers, understanding such spatial disparities is critical, as they shape not only individual outcomes but also the broader functioning of labor markets.

As the share of services in economic output and trade continues to rise in advanced economies, attention has increasingly turned to the globalization of services. Notably, productivity disparities in the service sector are even greater than those in manufacturing across Organisation for Economic Co-operation and Development (OECD) countries. Francois and Hoekman (2010) emphasize the importance of understanding how trade and trade policies influence service sector performance.

However, as highlighted earlier in this study, measuring the globalization of services presents substantial challenges. Although statistical innovations, such as the concept of Foreign Affiliates Trade in Services, have improved our ability to capture international service transactions, these data remain limited in scope. Even after 2020, capturing cross-border trade in services remains a challenge. Existing studies have primarily concentrated on specific aspects such as service offshoring, including analyses of its impact on manufacturing productivity through limited-service imports (Arnold et al., 2008) and measurements based on trade data (Amiti and Wei, 2009; Hummels et al., 2014; Magli, 2022). Another line of research has examined the high-tech sector in the United States (Jensen, 2008). More recently, research has used data on job displacements attributed to service offshoring from the Trade Adjustment Assistance program to measure service offshoring (Im et al., 2024). Although this approach has provided valuable insights, it has tended to overlook the potential positive aspects of globalization. These studies leave other facets of service-sector globalization largely unexplored, such as overseas activities.

Against this backdrop, this study attempts to shed light on the influence of FDI-related capital investment on local labor markets, while recognizing the limitations inherent in the available data.

The next section outlines the hypotheses and empirical methods. Section 3 describes the data used in this study, Section 4 presents the estimated results, and Section 5 concludes the paper.

2. Empirical strategy

The effect of globalization on regional labor markets may vary depending on the industry and whether overseas activities are conducted in the same or a different industry. In this study, globalization is measured by capital expenditure of overseas subsidiaries, that is, FDI-related capital investment, rather than new outward FDI flows. Theoretical channels can be considered as follows: First, complementary tasks such as administration, planning, or creative and technical work that support overseas offices tend to expand in response to business expansion. In such cases, these complementary tasks tend to benefit from knowledge spillovers and economies of agglomeration, potentially leading to urban concentration.

Second, when tasks are geographically independent, foreign labor can easily substitute domestic labor. Third, while overseas activities may partially increase employment in complementary tasks, such as administration and planning, other tasks may be substituted or remain unaffected, resulting in no increase in domestic labor demand for those tasks. In such cases, complementary tasks tend to benefit from knowledge spillovers and economies of agglomeration, leading to concentration in urban areas.

In the first case, industries such as the information and technology industry and lifestyle services and entertainment industry illustrate this pattern. Employment in domestic labor markets, especially in urban areas, among college-educated workers, and among regular employees may increase. This may also lead to migration toward urban centers. These industries involve complementary tasks—such as software development, planning, or content production—that support overseas operations and benefit from knowledge spillovers and urban agglomeration. In the second case, this applies to industries such as academic research and professional and technical services. When overseas activities are in the same industry, the domestic labor demand tends to decrease. By contrast, when overseas activities are in a different industry, domestic employment in complementary tasks may increase. In the third case, industries such as the wholesale and retail trade industry and real estate industry illustrate this pattern. Some college-educated or regular employees may see increased employment in urban areas, but domestic labor demand for non-college-educated and non-regular workers may decrease or remain unaffected because of substitution effects.

This study examines how the effects differ depending on whether foreign affiliates and domestic industries operate in the same industry (hereafter, “same industry match”) or in different industries (hereafter, “different industry match”). Previous studies have also addressed this distinction. For example, Javorcik (2004), demonstrating positive productivity spillovers from inward FDI, distinguishes between intra-industry and inter-industry spillovers in the estimation. Similarly, Alfaro and Charlton (2009) argue that, because of data limitations in earlier studies, FDI aimed at avoiding trade costs—namely horizontal FDI—had been predominantly captured. Using comprehensive data, however, they distinguish between horizontal FDI, referring to investment in the same industry as the parent firm, and vertical FDI, referring to investment in upstream industries, and show that vertical FDI exploiting cross-border factor cost differences is more prevalent than previously thought.

Based on these theoretical considerations, the following empirical model is specified to examine the relationship between overseas activities and domestic labor outcomes, with estimations conducted separately by industry, s , to capture the heterogeneity in effects.

$$\Delta Y_{j,t}^s = \beta_1 \sum_{i \in I^*(j,s)} \left(\frac{\text{prorate}_{f(i),j,t-1}^s}{D_{t-1}^s} \times \Delta FDI_t^s \right) + \beta_2 \text{has_} FDI_{j,prior}^s + \eta_j + \tau_t + \mu_{j,t} \quad (1)$$

Here,

$$\Delta Y_{j,t}^s = Y_{j,t}^s - Y_{j,t-1}^s$$

denotes the change in the outcome in employment area j , and

$$\Delta FDI_t^s = FDI_t^s - FDI_{t-1}^s$$

denotes the change in the amount of FDI-related capital investment. ΔFDI_t^s indicates the change in the annual flow, rather than the stock. This study aims to capture the effect of an acceleration in overseas investment activities. By focusing on flow changes, rather than cumulative investment, the analysis highlights the potential link between dynamic investment behavior and mid-term changes in domestic employment. To capture the mid-term effect, and given that the surveys are conducted every five years, the change from period $t-1$ to t represents a five-year interval. Since FDI data are not available by region, ΔFDI_t^s is allocated to each employment area using prorated weights, which reflect the share of employment at each establishment within the firm at time $t-1$. The following formula illustrates this allocation:

$$\text{prorate}_{f(i),j,t-1}^s = \frac{E_{i,j,t-1}^s}{E_{f,t-1}^s}$$

This is the ratio of employment at establishment i in industry s and employment area j in period $t-1$ ($E_{i,j,t-1}^s$) to the total employment at firm f in industry s at $t-1$ ($E_{f,t-1}^s$). This prorate produces values for each industry (s) and employment area (j), with industries classified at the firm level. It is normalized by $D_{t-1}^s = \sum_{f \in s} \sum_j \text{prorate}_{f,j,t-1}^s$, which aggregates the prorate values of all firms in industry s across regions. While previous studies allocate overseas activities using regional employment shares, this study uses employment weights reflecting the domestic scale of FDI firms, normalized within each industry.

Building on this construction, this study distinguishes between two cases: $\Delta SFDI_t^s$, which refers to the change when the overseas activity is in the same industry as the firm's domestic operations ("same industry match") and, $\Delta DFDI_t^s$, which refers to the change when the overseas activity is in the different industry ("different industry match"). The hypothesis is that the implications for domestic labor markets will vary significantly between these two types of matches.

$has_FDI_{j,prior}^s$ is a dummy variable equal to one if employment area j in industry s had overseas investment prior to period $t-1$, and zero otherwise. This dummy variable serves to distinguish between areas with and without such investment, capturing the effect of the presence of FDI as opposed to its change. This is critical because FDI presence may lead to structural changes in the local labor market that are distinct from the effects of investment flows. The decision to use a dummy variable instead of FDI level is based on two key considerations. First, if this study were to use a continuous measure of FDI, the FDI stock would theoretically be appropriate for capturing long-term presence. However, its precise calculation is complex due to the difficulty in determining the start of accumulation and accounting for depreciation. Second, our regional allocation method relies on prorated weights from the Economic Census for Business Frame, which are not available annually. Using these fixed prorate weights to allocate yearly FDI flows would provide an inaccurate measure of regional FDI stock, particularly because the existence of firms can change over time. Therefore, $has_FDI_{j,prior}^s$ dummy variable provides a more robust and simple measure of FDI presence, avoiding these data complexities while still capturing a crucial aspect of the impact of FDI. It is treated as exogenous in the analysis. This dummy is also split into $Shas_FDI$ (same-industry match) and $Dhas_FDI$ (different-industry match) in the corresponding estimations. This study then estimates equation (1) separately for these two cases:

$$(1S) \quad \Delta Y_{j,t}^s = \beta_{1S} \sum_{i \in (j,s)} \left(\frac{\text{prorate}_{f(i),j,t-1}^s}{D_{t-1}^s} \times \Delta SFDI_t^s \right) + \beta_{2S} Shas_FDI_{j,prior}^s + \eta_j + \tau_t + \mu_{j,t}$$

$$(1D) \quad \Delta Y_{j,t}^s = \beta_{1D} \sum_{i \in (j,s)} \left(\frac{\text{prorate}_{f(i),j,t-1}^s}{D_{t-1}^s} \times \Delta DFDI_t^s \right) + \beta_{2D} Dhas_FDI_{j,prior}^s + \eta_j + \tau_t + \mu_{j,t}$$

The model includes an employment area fixed effect, η_j , to control for time-invariant characteristics of each employment area. The term $\mu_{j,t}$ represents an idiosyncratic error, and τ_t captures time-fixed effects. Given the potential implications of including or excluding time effects, this study presents and compares results from both specifications. This issue is particularly relevant in the present setting, because the main explanatory variable, ΔFDI_t^s , is defined as the annual change in FDI-related capital inflows. By construction, ΔFDI_t^s is closely aligned with nationwide temporal dynamics, as FDI inflows expanded gradually during the study period. These dynamics were not solely the outcome of market forces; they were also encouraged by national policy initiatives that sought to expand FDI across regions. Consequently, including time-fixed effects would mechanically absorb both the general globalization trend and the policy-driven component, leaving limited variation to identify the impact of ΔFDI_t^s . Moreover, the specification already controls for whether an employment area had received FDI prior to the estimation period, thereby accounting for persistent structural differences across regions. The subsequent analysis therefore compares the results without time effects, where time trends are absorbed into the main explanatory variable, with those from a specification that relies on within-period variation across areas with high versus low FDI inflows.

The change in FDI-related capital investment might be endogenous because firms may decide to increase overseas investment in response to favorable local economic conditions such as strong corporate performance or growth expectations in the region. Thus, this study uses the following instrumental variable (IV):

$$IV_{j,t} = \sum_{m \in (j,s)} \left(\frac{E_{m,j,t-1}}{E_{m,t-1}} (\Delta FDI_{m,t} - \Delta FDI_{m,t,j}) \right) \quad (2)$$

To construct the instrument, for each medium-level industry m , the change in FDI-related capital investment in the national economy excluding the own region j is calculated. The variable $\Delta FDI_{m,t,j}$ is constructed as described in footnote 2.² These industry-level changes are then weighted by the share of employment in employment area j ($E_{m,j,t-1}$) relative to the national total for each industry ($E_{m,t-1}$) at the initial period ($t-1$). The weighted values are then aggregated to the large industry classification level s .³ Thus, the resulting regional FDI-related investment

² $\Delta FDI_{m,t,j} = \frac{\sum_{i \in I^*(j,m)} \text{prorate}_{f(i),j,t-1}^s}{\sum_{j'} \sum_{i \in I^*(j',m)} \text{prorate}_{f(i),j',t-1}^s} \times \Delta FDI_t^s$ where s denotes the corresponding broader industry, and the preceding term represents the normalized share of industry m employment in employment area j .

³ This study uses the Japan Standard Industrial Classification (JSIC), Large classification (alphabet code, one digit) and Medium classification (two digits), which are approximately

shocks are purged of potential endogeneity.

This type of shock, constructed using national industry trends and initial regional structures, corresponds to what is often referred to as the Bartik instrument, which is widely used in empirical research (Autor et al., 2013; Kiyota et al., 2022). The validity of this instrument has itself become a topic of study, most notably in Goldsmith-Pinkham et al. (2020). They demonstrate that the Bartik IV is mathematically equivalent to a GMM estimator using multiple industry shares as instruments, thereby highlighting that the share component plays a more fundamental role than the shift component. They also addressed the “black box” nature of this instrument by formally setting out the conditions for validity and clarifying that both the share and shift components are subject to specific independence assumptions.

In line with these conditions, the share components must be independent of local shocks and shocks that affect the region’s subsequent industrial composition, whereas the shift components should be exogenous, with minimal influence from any specific industry or region. Following previous studies, this study uses initial industry shares, presumed to be unrelated to later local shocks that influence economic outcomes, and excludes the local region when computing national growth rates to reduce the risk of local shocks contaminating the national average.⁴ Moreover, by conducting an industry level analysis, this study strengthens the plausibility of the key identifying assumption that the causal effects of the shocks are homogeneous across industries.

This equation is estimated using a panel fixed-effects model with IV, applying weights based on the population size of each employment area. The weights are constructed from the number of employed and unemployed individuals in each area. When the outcome is disaggregated by gender, the weights correspond to the number of employed and unemployed males or females, respectively. To reduce the influence of outliers, this study applies the Interquartile Range (IQR) method, excluding values that fall more than 1.5 times the interquartile range from the first or third quartile of each variable (i.e., the change in FDI-related capital investment, IV, and change in the outcome).

equivalent to the one- and two-digit levels of the International Standard Industrial Classification. To ensure consistency across our data sources, the author converted all industry information to the corresponding JSIC categories.

⁴ In addition, to further confirm the exogeneity of the IV, this study verified that there is no correlation between the change in the outcome in a previous period and Bartik IV for the current period. For example, using the change in employment as the outcome, this study analyzed the correlation between the Bartik IV and past changes in the outcome (2020–2015 and 2015–2010) for the information and communications industry and accommodation and food services industry, where significant results were found. The correlation coefficients and p-values were 0.0126 ($p = 0.8813$) and 0.1125 ($p = 0.1920$) for the former, and -0.1224 ($p = 0.1740$) and -0.0541 ($p = 0.5589$) for the latter. Since none of these correlation coefficients are statistically significant, it suggests that the Bartik IV is not influenced by past changes in the outcome.

3. Data

Figure 1 shows that FDI-related capital investment has increased since 2000, based on data from the Basic Survey on Overseas Business Activities conducted by the Ministry of Economy, Trade and Industry. Although it declined in 2020 during the COVID-19 pandemic, it remained higher than that in the early 2000s. The volume of FDI-related capital investment is similar in the manufacturing and non-manufacturing sectors. Even after excluding the finance sector⁵, investment in the non-manufacturing sector has exhibited a notable upward trend in recent years.

This study analyzes the effects of FDI-related capital investment on regional labor markets. Our measure of FDI-related capital investment is based on the change in the annual investment flow by foreign affiliates, collected through the Basic Survey on Overseas Business Activities, which is used to capture service sector globalization. To capture the mid-term effect, this study uses the five-year difference in annual investment flows. Specifically, this study calculates the change from the beginning to the end of each five-year period. The investment excludes land purchases.

To analyze the impact on regional labor markets, this study uses the employment ratio of firms with foreign affiliates in each region, calculated using the prorate method introduced above. To this end, a dataset is constructed using the following method: First, to create firm-level data, the Basic Survey on Overseas Business Activities is combined with the Basic Survey of Japanese Business Structure and Activities, both conducted by the Ministry of Economy, Trade and Industry. Second, this dataset is linked to the Economic Census for Business Frame (for recent years) or the Establishment and Enterprise Census of Japan (for earlier years), conducted by the Ministry of Internal Affairs and Communications. These sources provide data on the locations of each firm's business establishments and number of employees at each site, broken down by municipality. As the analysis is conducted at the employment area level (described in detail later), the data are further processed accordingly.

Using this allocation method to construct the dataset, for example, in 2015, 85.23% of firms in the Basic Survey on Overseas Business Activities with valid identifiers were successfully linked to the Economic Census for Business Frame. To ensure that all overseas activities are captured, the total amount of capital investment is used to calculate the difference between $t-1$ and t .

⁵ The survey excludes firms headquartered in finance, insurance, or real estate. However, overseas affiliates operating in these sectors are included if their parent companies belong to other industries.

This study examines the effects at the employment area level using the 2015 version of the Urban Employment Areas proposed by Kanemoto and Tokuoka (2002), which defines 222 areas across Japan. In this framework, core cities are identified based on the population size within Densely Inhabited Districts, whereas surrounding municipalities are included if at least 10% of their employed residents commute to the core city. The definition allows for multiple core municipalities to exist within a single employment area.

For the outcome variables, this study uses changes in the number of employed persons by total, gender, educational attainment (college vs. non-college), employment status (regular vs. non-regular employees),⁶ and residence status (whether the individual lived in a different employment area five years ago). It also considers changes in the number of unemployed persons, non-employees, and average hourly wages. Employment-related data are obtained from the Population Census conducted by the Ministry of Internal Affairs and Communications, while wage data are drawn from the Basic Survey on Wage Structure conducted by the Ministry of Health, Labour and Welfare.

Unlike establishment-based surveys that often exclude small firms, the Population Census offers comprehensive population coverage, including non-employees and the unemployed. The Population Census is conducted every five years. However, data classified by current employment status are only available from 2010 onward. Educational attainment data are collected in every other census (i.e., once every ten years), and information on individuals' previous residences is missing from the 2005 census.

The average hourly wage is calculated by dividing the total compensation, including overtime pay, by total working hours, including overtime. Wage data are based on a sample of establishments, stratified by prefecture, industry, and establishment size. As municipalities are not the basis of sampling, some may be missing within an employment area. Sampling weights are applied to calculate average values.

This study primarily analyzes data from 2005 to 2020, with adjustments depending on data availability and classification consistency. Although the overall period is from 2000 to 2020, some variables are only usable from certain years. Figure 1 shows the increase in overseas capital investment from 2005. The summary statistics for the main variables are provided in Appendix Table C1.

⁶ A regular employee is an individual called a “regular worker” at their workplace. They generally have access to job training and promotion opportunities, an obligation to accept transfers to different locations or departments as directed by the employer and a confidentiality agreement. In contrast, a non-regular employee is an individual called a “non-regular worker” who generally lacks these opportunities and obligations. This definition is used in the surveys for this study and is not based on the length of working hours (e.g., full- or part-time).

4. Results

4.1. Results for employment outcomes

4.1.1. Same industry match

Table 1a presents the results of Equation (1) without time-fixed effects, whereas Table 1b presents those with time-fixed effects, showing only the coefficients of ΔFDI . This corresponds to the case where domestic and overseas activities are in the same industry. First, as shown in Column (2) of Table 1a, FDI-related capital investment leads to employment growth in the information and communications industry. The estimated coefficient indicates that an increase of JPY 1 million yen (approximately USD 6,900) in FDI-related capital investment results in the creation of approximately 37 jobs, scaled to the population based on estimates from the 1% Census sample. In light of the fact that the upper limit of government job creation cost is around JPY 1 million yen⁷ per job in Japan, and that similar estimates exist in the United States, this magnitude is considerable. This growth is driven by female employment, as shown in the second and third rows, which present the estimated coefficients for female and male workers. Moreover, employment increases are observed among college-educated and regular employees, whereas the coefficients for non-college-educated and non-regular employees are not statistically significant.

The job creation effect from overseas investment appears to attract workers from outside the region. As shown in the eighth row, the number of employees who previously lived outside their current employment area increases. Turning to labor force dynamics, the results in the last two rows of Table 1a indicate that FDI-related capital investment in the information and communications industry does not significantly reduce the number of unemployed individuals, unlike in other industries. This may be because people who were previously out of the labor force have entered the labor market and are now counted as unemployed. In fact, while non-employed individuals significantly increase in other industries, the number remains statistically unchanged in this industry—suggesting that labor force participation has been activated.

Therefore, the empirical evidence supports the view that complementary tasks are expanding, leading to an increased domestic labor demand. These complementary activities are likely to promote urbanization, as firms seek to benefit from knowledge spillovers and agglomeration economies. In contrast, this study does not find significant employment growth among non-college-educated or non-regular workers.

The results hold even when time-fixed effects are included. Table 1b shows that increases in FDI-related capital investment raise employment—especially among female and regular employees—and attract inflows from outside the employment area.⁸ With time-fixed

⁷ This is the evaluation benchmark, not the actual cost per job created.

⁸ Tables 1b–4b, which include time-fixed effects, report estimates with standard errors clustered

effects, about 45–55% of the variation is absorbed, and while some coefficients lose significance, the female employment effect remains significant. The third row in each block reports the partial R^2 , which indicates how much of the variation in annual FDI changes is explained by time- fixed effects.⁹ The finding from Table 1a—that unlike other industries, unemployment does not fall and non-participation does not rise—is also maintained.

Second, in the accommodation and food services industry, FDI-related capital investment contributes to an increase in employment, particularly among non-college educated and non-regular employees, as shown in Column (7) of Table 1a. However, it neither attracts inflows from outside the employment area nor encourages labor force participation, suggesting that the increase in employment in this industry reflects a sector shift within the existing local workforce.

Business expansion increases employment not only in administrative and planning roles but also among front-line workers. These roles are not subject to substitution by foreign labor, as the industry is inherently tied to the consumer’s location. Overseas activities in this industry are also likely to reinforce domestic business activity because expanded financial resources allow for improved efficiency through additional investment. These results imply that FDI-related capital investment in this industry is unlikely to contribute to urbanization, because employment growth occurs without inflows and is concentrated in location-dependent front-line roles. These findings suggest that the urbanizing effect of complementary tasks, as discussed in the theoretical section, may not hold when expanded tasks do not benefit from knowledge spillovers or agglomeration economies and are inherently tied to specific locations.

Similar patterns are observed when time-fixed effects are included: FDI-related capital investment raises employment, especially among non-regular employees, although the coefficient is insignificant (Table 1b, Column (7)). About 60% of the variation is explained by the time-fixed effects. The increase of non-college-educated employees noted in Table 1a does not change, as it was based on the 2010–2020 cross-sectional estimation and is not shown in Table 1b. The signs of inflows, unemployment, and non-participation are the same as in Table 1a and remain significant in Table 1b. This industry neither attracts inflows from outside the employment area nor stimulates labor force participation.

The results for wholesale and retail trade are similar to those for the accommodation and food services industry. In this industry, globalization does not increase overall employment but increases employment among male, non-college educated, and non-regular employees.

at the employment-area level to account for serial correlation, whereas Tables 1a–4a do not. With clustering, the results for Tables 1a–4a remain robust overall, with the only exception that the coefficient for employment in the information and communication industry becomes insignificant.
⁹ The partial R^2 is calculated as $(R^2(\text{employment area+year}) - R^2(\text{employment area})) / (1 - R^2(\text{employment area}))$.

However, the magnitude of the effect is smaller than that in the accommodation and food services industry discussed above. Similarly, no increase in labor inflows or labor force participation is observed, suggesting that the same mechanisms are at play. Once time-fixed effects are controlled for, the coefficient becomes statistically insignificant, and in some outcomes, it turns negative, as shown in Column (4) of Table 1b. This suggests that regions where FDI-related capital investment increased over time did not necessarily see a corresponding rise in employment.

Third, comparing non-manufacturing with manufacturing is useful because the same data construction method and estimation model are applied. FDI-related capital investment does not significantly affect overall employment. The coefficients for regular employees and inflows are significantly negative, but the magnitudes are very small: -0.0035 and -0.0021, respectively (in Column (1) of Table 1a), which correspond to fewer than one individual at the population level, given the 1% sample.

Other non-manufacturing industries do not exhibit employment growth in response to the acceleration of overseas activities. Notably, the increase in FDI-related capital investment in the academic research and professional and technical services industry has a negative impact on college-educated employees and labor inflows (Table 1a, Column (6)). This finding is consistent with the theory that domestic labor is substituted by foreign labor if tasks are geographically independent. However, the average FDI-related investment in this industry is negative. This pattern is not affected by the inclusion of time-fixed effects, since the analysis by educational group is cross-sectional.

The negative impact on regular employees and the positive impact on non-regular employees also hold when the estimation includes time-fixed effects, and the latter coefficient is statistically significant (Table 1b, Column (6)). The coefficient of inflows is significantly negative even under the two-way fixed effects specification in Table 1b. Thus, the results continue to support the theory that domestic labor is substituted by foreign labor when tasks are geographically independent. The coefficient for unemployment in the lifestyle services and entertainment industry is relatively large, although the standard error is substantial. This industry changed its classification and only appeared in the data since 2010.

Appendix Tables A1 and A2 present the estimated coefficients for $has_FDI_{j,prior}$, which indicates whether employment area j had any FDI-related capital investment before period $t-1$. Table A1 reports the results without time-fixed effects, while Table A2 includes them. In the information and communications industry, male workers respond positively to the presence of FDI, whereas female workers are negatively affected, as shown in Tables A1 and A2. Conversely, changes in FDI-related investment have a positive effect on female workers, as shown above. This pattern implies that men and women engage in different types of tasks within the industry. For example, the presence of FDI may be associated with a concentration of managerial and strategic

functions within the region, which are often filled by male workers. However, an increase in FDI-related capital investment, as opposed to its mere presence, may directly lead to the expansion of operational and technical roles, such as software engineers, and female workers may be more frequently employed.

Although the coefficient of FDI-related capital investment is positive for non-college-educated and non-regular workers in the accommodation and food services industry, the presence of FDI is associated with significantly positive effects for college-educated and regular employees. This may reflect an increase in the administrative and planning responsibilities within the industry. As indicated above, no clear effect is observed with increased FDI-related capital investment in manufacturing. By contrast, the introduction of FDI is associated with a significant increase in overall employment in the industry. When time-fixed effects are included, however, this positive effect becomes insignificant, as shown in Table A2. This may reflect the fact that the adoption of FDI-related capital investment in this industry is largely historical and has changed little during the estimation period. As a result, regional differences in the presence of FDI do not vary meaningfully over time, and the inclusion of time-fixed effects absorbs much of the variation. The third row in each block reports the partial R^2 , indicating how much of the variation in $has_FDI_{j,prior}$ is absorbed by time-fixed effects. These results are provided for reference only, as the main analysis focuses on annual FDI changes. In some specifications, the existing FDI effect is omitted because of a lack of variation or collinearity with the fixed effects.

Finally, Tables B1 and B2 in the Appendix report the F-statistic for the excluded instruments, which exceeds the common threshold of 10, suggesting that the instrument is not weak. Exceptions are observed in the real estate and transportation industries, where the weak instrument test does not pass. However, these industries are not the focus of the analysis above.

4.1.2. Different industry match

For the case in which domestic and foreign activities occur in different industries, Tables 2a and 2b report the coefficients on ΔFDI from Equation (1), without and with time-fixed effects. For example, a firm in the information and communications industry may invest in the business services industry abroad, such as customer support or data entry services. First, in contrast to the previous section, which focused on same-industry matches, FDI-related capital investment does not lead to employment growth in the information and communications industry in many cases, as shown in Column (2) of Tables 2a and 2b. Furthermore, the coefficients are insignificantly negative overall, and the coefficient for college-educated workers is significantly negative in Table 2a. This suggests that some tasks are being offshored or that this industry's overseas activities in different industries substitute for domestic labor. However, the coefficients

for inflows, unemployment, and non-workers suggest that accelerating overseas activity attracts individuals from outside the current employment area and the labor force for both with and without time-fixed effects.

In the wholesale and retail trade industry, as shown in Column (4) of Table 2a, overseas activity involving different-industry matches has a negative effect on both employment and inflow worker growth, whereas such investment within the same industry does not show a clearly positive impact on domestic employment. While the coefficient for non-regular employees is slightly positive, the effect corresponds to less than one person in the total population. As the domestic market shrinks due to population decline, overseas investment may be a way to sustain businesses. Including time-fixed effects yields similar results (see Column (4) of Table 2b). Except for inflows, this pattern is also evident in the real estate industry as shown in Column (5) of Tables 2a and 2b. While the wholesale and retail trade industry does not attract individuals from outside the current employment areas, the real estate industry appears to do so.

In contrast, when the lifestyle services and entertainment industry invests in different industries abroad, globalization has a positive impact on the domestic labor market. Without time-fixed effects, an increase of JPY 1 million in FDI-related capital investment leads to the creation of approximately 300 jobs for females and 167 for males within the employment area, scaled to the population. When time-fixed effects are included, the coefficient for total employment remains positive and statistically significant. By gender, the inclusion of time-fixed effects explains about 55% of the variation, making the coefficients statistically insignificant but only slightly smaller in magnitude.

Notably, the academic research and professional and technical services industry exhibits opposite results depending on whether the match is within the same industry or across different industries. The number of college-educated workers increases in the case of a different-industry match. The results are robust to the inclusion of time-fixed effects. Investment in different industries may create complementary tasks for domestic workers, whereas investment in the same industry may substitute for domestic labor. The accommodation and food services industry, which contributes to job creation in the domestic labor market in the previous section, does not exhibit notable effects in this case.

The estimation results for $has_FDI_{j,prior}$ are summarized in Appendix Tables A3 and A4, corresponding to the models without and with time-fixed effects, respectively. In contrast to the increase in FDI-related capital investment, the existing FDI effect is positive in the wholesale and retail trade industry. This is consistent with the aforementioned theory, which suggests that overseas investment serves as a means to sustain business operations. Once time-fixed effects are included, however, the coefficient becomes negative, suggesting that the previously observed positive relationship may have been driven by nationwide globalization trends rather than by firm-

or region-specific mechanisms. As for the acceleration of FDI-related investment, the results show a similar pattern between the wholesale and retail trade industry and real estate industry. Yet, in terms of the effect of existing FDI, the real estate industry shows the opposite effect, which is significantly negative. When controlling for time effects, the coefficient of existing FDI turns positive, possibly reflecting the industry's greater sensitivity to cyclical or macroeconomic fluctuations.

Tables B3 and B4 in the Appendix report that almost all estimations pass the weak instrument variable test, as the F-statistic for the excluded instruments exceeds the commonly accepted threshold of 10. However, in some sectors, overseas investment does not occur in the different industry, leading to instances in which the test does not pass.

4.2. Results for wage outcomes

4.2.1. Same industry match

Tables 3a and 3b present the impact of FDI-related capital investment on wage outcomes, defined as average hourly wages, without and with time-fixed effects. Globalization appears to lower wages in the accommodation and food services industry across all groups, regardless of gender, educational attainment, or employment status (regular or non-regular), as shown in Column (7) of Table 3a, and the effect becomes insignificant but is still supported in Table 3b. This change indicates that the inclusion of time-fixed effects explains approximately 60% of the variation. These results contrast with the positive effect observed on employment outcomes. One possible explanation is that firms expanding their businesses overseas also invest in mechanization at domestic establishments as part of their overall growth strategy, resulting in the simplification of the tasks left for human workers.

In the information and communications industry, no significant gender differences are found. Wages increase by approximately 2 yen per hour for both college- and non-college-educated workers and by approximately 0.7 yen for regular employees when time-fixed effects are not included, while with time-fixed effects, the increases are approximately 1.4 yen for non-college-educated workers and 0.93 yen for regular employees.

In the academic research and professional and technical services industry, wages also show negative effects, mirroring earlier findings on employment outcomes, as shown in Column (6) of Table 3a and 3b. Consistent with earlier employment results, this finding further confirms the theory that when tasks are geographically independent, domestic labor is substituted by foreign labor. For comparison with non-manufacturing industries, the results for the manufacturing industry show no statistically significant impact on wages. The coefficient for regular employees is slightly negative but very small in magnitude (-0.0094 yen), well below one

yen in Table 3a. No notable findings are observed in Tables A5 and A6. The upper parts of Tables B5 and B6 in the Appendix report the F-statistic for excluded instruments, and almost all estimations pass the weak instrument variable test, except for some cases in the real estate and transportation industries, as well as in the employment outcomes estimation shown in Tables B1 and B2.

4.2.2. Different industry match

Table 4a and 4b show the impact of FDI-related capital investment on wage outcomes, the former excluding and the latter including time-fixed effects, when overseas activities occur in an industry other than the firm's domestic operations. In both cases, in the wholesale and retail trade industry, overseas activities in a different industry are associated with a decline in the average hourly wage, mirroring the negative effect on employment growth described in Section 4.1.2. Although the coefficient is statistically significant, its magnitude is very small. This finding is in line with the theory that overseas investment may serve as a means of sustaining businesses amid a shrinking domestic market due to population decline, as discussed in the employment outcomes section. Similar to the case of same-industry matches, overseas activities involving different industries are associated with lower wages in the accommodation and food services industry, as shown in Column (7) of Tables 4a and 4b.

In contrast to its effect on employment outcomes, when the lifestyle services and entertainment industry invests in different industries abroad, globalization has a negative impact on the domestic labor market across specifications. Consequently, jobs are created but the average wage level for workers in the employment area does not improve. The analysis finds no notable effects of existing FDI, as shown in Tables A7 and A8. The lower parts of Table B5 and B6 in the Appendix show that the weak instrument test is passed in most cases, with a few exceptions, particularly in the information and communications industry and in academic research and professional and technical services.

4.3. Robustness checks

Table 5 presents the estimation results for the impact of increases in FDI-related capital investment on the main employment outcomes, without using the IQR method to exclude outliers. While this study adopts outlier reduction as an appropriate approach, some researchers may prefer to use the full dataset (i.e., data from all employment areas) because of concerns that excluding certain rural or urban areas could introduce geographical bias. However, the main results remain robust.

Regarding the two main industries highlighted in the main text, the information and

communications industry and accommodation and food services industry, the coefficient for overall employment growth in the former is positive but not statistically significant, whereas the effect on female employment remains significantly positive, indicating robustness. Moreover, the evidence that overseas activities in this industry attract workers from outside the employment area continues to hold. In the accommodation and food services industry, the estimated coefficients for overall, female, and even male employment are all significantly positive, despite using the full dataset. The estimated effects for these two industries are slightly smaller than those reported in Table 1a using the IQR method. However, the magnitudes remain largely similar, thus supporting the robustness of the main findings.

A similar pattern is observed for the academic research and professional and technical services industry. As discussed in the main analysis regarding the potential effects of substitution in this industry, the results using the full dataset show significantly negative effects on overall employment, as well as for both males and females, further supporting the robustness of the findings.

5. Conclusions

This study examines the impact of globalization on domestic urbanization and employment structures in the non-manufacturing sector. Service sectors constitute a significant proportion of the workforce in many developed countries. While urbanization is often observed alongside globalization, its importance for analysis is heightened in the context of population decline, which is prevalent in many advanced economies.

Using Japanese data from the early 2000s to 2020 and a panel fixed-effects model with IVs, the results suggest that service globalization, reflected in changes in FDI-related capital investment, leads to employment growth with higher wages and inflows in the information and communications industry, supporting one of our theories. By contrast, a substitution effect is observed in the academic research and professional and technical services industry. However, the study also finds that in the accommodation and food services industry, employment growth occurs alongside decreasing wages, without inducing urbanization.

Empirical research on service globalization has been limited, partly due to the difficulty of capturing it in data and lack of well-established theories. Nevertheless, the significant results obtained in this study provide evidence that such effects do exist. Furthermore, rather than relying on existing approaches that allocate globalization exposure using regional employment shares or other proxies, this study links firms' overseas investment activities to the geographic distribution of their domestic establishments.

One limitation of this study concerns the classification of the service industry, which

became more detailed only after 2005. In the 2000 data, service industries were broadly grouped into a single “service industry” category. In addition, the information and telecommunications industry was not distinguished from the transportation industry. Thus, the main analysis was limited to the period from 2005 onward. In the 2005 data, the academic research and professional and technical services industry and lifestyle services and entertainment industry were still not classified as independent categories. A detailed overview of these classification changes is provided in Appendix D (Table D1).

Another data-related constraint is that employment outcomes by education level are available only in 10-year intervals. Therefore, this study does not use changes from 2000 to 2010 in the main estimation and focuses on the 2010–2020 period. In addition, because data on employment inflows are not available for 2005, the analysis is limited to changes between 2010 and 2015, and between 2015 and 2020. Given these limitations, it is important to consider whether the observed effects of globalization arise from the use of more detailed employment characteristics (e.g., education level) or from the specific estimation period.

Future research could examine why the effects of increased FDI-related capital investment differ across industries, for example, whether this reflects the nature of the tasks involved (complementary or substitutive), as suggested in the main analysis. Further analysis could also explore whether efficiency gains from business expansion, as interpreted in the main analysis, have in some cases contributed to the observed wage declines. While this study focuses on changes in the number of workers entering from outside the current employment area, future research could further explore the characteristics of the regions these workers come from. Additionally, the analysis allocates FDI shocks based on the domestic employment structure of FDI firms rather than simple regional employment shares. This approach, particularly relevant for service industries, reflects the actual spatial distribution of firms’ activities while preventing excessive influence of employment weights. Although firms with multiple establishments have their shocks spread across regions, this can reasonably be seen as reflecting their wider domestic presence, and alternative definitions of such allocation remain for future research. Taken together, this study demonstrates the structural and spatial effects of service globalization on the local labor market.

Appendix

Appendix Table C1 presents summary statistics for the main variables used in the analysis. `has_FDI` indicates that FDI-related capital investment was present in approximately 0.7 to 0.9 employment areas prior to the estimation period. FDI-related investment is greater in the wholesale and retail trade industry than in the information and communications industry and

relatively small in the accommodation and food services industry. The average change in employment in the wholesale and retail trade industry is negative; however, there is substantial regional variation owing to establishment closures and openings. In the academic research and professional and technical services industry, average employment is higher for females. However, the maximum values are similar across genders, and some areas exhibit negative employment levels for males (not shown in the table). Despite the overall negative average change in employment for both females and males in the accommodation and food services industry, certain areas exhibit positive employment growth. In the manufacturing sector, employment increased among college-educated workers, but declined among those without a college degree. Notably, in contrast to the effect from globalization, the average change in wages for college workers is negative in the information and communications industry, while it is positive in the accommodation and food services industry.

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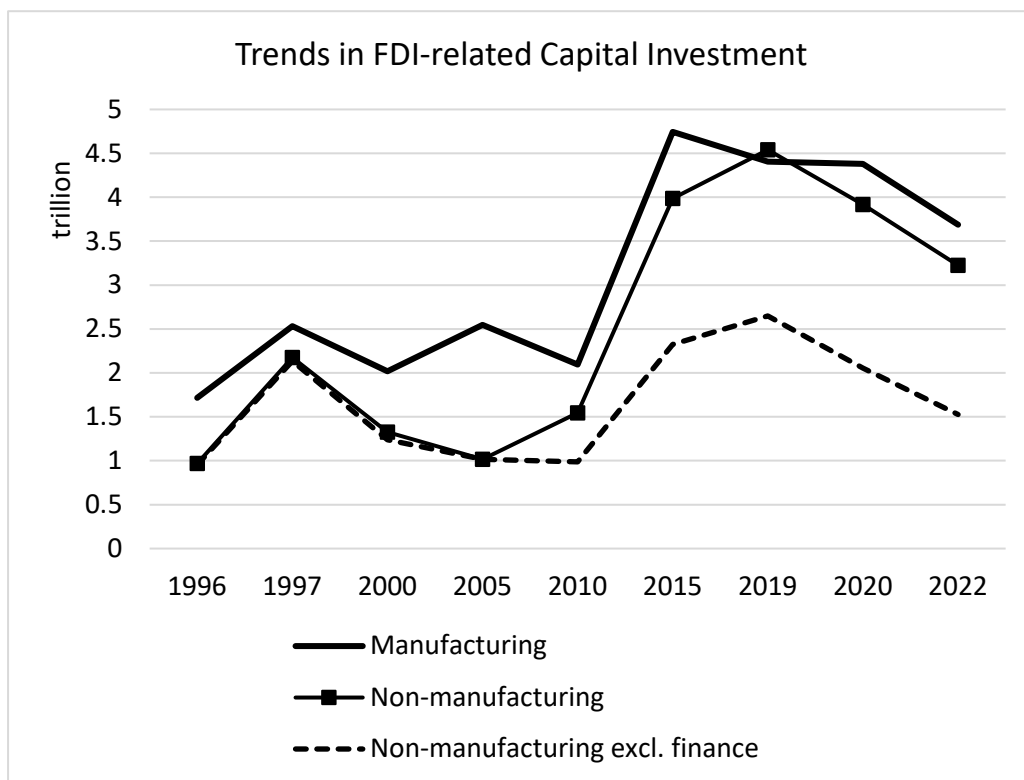


Figure 1 trends in FDI-related Capital Investment

Table 1a. The effect of Δ FDI on employment outcomes: same industry match

	Manufacturing	Information and communications	Transportation	Wholesale and retail trade	Real estate	Academic research and professional and technical services	Accommodation and food services	Lifestyle services and entertainment	Services (not elsewhere classified)
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Employed	0.0168 (0.0111)	0.372* -0.21	-3,115 (52,481)	0.103 (0.117)	-1.696 (3.546)	-0.703 (0.625)	5.120** (2.157)	-21.64 (35.27)	-18.26 (40.48)
Female	0.0104** (0.00519)	0.270** (0.106)	-10.88 (30.83)	0.0949 (0.0835)	-0.900 (2.071)	-0.332 (0.325)	2.586* (1.378)	-17.98 (17.13)	-25.19 (20.96)
Male	0.00968 (0.00621)	0.0967 (0.158)	-1,323 (15,566)	0.109* (0.0653)	-1.349 (2.834)	-0.0523 (0.432)	0.763 (1.000)	-15.21 (18.62)	-12.78 (26.32)
College†1	0.0538 (0.116)	0.0762** (0.0352)	16.16*** (3.172)	0.0300 (0.0473)	0.103*** (0.0294)	-2.271** (0.900)	10.22*** (1.525)	0.516 (2.099)	-30.80*** (5.260)
Non-college†1	-0.0878 (0.176)	0.0132 (0.0242)	-23.14* (13.00)	0.927*** (0.132)	0.0855* (0.0441)	-0.982 (0.639)	20.63*** (3.912)	26.51*** (8.627)	-22.95 (16.25)
Regular	-0.00351* (0.00191)	0.0553** (0.0232)	18.12** (8.585)	0.0173 (0.0170)	-1.370 (3.083)	-0.805** (0.339)	-0.477 (0.378)	-2.914 (11.58)	-0.792 (6.128)
Non-regular	0.00216* (0.00114)	0.0206 (0.0152)	19.42*** (6.883)	0.0340** (0.0172)	-11.51 (123.9)	0.431*** (0.160)	2.699*** (0.715)	-42.27* (24.19)	17.89*** (3.822)
Inflow†2	-0.00213*** (0.000448)	0.119*** (0.0261)	-0.687 (2.507)	-0.0195*** (0.00637)	1.588 (4.964)	-1.092*** (0.166)	-0.837*** (0.293)	11.28** (4.604)	-5.676*** (1.502)
Unemployed	-0.0269*** (0.00628)	-0.544 (2.209)	-3,435 (9,906)	-0.791*** (0.0987)	33.36 (22.73)	-40.60*** (2.853)	-37.81*** (2.010)	538.6*** (81.42)	-388.5*** (20.33)
Non-employees	0.132*** (0.0273)	-60.99 (65.47)	-2,245 (1,431)	2.266*** (0.385)	-344.3 (637.7)	183.1*** (13.11)	174.0*** (9.999)	-2,283*** (443.0)	1,834*** (126.7)

Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

†1 Based on cross-tabulation due to data constraints. †2 Change in the number of employed persons coming from outside the current employment area.

Table 1b. The effect of Δ FDI on employment outcomes: same industry match with time-fixed effects

	Manufacturing	Information and communications	Transportation	Wholesale and retail trade	Real estate	Academic research and professional and technical services	Accommodation and food services	Lifestyle services and entertainment	Services (not elsewhere classified)
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Employed	-0.00482 (0.0199) 0.578	0.0113 (0.211) 0.447	-132.1 (203.9) 0.697	-0.115 (0.140) 0.703	-0.776 (0.888) 0.498	-0.692 (1.927) 0.493	8.546 (5.540) 0.645	44.12 (68.12) 0.008	-120.8 (82.81) 0.730
Female	0.00315 (0.00919) 0.580	0.173** (0.0878) 0.464	3.708 (32.63) 0.701	-0.0781 (0.0887) 0.692	-0.321 (0.438) 0.499	-0.709 (0.963) 0.487	4.162 (3.515) 0.644	6.323 (36.83) 0.012	-102.3** (43.27) 0.729
Male	-0.00590 (0.0125) 0.575	-0.245 (0.151) 0.453	-30.17 (112.5) 0.700	-0.0147 (0.0761) 0.690	-0.570 (0.557) 0.500	0.277 (1.346) 0.493	-0.324 (2.491) 0.651	42.68 (35.04) 0.014	-78.21* (46.13) 0.727
Regular	0.00465 (0.00727) 0.550	-0.0496 (0.0563) 0.555	-6.995 (62.50) 0.599	0.0444 (0.0461) 0.658	0.0802 (0.563) 0.055	-1.625 (1.037) 0.488	-0.732 (1.032) 0.577	-17.14 (25.88) 0.011	2.139 (16.56) 0.643
Non-regular	-0.00412 (0.00490) 0.554	0.0249 (0.0346) 0.565	27.36 (23.15) 0.597	0.00615 (0.0468) 0.658	0.381 (0.302) 0.056	1.313** (0.538) 0.497	1.189 (2.089) 0.585	21.63 (46.35) 0.009	33.37*** (9.426) 0.648
Inflow ^{†1}	-0.00142 (0.00177) 0.550	0.103 (0.0666) 0.579	-19.38 (16.40) 0.593	-0.0277* (0.0165) 0.668	-0.454 (0.435) 0.041	-1.756*** (0.579) 0.500	-1.444* (0.810) 0.582	19.62 (20.27) 0.009	-6.386* (3.514) 0.660
Unemployed	0.0131 (0.0178) 0.574	-0.348 (0.947) 0.484	-878.3 (677.4) 0.682	-0.375*** (0.0980) 0.650	-45.35 (248.6) 0.056	-29.35*** (7.634) 0.621	-25.16*** (5.185) 0.580	260.3*** (66.72) 0.079	-217.2*** (44.84) 0.689
Non-employees	0.163* (0.0867) 0.561	-22.67 (14.17) 0.481	-2,752 (11,123) 0.682	1.639*** (0.485) 0.646	106.8 (139.7) 0.053	240.2*** (35.78) 0.620	200.3*** (29.78) 0.581	-1,776** (725.8) 0.079	2,282*** (399.7) 0.687

Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1. The third row in each block reports the partial R², calculated as (R²(employment area+time) - R²(employment area)) / (1 - R²(employment area)).

^{†1} Change in the number of employed persons coming from outside the current employment area.

Table 2a. The effect of Δ FDI on employment outcomes: different industry match

	Manufacturing	Information and communications	Transportation	Wholesale and retail trade	Real estate	Academic research and professional and technical services	Accommodation and food services	Lifestyle services and entertainment	Services (not elsewhere classified)
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Employed	0.104 (0.117)	-1.638 (2.626)	60.31** (28.56)	-0.169*** (0.0258)	-4.663*** (1.089)	0.0152 (0.0143)	-273.8 (471.2)	6.336*** (1.998)	13.71 (17.26)
Female	0.0380 (0.0581)	0.416 (1.102)	10.45 (10.25)	-0.114*** (0.0217)	-0.931** (0.446)	0.0197 (0.0123)	-235.4 (287.9)	3.060** (1.246)	3.736 (5.185)
Male	0.0701 (0.0558)	-3.188 (2.898)	43.20** (18.70)	-0.0816*** (0.0202)	-3.330*** (0.811)	-0.000101 (0.00929)	-254.3 (271.7)	1.672* (0.957)	2.473 (5.925)
College†1	0.0228*** (0.00322)	-1.446*** (0.521)	-1.535*** (0.421)	0.147 (0.265)	1.397*** (0.391)	0.0247*** (0.00581)		-0.172 (11.77)	-0.238*** (0.0484)
Non-college†1	-0.0208** (0.00934)	-0.453 (0.437)	3.261*** (1.107)	-1.009 (0.650)	1.125** (0.555)	-0.000266 (0.00578)		-153.0 (324.0)	-0.194** (0.0965)
Regular	-0.00713 (0.00924)	2.625 (2.993)	15.59*** (2.938)	0.00464 (0.00324)	-0.182 (0.274)	0.00640 (0.0100)	-47.09 (51.00)	0.314 (0.954)	-0.130 (0.441)
Non-regular	-0.00267 (0.00790)	0.301 (0.376)	5.109*** (1.932)	0.00553** (0.00275)	-0.911*** (0.222)	-0.000528 (0.00464)	447.8*** (78.13)	3.510*** (1.200)	-0.599* (0.332)
Inflow†2	-0.00261 (0.00304)	2.743*** (0.667)	2.453** (0.989)	-0.00293* (0.00162)	0.341* (0.187)	0.00960** (0.00416)	-18.26 (29.69)	0.255 (0.395)	0.296** (0.148)
Unemployed	-0.0291 (0.0336)	659.8 (2,919)	457.1 (357.7)	0.0910*** (0.0318)	-5.713** (2.621)	0.896*** (0.0732)	-21,435*** (5,107)	-59.89*** (6.078)	-3.305 (4.780)
Non-employees	0.535*** (0.207)	-459.8 (405.0)	-627.9*** (158.6)	0.277* (0.145)	25.64 (46.06)	-3.756*** (0.250)	63,408*** (10,987)	357.7*** (36.61)	-31.33 (25.44)

Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

†1 Based on cross-tabulation due to data constraints. †2 Change in the number of employed persons coming from outside the current employment area.

Table 2b. The effect of Δ FDI on employment outcomes: different industry match with time-fixed effects

	Manufacturing	Information and communications	Transportation	Wholesale and retail trade	Real estate	Academic research and professional and technical services	Accommodation and food services	Lifestyle services and entertainment	Services (not elsewhere classified)
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Employed	0.336 (0.571) 0.546	-6.720 (10.97) 0.230	-3.460 (6.388) 0.263	-0.0410 (0.0820) 0.713	-5.008 (3.491) 0.728	0.0336 (0.0413) 0.483	616.9 (1,566) 0.717	6.147* (3.139) 0.549	-62.51 (100.1) 0.267
Female	0.173 (0.359) 0.550	-0.168 (1.698) 0.239	-1.487 (2.349) 0.250	0.0118 (0.0285) 0.713	-0.435 (1.063) 0.725	0.0613 (0.0579) 0.494	328.8 (909.4) 0.717	2.558 (1.845) 0.559	-16.73 (13.82) 0.268
Male	0.173 (0.210) 0.544	-4.491 (6.683) 0.233	-2.946 (5.934) 0.254	-0.0328 (0.0643) 0.713	-3.172 (2.802) 0.726	0.0179 (0.0262) 0.482	-159.9 (1,059) 0.722	1.237 (1.436) 0.556	-21.83 (19.06) 0.265
Regular	-0.00505 (0.0171) 0.532	0.274 (6.378) 0.345	2.605 (6.287) 0.345	0.00361 (0.00556) 0.653	-0.573 (0.521) 0.603	0.000821 (0.0315) 0.485	72.62 (235.1) 0.628	0.274 (1.448) 0.557	-0.130 (0.621) 0.301
Non-regular	-0.00843 (0.0160) 0.548	0.155 (0.691) 0.322	0.734 (4.329) 0.344	0.000334 (0.00471) 0.654	-1.074*** (0.381) 0.609	0.000523 (0.0146) 0.500	10.12 (393.9) 0.634	3.400* (1.783) 0.556	-0.599 (0.467) 0.310
Inflow ^{†1}	-0.000879 (0.00580) 0.534	2.879** (1.390) 0.316	-0.208 (1.767) 0.350	-0.00613*** (0.00215) 0.659	0.328 (0.401) 0.640	-0.00145 (0.0141) 0.494	106.4 (141.8) 0.635	0.451 (0.582) 0.555	0.296 (0.208) 0.308
Unemployed	-0.00870 (0.0479) 0.541	-135.1 (215.0) 0.230	-4.962 (11.02) 0.278	-0.194 (0.140) 0.715	4.968 (4.721) 0.726	0.0357 (0.239) 0.500	-18,498 (28,460) 0.722	-53.99*** (9.818) 0.557	-1.432 (4.419) 0.269
Non-employees	0.564 (0.349) 0.540	-768.4 (1,836) 0.233	-145.3 (102.9) 0.267	-0.384 (0.595) 0.709	314.2* (163.9) 0.718	-2.403*** (0.815) 0.486	49,918** (20,406) 0.721	361.0*** (53.06) 0.560	2.416 (26.63) 0.282

Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1. The third row in each block reports the partial R², calculated as (R²(employment area+time) - R²(employment area)) / (1 - R²(employment area)).

†1 Change in the number of employed persons coming from outside the current employment area.

Table 3a. The effect of Δ FDI on wage outcomes: same industry match

	Manufacturing	Information and communications	Transportation	Wholesale and retail trade	Real estate	Academic research and professional and technical services	Accommodation and food services	Lifestyle services and entertainment	Services (not elsewhere classified)
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Female	-0.000702 (0.00253)	1.362 (1.032)	-6.511 (264.7)	-0.0267 (0.0206)	8.604 (6.367)	-6.484*** (1.733)	-14.27*** (1.400)	167.3*** (35.46)	-73.43*** (19.29)
Male	-0.00134 (0.00323)	0.890 (0.677)	238.1 (882.1)	-0.0350 (0.0371)	8.083 (5.731)	-6.399** (2.996)	-14.02*** (2.778)	155.9*** (46.43)	-107.9*** (25.60)
College	-0.00124 (0.00384)	1.904*** (0.674)	1,065 (3,643)	-0.0624 (0.0582)	-1.902 (7.174)	-2.880 (2.968)	-13.20*** (4.497)	137.1*** (45.46)	-67.29 (42.49)
Non-college	-2.42e-05 (0.00355)	2.142** (0.920)	2,460 (25,690)	0.0479 (0.0333)	6.086 (5.706)	-4.681** (1.963)	-6.342** (2.536)	29.85 (25.71)	-51.68*** (19.05)
Regular	-0.00940*** (0.00284)	0.740*** (0.213)	89.01** (35.57)	-0.168*** (0.0604)	7.423 (5.952)	-2.229 (1.901)	-17.23*** (2.936)	169.9*** (36.12)	-69.06** (30.66)
Non-regular	-0.00329 (0.00220)	0.272 (0.261)	112.5*** (22.84)	-0.175*** (0.0232)	-1,250 (124,975)	-8.263*** (1.857)	-13.65*** (1.154)	116.7*** (21.52)	-101.2*** (14.40)

Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

Table 3b. The effect of ΔFDI on wage outcomes: same industry match with time-fixed effects

	Manufacturing	Information and communications	Transportation	Wholesale and retail trade	Real estate	Academic research and professional and technical services	Accommodation and food services	Lifestyle services and entertainment	Services (not elsewhere classified)
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Female	0.00301 (0.00953) 0.632	0.580 (0.807) 0.557	14.01 (101.7) 0.742	0.00179 (0.0395) 0.672	-61.28 (801.3) 0.043	-3.974 (5.024) 0.578	-0.678 (2.978) 0.608	121.3 (143.6) 0.106	-50.19 (56.07) 0.656
Male	-0.00722 (0.00956) 0.621	0.741 (0.545) 0.546	-75.78 (295.8) 0.751	0.0183 (0.0773) 0.675	-8.424 (242.5) 0.057	-6.002 (7.656) 0.574	-1.460 (7.074) 0.600	233.2 (224.4) 0.151	-79.62 (72.27) 0.671
College	0.0106 (0.0153) 0.601	0.946 (0.745) 0.540	458.4 (287.1) 0.727	-0.0229 (0.129) 0.686	0.990 (3.099) 0.000	2.050 (6.329) 0.599	-1.531 (10.39) 0.639	92.22 (134.2) 0.256	-109.8 (112.9) 0.657
Non-college	0.000202 (0.00928) 0.625	1.370** (0.621) 0.528	3.605 (415.8) 0.748	0.0118 (0.0641) 0.679	-6.565 (38.21) 0.034	-5.448 (4.818) 0.575	2.794 (6.688) 0.607	52.20 (88.34) 0.129	-40.00 (57.15) 0.659
Regular	-0.0148 (0.0134) 0.605	0.933** (0.416) 0.582	-32.54 (147.9) 0.637	-0.152 (0.176) 0.708	-158.2 (7,051) 0.022	-1.659 (5.645) 0.571	-3.699 (7.149) 0.607	104.4 (123.6) 0.142	-14.50 (89.91) 0.659
Non-regular	0.0107 (0.00905) 0.601	-0.490 (0.524) 0.651	79.56 (69.09) 0.660	-0.128* (0.0675) 0.707	-3.170 (4.423) 0.003	-12.56*** (4.334) 0.569	-2.807 (2.766) 0.603	118.4* (66.08) 0.165	-142.1*** (40.91) 0.655

Robust standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. The third row in each block reports the partial R^2 , calculated as $(R^2(\text{employment area+time}) - R^2(\text{employment area})) / (1 - R^2(\text{employment area}))$.

Table 4a. The effect of Δ FDI on wage outcomes: different industry match

	Manufacturing	Information and communications	Transportation	Wholesale and retail trade	Real estate	Academic research and professional and technical services	Accommodation and food services	Lifestyle services and entertainment	Services (not elsewhere classified)
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Female	-0.0175 (0.0203)	55.77 (82.94)	52.76** (20.91)	-0.0773*** (0.0151)	42.64*** (4.049)	-0.804 (2.385)	-1,537*** (421.5)	-17.09*** (3.652)	0.694 (1.394)
Male	-0.00849 (0.0211)	65.48 (97.23)	31.14 (29.62)	-0.0411* (0.0227)	92.60*** (8.102)	-2.028 (9.649)	-429.6 (1,152)	-11.58* (6.958)	2.636 (2.173)
College	0.0126 (0.0423)	265.3 (2,929)	38.65** (16.64)	-0.0289 (0.0281)	2.681 (6.752)	-1.569 (5.065)	-3,125 (2,698)	-11.71 (8.645)	-4.927*** (1.842)
Non-college	-0.0625* (0.0350)	13.85 (42.60)	16.05 (12.90)	0.0188 (0.0224)	4.574 (3.772)	-1.337 (4.691)	1,533 (1,111)	-5.669 (3.596)	0.787 (1.404)
Regular	-0.0239*** (0.00878)	8.996 (7.202)	41.36*** (11.48)	-0.00796 (0.00831)	3.515* (1.988)	-1.630 (6.815)	-2,748*** (314.1)	-6.485 (6.375)	-0.178 (2.289)
Non-regular	-0.0145* (0.00835)	9.671*** (3.654)	32.21*** (6.016)	-0.0156*** (0.00446)	3.412 (2.285)	-0.159 (0.387)	-1,906*** (171.1)	-21.19*** (3.876)	2.057** (0.849)

Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

Table 4b. The effect of ΔFDI on wage outcomes: different industry match with time-fixed effects

	Manufacturing	Information and communications	Transportation	Wholesale and retail trade	Real estate	Academic research and professional and technical services	Accommodation and food services	Lifestyle services and entertainment	Services (not elsewhere classified)
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Female	-0.0226 (0.0399) 0.598	-10.55 (195.3) 0.389	-33.33 (46.72) 0.351	-0.0396* (0.0215) 0.759	24.88*** (4.970) 0.708	-4.572 (55.71) 0.521	280.2 (998.3) 0.773	-13.82** (6.729) 0.608	0.689 (1.982) 0.397
Male	0.00710 (0.0545) 0.594	102.8 (542.9) 0.383	-57.04 (61.27) 0.348	-0.121*** (0.0386) 0.743	35.75*** (9.582) 0.703	5.638 (51.44) 0.534	-1,298 (2,291) 0.761	-16.92 (11.22) 0.618	2.635 (3.062) 0.415
College	0.0281 (0.0616) 0.620	-10.48 (64.94) 0.390	-211.7 (460.1) 0.359	0.0403 (0.0542) 0.764	-7.889 (10.46) 0.748	-3.790 (32.99) 0.559	-9,038* (4,710) 0.792	-12.49 (16.34) 0.613	-4.959* (2.593) 0.427
Non-college	-0.0586 (0.0474) 0.590	-126.5 (1,889) 0.370	44.26 (46.03) 0.337	-0.0112 (0.0497) 0.766	2.114 (6.095) 0.706	369.6 (328,426) 0.528	4,032 (2,575) 0.770	-7.162 (6.558) 0.615	0.784 (1.981) 0.419
Regular	-0.0250 (0.0211) 0.593	9.947 (15.32) 0.470	-500.4 (4,068) 0.405	0.00536 (0.0152) 0.667	0.612 (4.023) 0.601	39.19 (3,166) 0.531	-1,141 (799.7) 0.644	-1.229 (10.17) 0.622	-0.190 (3.226) 0.415
Non-regular	-0.00372 (0.0194) 0.574	5.728 (8.264) 0.554	70.72 (104.4) 0.386	-0.00568 (0.00725) 0.664	-0.0380 (4.007) 0.609	-0.282 (0.648) 0.545	270.8 (438.8) 0.650	-20.08*** (7.361) 0.617	2.071* (1.206) 0.407

Robust standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. The third row in each block reports the partial R^2 , calculated as $(R^2(\text{employment area+time}) - R^2(\text{employment area})) / (1 - R^2(\text{employment area}))$.

Table 5 Robustness check to all data: the effect of Δ FDI on employment outcomes (same industry match)

	Manufacturing	Information and communications	Transportation	Wholesale and retail trade	Real estate	Academic research and professional and technical services	Accommodation and food services	Lifestyle services and entertainment	Services (not elsewhere classified)
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Employed	0.0177 (0.0197) 666 121.843 0.000	0.248 (0.174) 666 16412.614 0.000	43.15*** (10.64) 666 4.145 0.042	0.191 (0.223) 666 208.154 0.000	0.00618 (0.0199) 666 29.193 0.000	-0.479*** (0.0302) 444 9.135 0.003	3.788*** (1.126) 666 1388.866 0.000	-2.882*** (0.0792) 444 1259.470 0.000	-341.4*** (56.94) 666 3.313 0.069
Female	0.00560 (0.00723) 666 119.718 0.000	0.124** (0.0484) 655 14553.147 0.000	7.388 (4.842) 666 4.075 0.044	0.0636 (0.118) 666 212.982 0.000	0.0675*** (0.0227) 666 28.215 0.000	-0.257*** (0.0235) 444 8.846 0.003	2.055*** (0.265) 666 1383.661 0.000	-3.303*** (0.183) 444 1320.574 0.000	-175.2*** (27.01) 666 3.278 0.071
Male	0.0120 (0.0125) 666 122.709 0.000	0.124 (0.126) 663 17262.481 0.000	35.83*** (10.07) 666 4.171 0.042	0.127 (0.105) 666 204.348 0.000	-0.0601** (0.0234) 666 29.732 0.000	-0.222*** (0.00948) 444 9.284 0.002	1.773* (0.926) 666 1393.311 0.000	0.414 (0.256) 444 1215.037 0.000	-166.5*** (29.79) 666 3.332 0.068
Inflow ^{#1}	-0.00253*** (1.71e-05) 444 1725.857 0.000	0.00815*** (0.000317) 420 14721.265 0.000	3.000*** (0.120) 442 3.476 0.063	-0.00101*** (0.000146) 444 671.490 0.000	0.00768*** (0.00105) 409 288.064 0.000	0.0456 (0.0446) 442 9.135 0.003	0.167*** (0.0337) 444 4822.794 0.000	-0.277*** (0.0639) 444 1259.470 0.000	1.033*** (0.259) 444 2993320.421 0.000

Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

#1 Change in the number of employed persons coming from outside the current employment area.

For each industry and outcome, the estimated coefficient of Δ FDI is presented first, followed by the number of observations, the F statistic for excluded instruments, and the p-value in subsequent rows.

Slight differences in sample size may result from the handling of edge cases in the data-cleaning process, although the exact cause is unclear.

Appendix

Table A1. The existing FDI effect on employment outcomes: same industry match

	Manufacturing	Information and communications	Transportation	Wholesale and retail trade	Real estate	Academic research and professional and technical services	Accommodation and food services	Lifestyle services and entertainment	Services (not elsewhere classified)
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Employed	113.1*** (31.70)	1.346 (3.335)	173.2 (2,661)	141.5*** (20.34)	28.80 (108.0)	-1.238 (2.628)	-27.47*** (8.334)	-4.912 (7.919)	209.8*** (16.94)
Female	65.45*** (14.29)	-4.198** (2.081)	2.236 (2.359)	88.29*** (13.56)	21.33 (64.66)	0.351 (1.385)	-21.31*** (5.650)	-3.348 (4.548)	110.7*** (7.544)
Male	58.59*** (19.45)	5.284** (2.329)	76.77 (784.5)	53.44*** (10.87)	25.76 (86.43)	-2.120 (1.846)	-11.58*** (3.448)	-3.486 (4.162)	109.4*** (11.09)
College†1	70.21 (53.53)	2.055 (2.781)	-1.113 (3.419)		3.363 (2.118)	4.208 (3.612)	11.03*** (4.156)	1.271 (1.685)	2.605 (3.204)
Non-college†1	-104.9 (89.84)	0.954 (1.899)	19.60* (11.42)		9.024 (9.883)	-7.785* (4.498)	-43.61*** (10.75)	-22.63*** (7.896)	5.673 (14.46)
Regular			5.303 (5.143)			0.542 (1.890)	2.431** (1.170)	0.632 (2.517)	3.082 (5.708)
Non-regular			1.027 (3.859)			-0.692 (0.806)	-14.95*** (1.936)	-6.648 (4.459)	-1.115 (2.860)
Inflow†2			3.402* (1.908)			-0.279 (0.899)	-7.028*** (0.754)	2.756** (1.114)	-0.737 (1.429)
Unemployed			-153.9 (527.8)			188.0*** (30.16)		110.0*** (24.67)	
Non-employees			-296.3* (166.8)			-509.8*** (108.5)		-633.0*** (120.2)	

Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

In some specifications, the existing FDI effect is omitted due to lack of variation or collinearity with fixed effects.

†1 Based on cross-tabulation due to data constraints. †2 Change in the number of employed persons coming from outside the current employment area.

Table A2. The existing FDI effect on employment outcomes: same industry match with time-fixed effects

	Manufacturing	Information and communications	Transportation	Wholesale and retail trade	Real estate	Academic research and professional and technical services	Accommodation and food services	Lifestyle services and entertainment	Services (not elsewhere classified)
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Employed	-61.09 (49.40) 0.678	-3.579 (7.276) 0.743	-34.02 (61.23) 0.520	-155.2*** (34.02) 0.949		-1.283 (5.637) 0.398		13.43 (16.25) 0.141	106.0*** (24.15) 0.936
Female	-14.16 (20.20) 0.686	-6.339* (3.284) 0.732	-0.0271 (8.849) 0.521	-99.23*** (22.11) 0.946	5.242 (16.30) 1.000	1.984 (2.800) 0.401	-17.08 (11.22) 1.000	3.757 (9.408) 0.137	62.79*** (13.32) 0.937
Male	-42.30 (33.69) 0.681	2.438 (5.497) 0.739	-6.998 (32.34) 0.516	-83.06*** (17.21) 0.946	4.236 (20.02) 1.000	-3.504 (4.014) 0.394	-14.60** (6.707) 1.000	13.21 (8.807) 0.138	58.10*** (11.97) 0.935
Regular			-4.597 (17.21) 0.778			4.002 (3.749) 0.399	3.559 (3.089) 0.000	-3.625 (6.140) 0.141	1.972 (6.571) 0.052
Non-regular			5.528 (7.083) 0.773			-4.408** (1.829) 0.391	-8.674 (5.734) 0.000	9.667 (10.85) 0.139	-6.874* (3.569) 0.052
Inflow†1			-6.782 (5.522) 0.771			2.134 (1.706) 0.398	-4.379** (2.126) 0.000	4.942 (5.168) 0.139	-0.483 (1.586) 0.053
Unemployed			-306.5 (306.6) -0.005			146.7*** (35.47) 0.010		-29.64 (27.73) 0.000	
Non-employees			-1,430 (4,857) -0.005			-723.2*** (145.9) 0.010		-392.7 (269.4) 0.000	

Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1. The third row in each block reports the partial R², calculated as (R²(employment area+time) - R²(employment area)) / (1 - R²(employment area)). In some specifications, the existing FDI effect is omitted due to lack of variation or collinearity

†1 Change in the number of employed persons coming from outside the current employment area.

Table A3. The existing FDI effect on employment outcomes: different industry match

	Manufacturing	Information and communications	Transportation	Wholesale and retail trade	Real estate	Academic research and professional and technical services	Accommodation and food services	Lifestyle services and entertainment	Services (not elsewhere classified)
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Employed	-41.82 (90.42)	-3.003 (10.19)	-3.327 (14.34)	195.8*** (34.60)	-21.50*** (3.875)	-0.645 (3.690)		-0.625 (5.306)	313.2 (306.2)
Female	-11.19 (47.27)	-1.512 (4.238)	3.501 (4.351)	105.3*** (27.58)	-6.270*** (1.700)	4.582 (3.167)		-2.694 (3.637)	109.5 (95.21)
Male	-25.41 (45.48)	-7.173 (11.00)	-6.153 (10.91)	98.01*** (19.27)	-15.85*** (2.691)	-1.424 (2.519)		4.295 (2.903)	82.45 (104.7)
College†1		1.459 (3.005)	-9.090 (5.771)		-3.790 (2.763)	0.133 (3.820)		0.831 (1.399)	3.211 (3.463)
Non-college†1		0.298 (2.314)	45.12*** (16.94)		-5.393 (3.746)	-4.460 (5.081)		-33.51 (22.56)	5.890 (13.97)
Regular	-19.21 (13.58)	-3.291* (1.717)	6.733 (4.136)	-9.913 (7.089)	1.709 (1.507)	0.519 (2.599)		-1.806 (2.466)	-6.994 (6.732)
Non-regular	20.56 (12.54)	0.711 (0.691)	3.055 (2.585)	-1.027 (6.865)	-1.280 (1.214)	-1.754 (1.240)		2.614 (3.277)	-6.706 (5.632)
Inflow†2	-4.239 (4.812)	0.757 (0.834)	1.003 (1.576)	-2.909 (3.376)	2.381*** (0.802)	-2.121* (1.124)		-0.942 (1.237)	2.929 (2.117)
Unemployed	-90.23*** (24.99)	2,134 (10,219)	-107.8 (149.2)	-201.5*** (36.42)	-276.4*** (15.18)	-33.06* (19.90)		-104.6*** (16.66)	-292.5*** (91.55)
Non-employees	-43.11 (202.8)	-1,208 (1,580)	35.07 (190.2)	75.06 (185.8)	831.6*** (179.1)	151.3* (89.66)		10.53 (101.5)	20.81 (483.5)

Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

In some specifications, the existing FDI effect is omitted due to lack of variation or collinearity with fixed effects.

†1 Based on cross-tabulation due to data constraints. †2 Change in the number of employed persons coming from outside the current employment area.

Table A4. The existing FDI effect on employment outcomes: different industry match with time-fixed effects

	Manufacturing	Information and communications	Transportation	Wholesale and retail trade	Real estate	Academic research and professional and technical services	Accommodation and food services	Lifestyle services and entertainment	Services (not elsewhere classified)
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Employed	96.89 (150.8) 0.666	-9.105 (23.17) 0.717	1.819 (6.721) 0.127	-55.79** (27.21) 0.955	7.583 (9.717) 0.941	-0.205 (4.886) 0.615		-2.725 (6.203) 0.851	-369.1 (735.8) 0.905
Female	38.30 (58.92) 0.670	-0.713 (2.222) 0.738	5.458*** (2.040) 0.165	-64.78*** (14.85) 0.955	0.472 (3.615) 0.947	5.516 (5.245) 0.611		-7.148* (4.277) 0.849	-126.1 (173.3) 0.906
Male	57.29 (59.66) 0.666	-7.829 (14.20) 0.717	-1.585 (4.842) 0.126	-13.95 (28.54) 0.955	0.113 (4.751) 0.939	-1.006 (3.355) 0.621		-0.258 (3.308) 0.848	-137.0 (208.9) 0.905
Regular	-4.893 (14.12) 0.645	-2.186 (1.615) 0.621	-0.777 (3.006) 0.104	-14.24 (14.65) 0.935	4.786*** (1.755) 0.895	0.366 (3.616) 0.614		-2.164 (3.248) 0.846	-6.994 (9.467) 1.000
Non-regular	-2.617 (9.479) 0.657	1.002 (0.819) 0.627	0.482 (2.123) 0.103	-22.91** (10.69) 0.935	-0.116 (1.504) 0.890	-1.722 (1.756) 0.621		1.621 (4.063) 0.847	-6.706 (7.918) 1.000
Inflow†1	3.894 (3.354) 0.663	0.560 (0.798) 0.669	-0.776 (1.184) 0.074	-16.30*** (5.551) 0.936	2.486** (1.106) 0.904	-2.368 (1.512) 0.619		1.002 (1.447) 0.848	2.929 (2.974) 1.000
Unemployed	-3.980 (20.91) 0.676	-168.1 (295.1) 0.707	14.15 (15.35) 0.144	16.25 (36.13) 0.954	-22.26 (40.22) 0.938	-61.36*** (23.31) 0.622		-45.26*** (14.36) 0.850	-53.68 (36.14) 0.903
Non-employees	156.1 (170.1) 0.693	-1,318 (3,226) 0.714	-47.07 (98.17) 0.116	-342.5** (173.1) 0.956	504.6* (278.3) 0.936	180.5* (105.5) 0.609		57.54 (119.7) 0.856	-264.4 (323.5) 0.902

Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1. The third row in each block reports the partial R², calculated as (R²(employment area+time) - R²(employment area)) / (1 - R²(employment area)). In some specifications, the existing FDI effect is omitted due to lack of variation or collinearity

†1 Change in the number of employed persons coming from outside the current employment area.

Table A5. the existing FDI effect on wage outcomes: same industry match

	Manufacturing	Information and communications	Transportation	Wholesale and retail trade	Real estate	Academic research and professional and technical services	Accommodation and food services	Lifestyle services and entertainment	Services (not elsewhere classified)
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Female			54.17 (57.81)		0.224 (35.28)	32.16 (43.03)		75.26** (30.22)	24.47 (20.10)
Male			42.15 (119.3)		-6.567 (29.60)	77.69 (52.72)		-30.64 (46.91)	17.35 (37.76)
College			203.5 (678.7)			-44.19 (101.8)		-202.9 (194.6)	103.7 (89.86)
Non-college			314.1 (3,317)		-3.003 (23.63)	-6.532 (38.82)		-5.587 (32.11)	34.24 (40.41)
Regular			80.67** (37.16)		2.234 (26.54)	26.78 (51.71)		-12.49 (52.99)	3.521 (32.08)
Non-regular			60.52** (30.58)		-1,224 (122,016)	205.7*** (64.96)		-6.271 (22.10)	-28.55 (54.95)

Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

In some specifications, the existing FDI effect is omitted due to lack of variation or collinearity with fixed effects.

Table A6. The existing FDI effect on wage outcomes: same industry match with time-fixed effects

	Manufacturing	Information and communications	Transportation	Wholesale and retail trade	Real estate	Academic research and professional and technical services	Accommodation and food services	Lifestyle services and entertainment	Services (not elsewhere classified)
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Female			31.22 (80.00) 0.588		-756.9 (9,309)	6.286 (56.73) 0.131		52.61 (72.88) 0.067	12.73 (28.45) 0.014
Male			-10.48 (160.5) 0.544		-206.7 (3,024)	73.67 (72.95) 0.143		11.35 (122.3) 0.065	4.315 (43.83) 0.029
College			246.2 (253.4) 0.495			-97.63 (109.6) 0.096		-245.3 (227.3) 0.055	128.2 (98.89) 0.016
Non-college			37.32 (222.2) 0.558		-129.2 (451.5)	1.123 (51.96) 0.128		6.638 (55.90) 0.069	28.67 (44.71) 0.028
Regular			-3.895 (65.21) 0.632		-1,494 (64,788)	21.11 (70.50) 0.126		-48.33 (86.52) 0.069	-22.60 (40.97) 0.029
Non-regular			38.08 (42.39) 0.625		-95.89** (42.73)	258.0*** (78.67) 0.099		-5.060 (45.80) 0.056	-6.794 (57.93) 0.007

Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1. The third row in each block reports the partial R², calculated as (R²(employment area+time) - R²(employment area)) / (1 - R²(employment area)). In some specifications, the existing FDI effect is omitted due to lack of variation or collinearity

Table A7. The existing FDI effect on wage outcomes: different industry match

	Manufacturing	Information and communications	Transportation	Wholesale and retail trade	Real estate	Academic research and professional and technical services	Accommodation and food services	Lifestyle services and entertainment	Services (not elsewhere classified)
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Female	-1.154 (21.25)	650.9 (756.5)	-33.53 (43.02)	94.63*** (21.15)	325.7*** (40.00)	-552.9 (1,209)		-27.71 (18.66)	-13.97 (46.15)
Male	-7.125 (23.60)	808.9 (875.2)	-45.10 (57.91)	1.433 (28.88)	816.7*** (76.62)	-1,032 (4,659)		-33.54 (36.36)	-3.928 (64.79)
College	-31.47 (56.25)	3,973 (43,376)	60.50 (55.08)	47.85 (42.22)	-2.561 (63.25)	-876.3 (2,612)		-102.1** (49.78)	-156.8** (75.19)
Non-college	98.06*** (37.33)	233.9 (611.8)	46.76* (28.06)	-32.72 (29.12)	7.488 (31.39)	-723.4 (2,294)		4.462 (19.25)	-19.07 (49.99)
Regular	11.89 (19.52)	7.508 (50.20)	58.15** (29.61)	-2.510 (28.56)	-57.48* (29.46)	-828.8 (3,325)		-66.35** (30.68)	-77.30 (73.09)
Non-regular	16.56 (16.74)	-18.78 (43.57)	55.34** (24.98)	-20.87 (13.98)	-75.94*** (27.03)	-79.21 (227.6)		-12.91 (19.07)	45.37 (38.71)

Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

In some specifications, the existing FDI effect is omitted due to lack of variation or collinearity with fixed effects.

Table A8. The existing FDI effect on wage outcomes: different industry match with time-fixed effects

	Manufacturing	Information and communications	Transportation	Wholesale and retail trade	Real estate	Academic research and professional and technical services	Accommodation and food services	Lifestyle services and entertainment	Services (not elsewhere classified)
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Female	-15.16 (17.63) 0.594	-0.335 (648.8) 0.686	-21.97 (30.77) 0.123	24.68** (12.44) 0.937	113.1** (56.59) 1.000	-1,003 (11,724) 0.857		-0.551 (20.78) 0.881	-6.651 (33.44) 1.000
Male	11.20 (23.75) 0.600	304.7 (1,815) 0.682	-11.87 (40.33) 0.109	12.55 (22.72) 0.937	-678.7*** (67.70) 0.991	1,177 (10,356) 0.844		-83.04* (43.52) 0.881	-1.565 (46.26) 1.000
College	15.77 (57.55) 0.753	-79.78 (889.6) 0.785	-360.2 (658.7) 0.629	66.22 (56.74) 0.933	-30.09 (73.20) 0.987	-925.9 (7,395) 0.892		-109.0 (69.55) 0.863	-82.27 (54.74) 1.000
Non-college	-4.967 (41.78) 0.746	-1,445 (22,806) 0.790	10.06 (56.64) 0.553	3.916 (37.54) 0.930	0.211 (30.02) 0.990	76,298 (6.783e+07) 0.862		-10.01 (20.21) 0.884	-8.976 (35.51) 1.000
Regular	8.619 (24.66) 0.570	2.503 (61.23) 0.578	-560.9 (4,619) 0.100	57.75 (47.75) 0.911	-21.83 (36.95) 0.848	8,148 (657,718) 0.864		-21.85 (36.05) 0.876	-38.50 (51.93) 1.000
Non-regular	52.28** (25.84) 0.559	6.417 (47.45) 0.582	121.3 (177.1) 0.067	24.47 (21.45) 0.912	-34.36 (25.32) 0.811	131.7 (191.1) 0.895		-3.456 (18.66) 0.885	23.09 (27.75) 1.000

Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1. The third row in each block reports the partial R², calculated as (R²(employment area+time) - R²(employment area)) / (1 - R²(employment area)). In some specifications, the existing FDI effect is omitted due to lack of variation or collinearity with fixed effects.

Table B1. Observations, F statistic, and p-value corresponding to employment outcomes: same industry match

	Manufacturing	Information and communications	Transportation	Wholesale and retail trade	Real estate	Academic research and professional and technical services	Accommodation and food services	Lifestyle services and entertainment	Services (not elsewhere classified)
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Employed	436	457	455	480	469	335	450	286	483
	179.621	11.271	0.004	265.556	0.391	1288.164	850.024	8.924	812.832
	0.000	0.001	0.953	0.000	0.532	0.000	0.000	0.003	0.000
Female	442	458	459	488	470	336	449	294	487
	146.013	12.247	1.632	133.059	0.336	1455.078	921.549	11.165	869.880
	0.000	0.001	0.202	0.000	0.562	0.000	0.000	0.001	0.000
Male	436	456	455	487	467	332	463	292	487
	189.516	11.703	0.007	133.858	0.296	1256.110	466.912	10.236	940.995
	0.000	0.001	0.932	0.000	0.587	0.000	0.000	0.002	0.000
College	156	177	183	178	181	185	187	186	192
	2.260	269.120	76.550	73.340	208.740	503.320	512.620	885.720	312.070
	0.135	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Non-college	153	179	186	183	176	188	189	193	184
	1.440	231.970	107.010	86.920	172.920	401.040	525.180	1569.900	335.440
	0.233	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Regular	298	304	218	328	294	328	334	286	346
	236.597	258.359	13.040	2347.723	0.124	1245.831	712.324	22.352	889.661
	0.000	0.000	0.000	0.000	0.725	0.000	0.000	0.000	0.000
Non-regular	304	288	222	330	296	340	332	290	346
	287.385	309.851	25.671	2564.582	0.009	1385.545	578.676	6.245	940.032
	0.000	0.000	0.000	0.000	0.926	0.000	0.000	0.013	0.000
Inflow	300	288	220	330	289	334	338	290	344
	267.902	257.762	29.194	2227.777	0.110	779.992	716.619	7.273	1042.928
	0.000	0.000	0.000	0.000	0.740	0.000	0.000	0.007	0.000
Unemployed	382	375	334	367	305	270	333	280	336
	91.192	6.559	0.117	130.814	2.125	259.584	751.303	44.175	928.142
	0.000	0.011	0.733	0.000	0.146	0.000	0.000	0.000	0.000
Non-employee	365	362	324	360	301	266	327	280	334
	183.570	0.676	2.854	237.373	0.284	250.721	577.881	27.789	924.979
	0.000	0.411	0.092	0.000	0.594	0.000	0.000	0.000	0.000

For each industry and outcome, the number of observations is presented first, followed by the F statistic for excluded instruments and the p-value in subsequent rows.

Table B2. F statistic and p-value corresponding to employment outcomes: same industry match with time-fixed effects

	Manufacturing	Information and communications	Transportation	Wholesale and retail trade	Real estate	Academic research and professional and technical services	Accommodation and food services	Lifestyle services and entertainment	Services (not elsewhere classified)
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Employed	49.071 0.000	13.042 0.000	1.351 0.247	199.171 0.000	2.791 0.097	163.872 0.000	141.135 0.000	1.194 0.276	140.382 0.000
Female	39.294 0.000	19.329 0.000	5.018 0.026	172.573 0.000	2.344 0.128	201.321 0.000	168.648 0.000	1.454 0.230	213.891 0.000
Male	53.727 0.000	14.840 0.000	1.680 0.196	163.324 0.000	2.546 0.112	161.508 0.000	53.458 0.000	1.275 0.261	187.611 0.000
Regular	18.149 0.000	50.097 0.000	0.909 0.343	373.014 0.000	0.774 0.381	185.012 0.000	146.692 0.000	5.751 0.018	144.040 0.000
Non-regular	21.981 0.000	67.981 0.000	2.751 0.100	395.776 0.000	1.449 0.231	186.432 0.000	120.290 0.000	0.436 0.510	149.297 0.000
Inflow	18.864 0.000	53.284 0.000	2.570 0.112	413.877 0.000	0.979 0.324	88.396 0.000	146.301 0.000	0.689 0.408	160.372 0.000
Unemployed	6.269 0.013	15.309 0.000	1.569 0.212	143.427 0.000	0.034 0.854	55.886 0.000	131.738 0.000	13.699 0.000	114.290 0.000
Non-employees	17.437 0.000	3.155 0.077	0.091 0.763	213.470 0.000	0.595 0.442	54.974 0.000	92.675 0.000	5.541 0.020	116.291 0.000

For each industry and outcome, the F statistic for excluded instruments is presented first, followed by the p-value in subsequent rows.

Table B3. Observations, F statistic, and p-value corresponding to employment outcomes: different industry match

	Manufacturing	Information and communications	Transportation	Wholesale and retail trade	Real estate	Academic research and professional and technical services	Accommodation and food services	Lifestyle services and entertainment	Services (not elsewhere classified)
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Employed	505 2.913 0.088	438 1.522 0.218	422 3.978 0.047	492 163.193 0.000	405 17.809 0.000	351 222.352 0.000	546 47.951 0.000	350 303.690 0.000	450 1.790 0.182
Female	511 1.944 0.164	434 2.609 0.107	422 3.101 0.079	502 122.397 0.000	407 19.503 0.000	352 93.095 0.000	545 48.007 0.000	360 300.683 0.000	452 3.297 0.070
Male	505 4.940 0.027	433 2.072 0.151	420 3.608 0.058	500 83.436 0.000	403 14.606 0.000	350 229.377 0.000	553 33.635 0.000	358 315.749 0.000	450 2.163 0.142
College	182 87.040 0.000	171 15.860 0.000	194 9.470 0.002	170 0.360 0.549	169 8.300 0.005	196 476.330 0.000	169 - -	184 0.240 0.622	192 82.200 0.000
Non-college	176 109.500 0.000	174 11.380 0.001	204 26.570 0.000	174 2.650 0.106	169 6.020 0.015	199 667.310 0.000	173 - -	190 0.230 0.629	187 125.820 0.000
Regular	334 7.778 0.006	251 41.025 0.000	272 50.246 0.000	340 1638.455 0.000	346 304.626 0.000	344 214.254 0.000	376 781.867 0.000	352 281.478 0.000	252 10.843 0.001
Non-regular	334 11.771 0.001	266 195.867 0.000	274 51.976 0.000	342 1689.717 0.000	348 287.256 0.000	356 236.001 0.000	375 717.544 0.000	354 275.861 0.000	256 20.107 0.000
Inflow	328 8.399 0.004	260 56.162 0.000	286 62.943 0.000	344 1115.178 0.000	321 317.594 0.000	354 222.537 0.000	378 651.432 0.000	358 320.673 0.000	252 14.426 0.000
Unemployed	510 7.018 0.008	438 0.050 0.823	423 1.495 0.222	510 103.303 0.000	399 97.885 0.000	362 117.615 0.000	541 19.657 0.000	362 315.834 0.000	462 5.163 0.024
Non-employ	502 12.195 0.001	431 1.680 0.196	414 19.181 0.000	503 95.146 0.000	387 14.249 0.000	350 230.956 0.000	536 26.188 0.000	350 193.171 0.000	453 7.124 0.008

For each industry and outcome, the number of observations is presented first, followed by the F statistic for excluded instruments and the p-value in subsequent rows.

Table B4. F statistic and p-value corresponding to employment outcomes: different industry match with time-fixed effects

	Manufacturing	Information and communications	Transportation	Wholesale and retail trade	Real estate	Academic research and professional and technical services	Accommodation and food services	Lifestyle services and entertainment	Services (not elsewhere classified)
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Employed	0.466 0.496	0.280 0.597	23.268 0.000	22.464 0.000	3.968 0.048	23.286 0.000	53.119 0.000	281.570 0.000	0.378 0.540
Female	0.259 0.612	0.954 0.330	23.875 0.000	20.221 0.000	4.348 0.039	6.398 0.012	47.464 0.000	325.707 0.000	1.413 0.236
Male	1.040 0.309	0.619 0.433	22.879 0.000	13.820 0.000	3.130 0.079	25.578 0.000	75.050 0.000	280.971 0.000	1.254 0.264
Regular	7.503 0.007	6.018 0.016	28.468 0.000	1084.139 0.000	151.309 0.000	20.647 0.000	60.293 0.000	228.349 0.000	5.447 0.021
Non-regular	7.640 0.006	61.152 0.000	17.957 0.000	1113.164 0.000	128.060 0.000	22.606 0.000	50.183 0.000	266.354 0.000	10.104 0.002
Inflow	6.227 0.014	14.011 0.000	29.679 0.000	700.937 0.000	152.242 0.000	22.413 0.000	34.130 0.000	259.834 0.000	7.242 0.008
Unemployed	8.995 0.003	0.415 0.520	27.042 0.000	16.422 0.000	22.371 0.000	8.732 0.004	0.856 0.356	254.035 0.000	9.289 0.003
Non-employees	26.848 0.000	0.195 0.659	37.224 0.000	15.995 0.000	2.524 0.114	26.193 0.000	33.217 0.000	138.885 0.000	19.957 0.000

For each industry and outcome, the F statistic for excluded instruments is presented first, followed by the p-value in subsequent rows.

Table B5. Observations, F statistic, and p-value corresponding to wage outcomes

	Manufacturing	Information and communications	Transportation	Wholesale and retail trade	Real estate	Academic research and professional and technical services	Accommodation and food services	Lifestyle services and entertainment	Services (not elsewhere classified)
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
<i>Same industry match</i>									
Female	375	197	327	324	187	224	304	234	301
	64.139	10.602	0.454	326.519	1.673	617.116	940.212	26.293	789.294
	0.000	0.001	0.501	0.000	0.198	0.000	0.000	0.000	0.000
Male	375	213	322	327	187	208	303	240	297
	148.855	15.332	0.131	310.944	2.000	602.633	880.305	31.292	757.795
	0.000	0.000	0.717	0.000	0.159	0.000	0.000	0.000	0.000
College	359	209	298	314	152	195	267	212	278
	57.771	15.248	0.079	416.011	0.263	982.240	1140.595	63.151	814.176
	0.000	0.000	0.779	0.000	0.609	0.000	0.000	0.000	0.000
Non-college	376	193	327	328	182	213	286	228	298
	143.264	10.123	0.008	316.449	1.375	942.157	835.980	30.053	728.529
	0.000	0.002	0.927	0.000	0.243	0.000	0.000	0.000	0.000
Regular	262	174	158	279	183	199	297	229	296
	247.693	792.104	56.240	2647.991	2.216	841.490	863.751	29.692	726.964
	0.000	0.000	0.000	0.000	0.138	0.000	0.000	0.000	0.000
Non-regular	269	151	151	285	201	203	299	240	286
	240.661	698.841	54.893	2702.352	0.000	992.400	833.838	43.458	786.301
	0.000	0.000	0.000	0.000	0.992	0.000	0.000	0.000	0.000
<i>Different industry match</i>									
Female	478	247	335	438	298	222	495	292	249
	20.575	0.475	17.128	120.969	198.281	0.198	30.462	576.291	31.124
	0.000	0.492	0.000	0.000	0.000	0.657	0.000	0.000	0.000
Male	476	250	350	454	298	206	501	294	237
	31.139	0.564	16.962	103.590	229.707	0.069	26.321	539.668	25.791
	0.000	0.453	0.000	0.000	0.000	0.792	0.000	0.000	0.000
College	454	233	302	442	223	195	425	264	224
	3.769	0.008	33.705	29.279	76.191	0.160	18.585	810.855	55.726
	0.053	0.927	0.000	0.000	0.000	0.689	0.000	0.000	0.000
Non-college	490	225	347	455	258	213	473	282	242
	3.361	0.330	25.461	29.533	69.716	0.121	25.178	505.842	29.614
	0.067	0.566	0.000	0.000	0.000	0.728	0.000	0.000	0.000
Regular	304	156	218	301	211	202	327	283	240
	55.838	52.195	113.045	1178.415	376.954	0.105	844.204	537.900	31.696
	0.000	0.000	0.000	0.000	0.000	0.747	0.000	0.000	0.000
Non-regular	315	141	226	306	221	211	327	286	234
	67.912	95.665	97.733	1195.375	502.274	2.429	840.868	560.195	32.401
	0.000	0.000	0.000	0.000	0.000	0.121	0.000	0.000	0.000

For each industry and outcome, the number of observations is presented first, followed by the F statistic for excluded instruments and the p-value in subsequent rows.

Table B6. F statistic, and p-value corresponding to wage outcomes with time-fixed effects

	Manufacturing	Information and communications	Transportation	Wholesale and retail trade	Real estate	Academic research and professional and technical services	Accommodation and food services	Lifestyle services and entertainment	Services (not elsewhere classified)
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
<i>Same industry match</i>									
Female	4.911 0.028	34.823 0.000	6.485 0.012	511.320 0.000	0.006 0.940	116.491 0.000	165.429 0.000	0.918 0.340	128.927 0.000
Male	14.284 0.000	41.514 0.000	2.638 0.106	518.227 0.000	0.002 0.969	111.476 0.000	164.100 0.000	1.351 0.247	120.528 0.000
College	4.142 0.043	42.244 0.000	4.620 0.033	531.815 0.000	1.231 0.270	202.458 0.000	251.491 0.000	6.458 0.012	140.062 0.000
Non-colleg	14.070 0.000	33.183 0.000	2.037 0.155	509.828 0.000	0.031 0.860	170.675 0.000	181.669 0.000	1.550 0.215	118.632 0.000
Regular	14.196 0.000	262.246 0.000	6.370 0.013	511.552 0.000	0.000 0.983	153.025 0.000	188.983 0.000	1.326 0.252	118.790 0.000
Non-regul	14.285 0.000	174.863 0.000	6.611 0.012	502.605 0.000	0.833 0.363	156.068 0.000	162.084 0.000	4.347 0.039	133.363 0.000
<i>Different industry match</i>									
Female	14.860 0.000	0.031 0.861	4.443 0.037	11.948 0.001	55.325 0.000	0.007 0.932	110.503 0.000	197.203 0.000	15.311 0.000
Male	16.641 0.000	0.033 0.857	4.468 0.036	10.762 0.001	67.657 0.000	0.010 0.921	119.661 0.000	193.778 0.000	12.961 0.000
College	3.422 0.066	0.086 0.770	0.201 0.655	9.140 0.003	38.249 0.000	0.016 0.899	288.153 0.000	251.115 0.000	28.058 0.000
Non-colleg	3.409 0.066	0.004 0.948	3.820 0.052	8.888 0.003	25.075 0.000	0.000 0.999	130.726 0.000	186.887 0.000	14.809 0.000
Regular	18.899 0.000	11.408 0.001	0.013 0.908	503.013 0.000	86.730 0.000	0.000 0.990	172.412 0.000	184.458 0.000	15.856 0.000
Non-regul	25.152 0.000	25.633 0.000	0.839 0.361	502.122 0.000	144.856 0.000	0.971 0.327	166.763 0.000	194.261 0.000	16.089 0.000

For each industry and outcome, the F statistic for excluded instruments is presented first, followed by the p-value in subsequent rows.

Table C1. Summary statistics

	Manufacturing		Information and communications		Transportation		Wholesale and retail trade		Real estate		Academic research and professional and technical services	
Variable	Mean	Std. dev.	Mean	Std. dev.	Mean	Std. dev.	Mean	Std. dev.	Mean	Std. dev.	Mean	Std. dev.
ΔFDI(same)	2342.958	1834.414	100.578	18.419	0.575	0.346	177.275	111.706	151.245	19.666	3.396	2.931
ΔFDI(different)	2591.145	935.243	6.231	3.078	1.499	1.102	18.550	695.718	4.311	2.431	695.903	124.724
IV	-3197.412	744.131	-9.799	14.685	17.833	25.674	101.892	72.433	-21.718	30.927	0.554	3.301
has_FDI	0.775	0.418	0.755	0.431	0.659	0.474	0.683	0.466	0.676	0.469	0.800	0.401
<i>Change in employment</i>												
Employment	-248.308	170.308	25.351	11.706	-16.457	46.160	-340.295	146.517	45.938	17.042	47.930	19.449
Female	-96.626	79.134	12.333	5.898	18.183	12.266	-138.033	89.327	23.015	8.060	33.525	8.778
Male	-158.971	99.543	12.789	9.029	-34.766	38.292	-204.824	70.388	22.924	11.385	14.572	13.385
College	31.994	42.976	4.859	8.556	6.142	12.326	9.051	23.507	6.315	7.795	11.184	16.621
Non-college	-54.497	98.707	-2.006	8.585	-31.220	41.336	-155.208	130.557	4.659	13.691	2.027	19.433
Regular	-13.090	42.681	53.528	6.929	-3.831	19.894	-65.957	29.582	15.583	7.382	22.320	13.013
Non-regular	-22.095	31.556	-1.943	3.587	-6.858	12.545	6.516	33.220	6.950	4.897	7.264	5.709
Inflow	-4.597	12.933	6.829	4.747	1.050	6.359	-8.842	11.139	1.927	3.463	3.136	5.317
Unemployed	-278.397	126.490	-298.004	130.262	-248.193	115.502	-328.907	127.196	-338.099	123.426	-393.815	126.493
Non-employees	-698.100	671.871	-609.392	660.326	-807.481	842.280	-726.260	592.105	-567.297	580.410	-477.439	613.545
<i>Change in average hourly wages</i>												
Female	77.073	107.607	72.462	194.115	89.246	170.870	82.737	79.649	83.936	146.793	262.485	207.753
Male	11.236	139.278	8.347	232.531	84.331	230.518	40.969	154.741	64.501	256.439	90.305	254.141
College	14.127	212.682	-8.081	267.666	33.853	365.577	23.905	216.508	-2.215	286.609	83.348	281.415
Non-college	46.913	134.931	9.284	211.314	115.330	229.436	3.012	146.701	41.069	181.332	84.782	208.874
Regular	64.729	124.709	58.001	214.045	133.767	222.143	81.804	169.946	79.582	194.790	109.596	217.936
Non-regular	92.696	112.516	112.880	187.546	153.284	162.541	78.428	82.383	80.893	140.560	53.642	273.676

ΔFDI (same), ΔFDI (different), has_FDI, and IV are based on data from 2005 to 2020.

ΔFDI (same) and ΔFDI (different) indicate whether the FDI-related capital investment is in the same industry or in a different industry, respectively. The unit of ΔFDI and IV is one million yen (approximately 6,900 U.S. dollars). The units for other variables are as follows: change in employment is measured in persons, and change in wage is measured in yen.

Table C1. (continued)

	Accommodation and food services		Lifestyle services and entertainment		Services (not elsewhere classified)	
Variable	Mean	Std. dev.	Mean	Std. dev.	Mean	Std. dev.
ΔFDI(same)	1.530	1.923	-3.773	0.357	0.071	0.212
ΔFDI(different)	-0.027	0.018	0.633	1.435	-90.099	12.490
IV	4.360	1.782	-3.683	1.352	0.645	0.151
has_FDI	0.623	0.485	0.927	0.261	0.659	0.475
<i>Change in employment</i>						
Employment	-34.459	53.292	-32.376	21.977	-152.383	130.476
Female	-10.175	36.502	-14.709	15.306	-69.032	63.169
Male	-25.094	23.215	-17.667	13.514	-84.371	73.425
College	-9.572	29.323	2.000	7.460	19.000	19.229
Non-college	-70.164	64.063	-39.171	46.863	27.562	43.937
Regular	-7.550	14.380	-15.514	11.230	32.439	19.738
Non-regular	-17.599	25.680	-17.045	12.300	41.009	15.068
Inflow	-7.986	9.503	-3.221	5.264	4.669	5.860
Unemployed	-356.756	133.451	-367.672	127.094	-362.472	122.050
Non-employees	-422.889	620.160	-435.271	607.287	-431.454	602.276
<i>Change in average hourly wages</i>						
Female	140.187	106.048	98.441	128.983	76.643	138.792
Male	106.063	177.965	104.066	205.488	38.603	160.112
College	84.624	262.222	100.823	334.474	23.945	266.541
Non-college	106.202	135.969	74.621	123.796	27.328	144.367
Regular	183.207	189.196	136.608	181.657	51.248	162.916
Non-regular	148.460	97.958	99.147	129.179	84.693	141.074

Table D1. Overview of industrial classification changes

	2000	2005	2010	2015	2020
Manufacturing	Independent	Independent	Independent	Independent	Independent
Information and communications	Not distinguished (single category)	Independent	Independent	Independent	Independent
Transportation		Independent	Independent	Independent	Independent
Wholesale and retail trade	Grouped with food services	Independent	Independent	Independent	Independent
Real estate	Independent	Independent	Independent	Independent	Independent
Academic research and professional and technical services	a single "service industry" category	Grouped under Services	Independent	Independent	Independent
Accommodation and food services		Independent	Independent	Independent	Independent
Lifestyle services and entertainment		Grouped under Services	Independent	Independent	Independent
Services (not elsewhere classified)		Independent	Independent	Independent	Independent

→used for estimation

The estimation results presented in this study are based on the nine industry categories shown above.