Local Labor Market Effects of Preferential FDI Tax Policy: Evidence from China

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Abstract

This study examines the local labor market effects of FDI-related tax incentives, using China's corporate tax unification reform as a natural experiment. We find the tax reform led to slower real wage growth in high-foreign-exposure prefectures. This effect is more pronounced among low-skilled workers than high-skilled workers, resulting in an increased inter-regional disparity of skill wage premium. Our spatial general equilibrium model reveals that high-skilled workers have greater migration elasticity than low-skilled workers, significantly shaping the reform's wage effects across regions and skill levels. Counterfactual simulations demonstrate that while reducing migration costs mitigates the tax reform's adverse wage effects, it exacerbates the reform's impact on inter-regional skill wage premium disparities.

Key Words: FDI-related tax incentive, tax reform, worker skills, labor mobility, local labor market, migration cost

JEL Codes: F21, F23, F66, J31, R12, H25

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1. Introduction

Many developing countries use preferential tax policies to attract foreign direct investment (FDI). While previous studies (Harding and Javorcik, 2011; Crescenzi et al., 2021) have established the effectiveness of these policies in stimulating FDI inflows, their broader economic implications for host countries remain largely unexplored. Of particular interest are the labor market effects of these preferential policies in the host country. Despite the extensive literature on the labor market effects of FDI flows themselves (e.g., Aitken et al., 1996; Feenstra and Hanson, 1996, 1997, 1999; Lipsey and Sjöholm, 2004; Hijzen et al., 2005; Hsieh and Woo, 2005; Han et al., 2012; Fan et al., 2020), less is known about the specific impacts of FDI-related preferential tax policies on wage distributions in host countries. How do tax incentives offered to foreign-invested enterprises (FIEs) influence wage distributions in developing countries where rigid migration restrictions are prevalent and labor markets are often localized? What are the underlying mechanisms that drive these labor market effects?

We leverage China's corporate tax unification reform as a natural experiment to explore these issues. China, having successfully emerged as a leading destination for FDI over the past four decades, provides an ideal setting for this study. The Chinese government has long used tax incentives as a key policy tool to attract FDI. From the early 1990s, China maintained a dual corporate income tax (CIT) regime that favored FIEs with lower rates. However, in 2007, China announced a major reform to eliminate this preferential treatment and implement a uniform CIT rate for all firms. Given the significant role of FIEs in the Chinese economy (Naughton, 2018) [1], this policy shift is expected to have far-reaching impacts, particularly on China's labor market.

[1] According to the above-scale Industrial Enterprises Survey (AIES) data and Chinese customs data, FIEs contributed to more than a quarter of total manufacturing sales (and output) and about one-half of China's total exports during the period 1998-2013.

Furthermore, China's institutional and economic environment offers an excellent opportunity to examine the labor market effects of FDI-related tax incentives. The country's labor market features restricted labor mobility due to the Hukou system, resulting in localized labor markets (Fan, 2019; Feng et al., 2024). Additionally, FDI distribution across Chinese regions is highly uneven, with foreign investment heavily concentrated in eastern coastal areas. According to China's Ministry of Commerce data from 2023, the eastern region captured 87.6% of new FIEs and 87.1% of actual utilized foreign capital, while the central and western regions attracted much smaller shares, accounting for 5.6% and 6.8% of new enterprises and 6.4% and 6.5% of actual utilized foreign capital, respectively. This spatial imbalance in FDI distribution, combined with China's restrictive migration policies and localized labor markets, allows us to gain a more comprehensive understanding of the tax reform's impacts on local labor markets in a multi-regional context.

While this study focuses on Chinese data, our findings have broad implications for other developing countries with similar characteristics, such as reliance on foreign investment, low labor mobility, and segmented labor markets. The results are particularly relevant for policymakers in these countries who seek to better understand the potential effects of FDI-related preferential tax policies on local labor markets and wage inequality.

Our analysis begins with reduced-form empirical evidence using micro-level data from China. Based on the prefecture-level data, we document that the tax reform led to significantly slower average real wage growth in areas with high initial exposure to foreign investment, thereby reducing inter-regional wage disparities. To investigate potential heterogeneity in the wage effects across skill levels, we resort to individual-level data. Our results show that the reduction in inter-regional wage disparity is more

pronounced for low-skilled workers than for their high-skilled counterparts, leading to a greater increase in the skill wage premium in high-exposure regions relative to low-exposure regions.

Complementing these wage patterns, we examine prefecture-level employment and firm registration data. Our evidence indicates that regions with high foreign exposure experienced larger employment shifts from foreign-invested enterprises (FIEs) to domestically-owned firms than low-exposure regions. This labor reallocation effect is evident in both employment size and firm count ratios, and is stronger in low-skilled sectors.

To rationalize these empirical observations, we build a spatial general equilibrium model with ownership-specific tax policies and skill-specific labor mobility to conduct quantitative analysis on the tax reform's wage effects and to illustrate the key mechanisms at work. Specifically, we micro-found the skill-specific labor mobility by migration elasticity in the model and calibrate the model using the micro-level data from China's population census and the above-scale industrial enterprise surveys (AIES). Our calibration reveals that high-skilled workers exhibit greater migration elasticity than low-skilled workers.

First, our quantitative results shown that while the tax reform leads to an overall real wage growth slowdown of 0.29%, its impacts are distributed unevenly across regions. High-foreign-exposure regions experience a marked wage slowdown (-2.67%), while low-exposure regions see significant wage growth acceleration (5.37%). Consequently, the inter-regional real wage gap narrows after the tax reform, consistent with our reduced-form empirical results.

Second, the tax reform's wage effects vary substantially across skill levels. Although both high-skilled and low-skilled workers experience wage decreases in high-

exposure regions and increases in low-exposure regions, low-skilled workers show significantly larger wage responses due to their limited mobility. As a result, the reduction in the inter-regional real wage gap is more pronounced for low-skilled workers (-8.21%) than for high-skilled workers (-5.66%), aligning with our empirical findings.

Third, the tax reform's impact on skill wage premium differs significantly among regions. In high-foreign-exposure regions, the reform leads to a smaller wage decline for high-skilled workers than for low-skilled workers, causing the skill wage premium to rise by 1.08%. By contrast, in low-exposure regions, high-skilled workers experience smaller wage gains than low-skilled workers, resulting in a 1.46% reduction in the skill wage premium. Overall, the tax reform increases the inter-regional disparity in skill wage premiums between high and low foreign exposure areas by 2.55%.

To better understand how skill-specific migration elasticity influences wage effects, we conduct counterfactual analyses assuming equal migration elasticity for both high-skilled and low-skilled workers. Our results show that, under the assumption of equal migration elasticities, wage effects within a given region vary little across skill levels. This contrasts sharply with our empirical observations, which reveal significant heterogeneity in wage effects across skill levels. Additionally, we use our quantitative model to explore the interplay between a migration cost reduction policy and the tax reform. We find that reducing migration costs generally mitigates the negative wage effects of the tax reform across regions and for different skill types.

Our study contributes to the literature in four key aspects. First, this paper extends the research on FDI-related tax incentives by broadening its scope beyond the traditional focus. While existing studies in this field (e.g., Harding and Javorcik, 2011; Crescenzi et al. 2021) have primarily examined the effects of such incentives on FDI

attraction, we explore their wider impacts on local labor markets in host countries. Our analysis pays particular attention to countries characterized by low labor mobility and high migration costs, thus offering new insights into the consequences of these incentives in diverse economic environments.

Second, this study contributes to the broader literature on the labor market effects of globalization. Previous research in this area has primarily examined the wage effects of openness to trade or FDI, consistently linking increased globalization to rising wage inequality (e.g., Aitken et al., 1996; Feenstra and Hanson, 1996, 1997, 1999; Lipsey and Sjöholm, 2004; Hijzen et al., 2005; Hsieh and Woo, 2005; Han et al., 2012; Fan et al., 2020). Our study shifts focus to evaluate the distributional impacts of preferential FDI tax treatment in host countries. We uncover substantial heterogeneity in the wage effects of FDI-related tax policies and emphasize the crucial role of skill-specific labor mobility in shaping these local labor market effects.

Third, our work connects to the growing literature on labor mobility frictions. Much of this literature has focused on how internal migration costs influence the economic impacts of international trade (e.g., Allen and Arkolakis, 2014; Coşar and Fajgelbaum, 2016; Redding, 2016; Dix-Carneiro and Kovak, 2017; Bryan and Morten, 2019; Caliendo et al., 2019; Fan, 2019; Tombe and Zhu, 2019; Morten and Oliveira, 2024). Some empirical analyses have also examined how international trade affects internal migration in developing countries (e.g., Hering and Paillacar, 2016; McCaig and Pavcnik, 2018). Our study diverges from these works by analyzing the local labor market effects of eliminating FDI-related tax incentives. However, our findings on the instrumental role of skill-specific labor mobility in determining the tax reform's distributional effects align with this literature.

Finally, this study relates to the public finance literature on tax incidence (e.g.,

Suárez Serrato and Zidar, 2016; Fuest et al., 2018; Nallareddy et al., 2018; Garrett et al., 2020). While a central issue in this literature is who bears the incidence of corporate taxes, our objective differs. We investigate the local labor market effects of the tax unification reform through its differential impacts on domestic and foreign firms. Despite this key difference, our results corroborate existing findings that corporate tax policies can have significant labor market effects.

The rest of the paper is organized as follows. Section 2 offers background information on China's corporate tax unification reform and describes the datasets used in this study. Section 3 presents our reduced-form empirical results. Section 4 develops a quantitative spatial general equilibrium model. Section 5 discusses the results from the quantitative model. Concluding remarks are offered in Section 6.

2. Background and Data

2.1.Institutional Background

To promote inward FDI, in 1991, the National People's Congress passed the *Income Tax Law of the People's Republic of China for Enterprises with Foreign Investment and Foreign Enterprises* and the *Detailed Rules for the Implementation of the Law*. The 1991 Tax Law established a dual CIT rate regime in China. Under this regime, domestically-owned firms were subject to a standard CIT rate of 33%, while most foreign-owned firms were granted a preferential CIT rate of 15%.[2]

These preferential tax policies for FDI have successfully attracted FDI inflows to

[2] The 1991 Law set a 15% CIT rate for foreign firms that were established in Special Economic Zones (SEZs), or of a production nature in Economic and Technological Development Zones (ETDZs), or belong to government encouraged industries such as infrastructure and technology. Due to the dramatic expansion of SEZs and ETDZs in China since the 1990s, most foreign firms of a production nature were subject to a 15% CIT rate before the start of our sample year.

China. Starting from the early 1990s, China has become the largest FDI recipient among developing countries, absorbing around 30% of total FDI inflows to developing countries. Foreign-owned firms have now contributed a significant share to China's economic growth (e.g., Han et al., 2012; Naughton, 2018).

As China's domestically-owned firms gained strength over time, however, there are growing calls to abolish the preferential tax treatment of foreign firms and to level the playing field between foreign- and domestic-owned firms. Against this backdrop, a new corporate income tax law that aims to eliminate the CIT differential between domestic and foreign firms was passed by the National People's Congress in 2007.

The 2007 corporate income tax law replaced the dual tax rates with a uniform CIT rate of 25% for all firms. Specifically, domestic firms nationwide started to pay a standard CIT rate of 25% from 2008 and on. Foreign-owned firms gradually exited the preferential tax treatment regime, with their CIT rates rising to 18% in 2008, 20% in 2009, 22% in 2010, and 24% in 2011, eventually converging to the standard CIT rate of 25% in 2012. It is worth mentioning that, according to China's Western Development Strategy (*Xibu Dakaifa*), foreign-invested firms in some western regions of China remain eligible for the lower CIT rate of 15% after 2007.[3]

2.2. Data

We leverage various data sources from China to empirically assess the impacts of the CIT unification reform on local labor markets. This subsection describes our primary data sources and the construction of key variables. Summary statistics of main

[3] China's western development strategy applies to 12 provinces and municipalities, including Chongqing, Sichuan, Guizhou, Yunnan, Xizang, Shaanxi, Gansu, Qinghai, Ningxia, Xinjiang, Inner Mongolia, Guangxi.

variables used in our reduced-form empirical analysis are provided in Appendix Table A1.

2.2.1. Wage earnings

We collect wage information at both the prefecture and individual levels from two primary data sources. The *prefecture-level* data on annual average wage earnings cover the period 2002-2018 and are obtained from various issues of the *China City Statistical Yearbook*.[4] According to the Yearbook, a prefecture's annual average wage is calculated by dividing its total wage payment by the total number of workers employed each year. The total wage payment includes basic salaries, bonuses, and subsidies. We deflate the average wage earnings by the corresponding provincial CPI (using 2010 as the base year) to obtain average real wage for each prefecture.

A preliminary review of the prefecture-level wage data reveals two notable features of wage distribution across prefectures in China. First, the average real wage varies substantially across prefectures. The average real wage in prefectures located at the 90th percentile of the wage distribution is generally over 50% higher than, sometimes even close to double, that in prefectures located at the 10th percentile. For example, during the period 2002-2018, Xiangyang City in Hubei Province (the 10th percentile of the wage distribution) had an average real wage of 25827.94 yuan (in 2010 Chinese yuan), while Jinhua City in Zhejiang Province (the 90th percentile) has an average real wage of 41662.53 yuan (in 2010 Chinese yuan), over 61% higher. Second, the cross-prefecture wage dispersion has been declining since 2007. In Appendix Figure

[4] Self-employed entrepreneurs or workers are excluded from calculating the annual average wage.

A2, we graph the 90/10 wage ratio and the coefficient of variation calculated from the cross-prefecture real wage distribution in China for each year from 2002 to 2018. Both series began to decline sharply around 2007, indicating a significant reduction in the real wage gap across prefectures over time, and they have stabilized somewhat since 2012.

Our second data source is the Urban Household Surveys (UHS), conducted by China's National Bureau of Statistics (NBS) from 2002 to 2014. These nationally representative surveys use stratified random sampling to collect comprehensive data on urban households in China, including detailed information on individuals' employment status, occupation, earnings, and demographic characteristics. The UHS dataset has been extensively used in studies on China's wage structure and income inequality (e.g., Han et al., 2012). In this paper, we leverage the UHS data to analyze how the tax reform's wage effects vary across different worker categories, providing insights into the heterogeneous impacts of the policy change. Due to restrictions imposed by the NBS on data access, our UHS sample includes data from three provinces (Guangdong, Liaoning, and Sichuan) and one municipality (Shanghai) over an extended period from 2002 to 2014. Additionally, we have data for ten provinces (Anhui, Gansu, Heilongjiang, Henan, Hubei, Jiangsu, Jiangxi, Shandong, Shanxi, and Yunnan) and two municipalities (Beijing and Chongqing) for a shorter period between 2002 and 2009. To maximize the available cross-sections for our analysis, we focus on the common sample period from 2002 to 2009.

Following the conventional data-cleaning procedures in the literature (e.g., Han et

al., 2012; Ge and Yang, 2014), we include only full-time wage earners in our UHS sample, excluding business employers, self-employed individuals, farmers, retirees, students, and re-employed retired workers. According to the statutory retirement ages in China, we further restrict our sample to female workers aged between 16 and 55 and male workers aged between 16 and 60. In the UHS, each individual is asked to report his/her annual wage income, including basic wages, bonuses, and subsidies. We deflate individual-level annual nominal wage earnings by the corresponding provincial CPI to obtain real wage earnings (in 2010 Chinese Yuan).

Given that foreign-invested firms in western China are unaffected by the tax reform due to the Western Development Strategy, we exclude the western region from our analysis to ensure a clean identification of the causal impact of the tax reform on local labor market.[5] In doing so, our prefecture-level data covers 199 prefectures from 2002 to 2018 and the UHS sample contains 266,164 individuals from 128 prefectures between 2002 and 2009.

2.2.2. Prefecture's foreign exposure

To measure the exposure to foreign-invested firms at the prefecture level, we utilize the AIES dataset, which provides detailed information on firm's ownership structure, geographical location, and employment. Specifically, we compute the share of labor employed by foreign-owned firms for each prefecture in 2002 (the starting year

[5] We also examined the effect of the tax reform on the wage gap across a broader sample of prefectures, including those in western regions. The estimation results from this expanded sample indicate that the tax reform led to a significant reduction in the wage gap between high- and low-exposure prefectures in non-western regions, but not in the western prefectures where foreign-owned firms continued to receive preferential tax treatment after the tax reform.

of our sample) to proxy for a prefecture's initial foreign exposure. [6] A cursory look at the distribution of this initial foreign labor share reveals substantial variations across prefectures. For instance, the share was about 1.05% in Huaihua of Hunan Province (the 10th percentile) but reached close to 41.05% in Foshan of Guangdong Province (the 90th percentile).

In Figure 1, we present two key relationships using binned scatter plots. Panel A illustrates the correlation between the prefecture-level initial foreign labor share and log real wage during the pre-reform period (2002-2006). This plot displays a positive association, indicating that prefectures with higher initial foreign labor shares had higher real wages before the tax reform. Panel B plots the change in log real wage before and after the reform against the initial foreign labor share. Interestingly, this graph shows a negative relationship, suggesting that prefectures more exposed to foreign investment experienced slower real wage growth following the reform. Taken together, these graphical patterns indicate that the tax reform is associated with a decline in relative wage growth between high-foreign-exposure and low-foreign-exposure prefectures.

3. Empirical Results

Despite its nationwide implementation, the tax reform's impact on local labor markets may differ due to substantial heterogeneity in pre-reform exposure to foreign investment across prefectures. To investigate these localized effects, we employ a

[6] We follow the literature to classify a firm as foreign-owned if the firm is registered as a foreign-invested firm (either wholly-owned or joint venture) and foreign investors contributed at least 25 percent of the firm's paid-in capital.

differential exposure approach, a method widely used in the literature (e.g., Goldberg and Pavcnik, 2007; Hanson, 2007; Topalova, 2010; Han et al., 2012; Autor et al., 2013; Kovak, 2013; Dix-Carneiro and Kovak, 2017; Pavcnik, 2017; Fan et al., 2020). Given the potential nonlinearity in the relationship between initial foreign labor share and local labor market effects, we divide prefectures into high-exposure and low-exposure groups based on the sample mean of initial foreign labor share and compare the effects of the tax reform on local labor market outcomes, such as real wages and labor allocation, between the two groups of prefectures.

3.1. Inter-Regional Wage Gap

3.1.1. Basic results

We first examine the impact of the tax reform on the inter-regional real wage gap using the prefecture-level data from 2002 to 2018. Specifically, we estimate the following model specification:

$$\ln(w_{i,t}) = \beta_0 + \beta_1 ForExposure_{i,0} \times Post_t + \gamma X_{i,t} + \mu_i + \tau_{r,t} + \varepsilon_{i,t} \quad (1)$$

where $w_{i,t}$ is prefecture i's average real wage in year t. $ForExposure_{i,0}$ is a binary indicator of high exposure to foreign investment that takes on the value of one if the prefecture's initial foreign labor share exceeds the sample mean and zero otherwise. $Post_t$ is the post-reform dummy that equals to one for years since 2007 and zero otherwise. X_{ct} is a vector of prefecture-level controls, including pre-trends in real GDP growth, real wage growth, population size, state-owned firms' labor share, and skilled labor share.[7] μ_i and $\tau_{r,t}$ are prefecture and region-year fixed effects to control for time-

[7] Following the literature (e.g., Autor et al., 2013), we interacted year dummies with average real GDP growth and real wage growth between 2002 and 2006, and log population size averaged over the period 2000-2002, average share of labor employed by state-owned firms between 2002 and 2006, and share of population aged between 15 and 65 with college degree or above in 2005, and included these interaction terms as the pre-trend controls.

invariant prefecture-level heterogeneities and time-varying regional shocks, respectively. Note that the level effect of $ForExposure_{i,0}$ is absorbed by the prefecture fixed effects. We cluster standard errors at the prefecture level to account for potential serial correlation in real wages within each prefecture.

We are particularly interested in the coefficient on the interaction term (β_1), as it captures the tax reform's impacts on wage differentials between prefectures with high and low foreign exposure. As shown in column (1) of Table 1, the estimated coefficient on the interaction term is negative and statistically significant at the 5% level, indicating a substantial slowdown in relative wage growth between high- and low-exposure prefectures post-reform. The estimated wage effect of the tax reform is also economically sizable. Following the tax reform, the inter-regional real wage gap between high- and low-exposure prefectures narrows by 0.044, equivalent to a 15.5% reduction relative to the pre-reform sample mean of log real wage gap (0.284).

To ensure that our results are not driven by prefectures' foreign exposure in a single year, we regroup prefectures into high- and low-exposure categories based on their average foreign labor shares over an extended pre-reform period (1998-2006). Column (2) of Table 1 presents the results from using this alternative high-exposure indicator. Notably, the estimated coefficient remains significantly negative and comparable in magnitude to our baseline estimate in column (1).

In column (3), we replace the post-reform dummy with a continuous measure of the corporate income tax rate gap (*CIT gap*) between foreign-owned and domestically-owned firms. The CIT gap is calculated as the difference between the *statutory* corporate income tax rates applicable to these two types of firms. We obtain the corporate income tax rates from China's tax laws and their implementation guidelines. By construction, an increase in the *CIT gap* value indicates a rise in the corporate

income tax rate for foreign-owned firms relative to domestic firms.

Employing this continuous CIT gap measure leaves our main result intact. We continue to find a significantly negative coefficient on the interaction term between the high-exposure indicator and *CIT gap*. Moreover, given the overall increase in the CIT gap of 18 percentage points after the tax reform, the estimated coefficient of -0.002 implies a 0.036 reduction in log real wage gap between high-exposure and low-exposure prefectures following the tax reform, which is comparable to our baseline estimate in the first column.

3.1.2. Establishing causality

Although our baseline specification has already controlled for potential confounding pre-trend effects, the concern that pre-existing trends or some unobserved factors drive our results may remain. To strengthen the causal inferences in the wage effect of the tax reform, in this subsection, we conduct three additional tests.

First, we verify parallel trends in pre-reform real wage gap between high- and low-exposure prefectures. Following Erten and Leight (2021), we re-estimate the baseline specification by replacing the post-reform dummy with a vector of year dummies for 2002 to 2018, using 2006 as the reference year. To ensure robustness, we employ three different estimators to estimate the dynamic treatment effects. These include the ones developed by de Chaisemartin and D'Haultfœuille (2020), Sun and Abraham (2021), and Callaway and Sant'Anna (2021), resepctively.[8]

We present the estimated dynamic treatment effects along with their 90% confidence intervals in Figure 2. Across all estimators, the pre-reform coefficients are

[8] We also estimated the baseline model specification in equation (1) using these three alternative estimators and reported the estimation results in Appendix Table A3. Across all three columns, the estimated coefficients on the interaction term between the high-exposure indicator and the post-reform dummy are negative and statistically significant at the 5% level at least. Importantly, the magnitudes of these coefficients are also similar to the baseline estimate reported in column (1) of Table 1.

statistically insignificant and predominantly flat, showing no discernible trend. In contrast, the post-reform coefficients become significantly negative. This graphical evidence assures us that bias associated with different pre-existing trends across prefectures should be less of a concern in our analysis.

Second, we conduct a falsification test following Topalova's (2010) approach. In this exercise, we set the year 2004 as a pseudo-reform year and re-estimate the baseline model using only the pre-reform period from 2002 to 2006.[9] As no actual tax reform occurred during this timeframe, we expect no significant effect of this hypothetical policy change on the inter-regional wage gap. Any significant effect would indicate bias associated with pre-existing trends in the outcome variable.

Column (4) of Table 1 presents the results of this falsification test. The estimated coefficient on the interaction term is statistically insignificant and very close to zero in magnitude. This finding further assures us that the post-reform decline in relative wage growth between high- and low-exposure prefectures is not driven by confounding factors related to pre-existing trends.

Third, we conduct a placebo test to evaluate the potential bias from unobserved prefecture-level heterogeneities. We randomly assign prefectures into high- or low-exposure groups and re-estimate the baseline specification using the artificially generated data. This simulation is repeated 1,000 times. If the estimated coefficient on the interaction term (β_1) is statistically significant using the artificially generated data, it would suggest that uncontrolled prefecture-level factors are responsible for our results. Conversely, the coefficient's statistical insignificance and trivial magnitude would

[9] We also tried to set 2003 or 2005 as the pseudo reform year and re-estimated the baseline model using the pre-reform period (2002 to 2006). The results are similar to the one reported in column (4) of Table 1.

indicate that our findings are unlikely to be fully driven by these unobserved factors.

As shown in Appendix Figure A4, the distribution of the estimated β_1 has a mean close to zero (-0.00005) and a standard deviation of 0.0169. Notably, our baseline estimate of -0.044, shown in column (1) of Table 1, falls well below the 1st percentile of this distribution (-0.039). This placebo test result thus helps rule out the possibility that our results are entirely driven by unobserved prefecture-level factors.

3.1.3. Robustness checks

In this subsection, we conduct further robustness check by including additional prefecture-level controls. Table 2 summarizes these estimation results.

First, we address potential confounding effects associated with changes in local socioeconomic conditions, focusing on labor composition, market tightness, and international trade exposure. Column (1) controls for prefecture-level heterogeneity in the gender composition of local labor force. We compute the prefecture-level female labor share using China's 2005 Population Census data and include its interactions with year dummies as additional controls. Column (2) accounts for labor market tightness by interacting pre-reform average unemployment rates with year dummies. Column (3) addresses differential exposure to international trade by including interactions between year dummies and pre-reform average trade openness, measured as the sum of exports and imports relative to GDP.[10]

Second, we control for concurrent policy changes that might influence our results. To account for the 4-trillion-yuan fiscal stimulus policy implemented in late 2008, which Bai et al. (2020) show disproportionately benefited unskilled labor, column (4) includes interactions between year dummies and prefecture-level government

[10] The prefecture-level data on GDP, urban unemployment rate, trade, and government expenditure are obtained from various China City Statistical Yearbook issues.

expenditure (scaled by local GDP) in 2005. Column (5) addresses the 2009 value-added tax (VAT) reform by incorporating interactions between year dummies and prefecture-level pre-reform average VAT rates, calculated using the AIES data.

The third policy change we consider is the accelerated depreciation policy for fixed assets (ADFA), implemented in China from 2014. This policy allowed firms in six selected industries to depreciate fixed assets acquired after January 1, 2014, at an accelerated rate.[11] Column (6) includes an interaction between a post-ADFA dummy (for years from 2014 onward) and the high-exposure indicator.

Finally, we address concerns that our results might be driven by differential exposure to the global financial crisis (*GFC*), which coincided with the tax reform. Column (7) includes an interaction between a *GFC* indicator, which equals to one for 2007-2009 and zero otherwise, and the high-exposure indicator as an additional control.

Overall, including these additional controls does not affect our main finding. Across all columns in Table 2, the estimated coefficients on the interaction between the high-exposure indicator and the post-reform dummy are consistently negative and statistically significant at the 5% level at least. The magnitude of these coefficients remains similar to our baseline estimate in Table 1. These results strengthen the robustness of our findings, suggesting that the observed reduction in wage gaps between high- and low-exposure prefectures is indeed attributable to the tax reform rather than to other confounding factors or policy changes.

3.2. Heterogeneous Wage Effects

Having established that the tax reform resulted in significantly slower real wage

[11] The ADFA policy was initially implemented for six key industries, including the bio-pharmaceutical industry, special equipment manufacturing industry, transportation vehicle manufacturing industry, computer, telecommunication and other electronic product manufacturing industries, instrument and meter manufacturing industry, information transmission, software and IT service industry. In 2015, the policy expanded to cover four additional industries, including light industry, the textiles industry, the machinery industry, and the automobile industry. From 2019 onwards, the ADFA policy was extended to cover all manufacturing industries.

growth in high-exposure prefectures relative to low-exposure ones, we now seek to explore the distributional consequences of the tax reform. To that end, we employ two complementary strategies using individual-level data from the UHS. First, we estimate quantile regressions to examine wage effects across different points of the wage distribution. Second, we analyze wage effects across various worker types to investigate potential heterogeneity in the tax reform's wage effects.

3.2.1. Across wage distribution

To evaluate the wage effects of the tax reform across different percentiles of the wage distribution, we estimate the following specification with a quantile regression method:

$$\ln(w_{j,i,t}) = \beta_0 + \beta_1 ForExposure_{i,0} \times Post_t + \theta Z_{j,t} + \gamma X_{i,t} + \mu_i + \tau_{r,t} + \varepsilon_{j,i,t} \quad (2)$$

where $w_{j,i,t}$ is the real wage of individual *j* from prefecture *i* in year *t*. The vector $Z_{j,t}$ is a set of individual-level controls, including gender, experience, education, marital status, ethnicity, Hukou status, industrial affiliation, and occupation. Likewise, the baseline prefecture-level controls ($X_{i,t}$), prefecture fixed effects (μ_i), and region-year fixed effects ($\tau_{r,t}$) are included in the specification.

Figure 3 graphs the estimated wage effects of the tax reform at different quantiles alongside their 90% confidence intervals. We find that while the tax reform generally reduced the real wage gap between high- and low-exposure prefectures, this effect is statistically significant only at the lower quantiles, not the upper quantiles. Furthermore, the magnitude of the reform-induced wage effect is substantially larger at the lower quantiles compared to the upper quantiles.[12] These results suggest that there is

[12] We also tried to include additional prefecture-level controls and use the alternative high-exposure indicator constructed based on the average foreign labor share during the pre-reform period in the quantile regressions. The results are similar to those in Figure 3.

considerable heterogeneity in the tax reform's wage impacts. The reduction of the inter-regional wage gap was more pronounced for *low-wage* earners than for *high-wage* earners.

3.2.2. Across worker types

To further explore the heterogeneous effects of the tax reform across worker types, we categorize workers based on their skill levels, occupation types, and work experience. Table 3 summarizes the results of these analyses. In column (1), we first confirm the negative effect of the tax reform on the relative wage growth between high- and low-exposure prefectures using individual-level data from the UHS. The estimated wage effect is statistically significant at the 5% level and comparable in magnitude to our baseline estimate obtained from prefecture-level data.[13]

Columns (2) and (3) present the wage effects of the tax reform by worker skill types. We classify workers with a four-year university degree or higher as *high-skilled*, and those with a high school diploma, two-year vocational degree, or less as *low-skilled*. While the estimated coefficients on the interaction term are negative and significant for both worker types, the impact is substantially larger for *low-skilled* workers, over 1.6 times that for *high-skilled* workers.

Columns (4) and (5) compare the trade reform's wage effects across occupation groups with different skill intensities. We classify workers as *professionals* (scientists, engineers, technicians, specialists, researchers, lawyers, teachers, professors, artists, and managers) and *non-professionals* (all others). We find that the negative impact on inter-regional wage gaps between high- and low-exposure prefectures is stronger for *non-professionals* than *professionals*.

[13] In Appendix Table A5, we check the robustness of the tax reform's effect on relative wage growth between high- and low-exposure prefectures using individual-level data from the UHS. Consistently across all specifications, the estimated wage effect of the tax reform is statistically significant and negative at the 5% level, with a similar magnitude to our baseline estimate.

Columns (6) and (7) examine wage effects by work experience, which proxies for skills gained through on-the-job learning. We classify workers as *more-experienced* if their years of work experience exceed the sample median, and *less-experienced* otherwise. Our results show that the estimated coefficient on the interaction term is significantly negative for *less-experienced* workers but statistically insignificant for *more-experienced* workers. Moreover, the wage effect for *less-experienced* workers is also larger in magnitude, more than twice that of *more-experienced* workers.

Overall, our results reveal significant heterogeneity in the tax reform's wage effects across worker types. The negative impact of the tax reform on inter-regional real wage gap was stronger on low-skill workers – those with less education, non-professional jobs, or limited work experience.

3.3. Labor Reallocation

To better understand the tax reform's local labor market effects, we examine its impact on within-prefecture labor reallocation across firms with different ownership structures. We calculate each prefecture's foreign-to-domestic employment ratio (i.e., employment size in foreign-owned firms divided by that in domestic firms) using the ASIE data and re-estimate equation (1) by replacing the dependent variable with this relative employment ratio. As shown in column (1) of Table 4, the estimated coefficient on the interaction term is negative and statistically significant, indicating a reduced inter-regional gap in foreign-to-domestic employment ratio after the reform.

We then separate industries into high- and low-skilled sectors based on industry-level skill intensity data from Belo et al. (2017) and calculate sector-specific foreign-

to-domestic employment ratios for each prefecture.[14] Re-estimating equation (1) with these ratios, columns (2) and (3) reveal distinct patterns: the tax reform significantly reduced the inter-regional gap in foreign-to-domestic employment ratios only in low-skilled sectors, with no significant effect in high-skilled sectors.

To complement our analysis, we examine an alternative indicator of within-prefecture labor reallocation – the ratio of foreign to domestic firm counts (Roberts and Tybout, 1996). We count active foreign-owned and domestic firms in each prefecture based on China's Enterprise Registration Database and compute this relative firm count ratio for each prefecture accordingly. Column (4) shows results for all sectors, while columns (5) and (6) separate high- and low-skilled sectors. The findings align with our employment ratio results: following the tax reform, there was a significant reduction in the inter-regional gap of the foreign-to-domestic firm count ratio, mainly in low-skilled sectors. High-skilled sectors, however, showed little change.

In summary, our findings consistently demonstrate that the tax reform had a differential impact on labor allocation across prefectures. Specifically, regions with higher pre-reform exposure to foreign investment exhibited a more significant shift in employment from foreign-owned to domestically-owned firms. Importantly, this reallocation effect varied by skill level: the low-skilled sector underwent considerable labor redistribution, while the high-skilled sector remained largely unaffected.

[14] Belo et al. (2017) constructed the US industry-level skill intensity data for the US industries over the years from 1988 to 2013, based on the occupation and employee data. The data represents the share of high-skill workers (i.e., workers engaging in occupations that require a substantially high level of training and execute complex tasks) for each industry. We convert the data to the 2-digit Chinese national economic industry classification (version 2011). Using this industry-level skill intensity data from the US as a proxy for China can be justified on several grounds. Firstly, many industries globally use similar technologies and production processes, suggesting comparable skill requirements across countries. Secondly, given that the skill requirements for many industries are determined more by the nature of the work itself rather than the country context, this measure likely reflects the inherent nature of industrial production processes and thus is exogenous to local labor market development in China. Additionally, while absolute skill levels may differ between the US and China, the relative differences in skill intensity across industries are likely similar, which is more of an importance in this study.

4. The Model

Our empirical analyses thus far have demonstrated that the tax reform led to significantly slower real wage growth in areas more exposed to foreign investment, primarily affecting low-skilled workers. To rationalize these findings and illustrate the underlying mechanisms, we develop a spatial general equilibrium model with skill-specific labor mobility.[15]

Conceptually, the tax reform can be viewed as having dual effects: a negative labor demand shock to foreign-owned firms due to increased corporate tax rates, and a positive shock to domestically-owned firms resulting from reduced tax rates. In markets with higher exposure to foreign firms, the downward pressure on wages from the negative shock to foreign firms' labor demand is likely to outweigh the upward pressure from increased domestic firms' labor demand. This imbalance results in slower wage growth in areas more exposed to foreign investment compared to those with low exposure.

Furthermore, the impact of these shocks can vary across worker types depending on their labor supply elasticity. Workers with low labor supply elasticity are likely to experience stronger wage responses to the tax reform, as they are less able to adjust their labor supply to wage changes. On the contrary, workers with highly elastic labor supply may see only trivial wage impacts, as they can more easily adjust their labor supply to changing market conditions. Consequently, the tax reform is expected to produce a greater slowdown in inter-regional relative wage growth for workers with

[15] Appendix A6 presents a simplified partial equilibrium model that illustrates the key mechanisms underlying our reduced-form evidence on the tax reform's wage effects.

low labor supply elasticity than for workers with highly elastic labor supply.

In the following subsections, we will develop a fully specified spatial general equilibrium model to conduct a detailed quantitative analysis of the tax reform's local labor market effects and examine the role of skill-specific labor mobility in shaping these outcomes.

4.1. Environment

Consider an economy with N regions, indexed by $n, i, g \in \{1,2,\dots,N\}$. In each region, there are two types of workers, high-skilled (h) and low-skilled (u). These worker types are denoted as $s \in \{h, u\}$. The measure of s-type workers native to region n is represented by $\bar{L}_{sn}$ and is exogenously given.

The economy also features two types of producers: domestically-owned firms (d) and foreign-owned firms (f). Following Fajgelbaum et al. (2019) and Deng et al. (2023), the aggregate measure of firms, represented by M_o where $o \in \{d, f\}$, is assumed to be exogenous. Each firm specializes in producing a single variety of heterogeneous final goods, indexed by $\omega \in \Omega$.

As in Suárez Serrato and Zidar (2016), this economy is characterized by localized labor markets with imperfect worker mobility across regions and global markets for final goods with free cross-regional flows.

In the economy, the government implements a corporate tax system where firms of ownership type o in region i are subject to a corporate tax rate τ_{oi}. These taxes generate revenue for the government, funding government expenditures.

4.2. Workers

For a worker j with s-type skill who is originally from region n but chooses to work and live in region i, her utility is represented as $U_{sni}\epsilon_{sni}(j)$, where $U_{sni} = B_{si}C_{si}/d_{sni}$ and

$$C_{si} = \left(\int_{\omega\in\Omega} q_{si}(\omega)^{\frac{\sigma-1}{\sigma}} d\omega\right)^{\frac{\sigma}{\sigma-1}}. \quad (3)$$

Here B_{si} represents the amenity of residing in region i for s-type workers. d_{sni} is the migration cost for s-type workers moving from region n to region i. C_{si} is the consumption bundle of a variety of final goods with constant elasticity of substitution (CES). The local labor markets operate under perfect competition, with each worker supplying one unit of labor inelastically. Consequently, an s-type worker in region i earns a wage income of w_{si} and faces a budget constraint of $C_{si} = w_{si}/P$, where P denotes the price index of the consumption bundle.[16]

$\epsilon_{sni}(j)$ represents an idiosyncratic utility shock faced by worker j, which is assumed to follow a multivariate Fréchet distribution with the cumulative distribution function (CDF) given by:

$$\Pr[\epsilon_{sn1}(j) \le \epsilon_1, \ldots, \epsilon_{snN}(j) \le \epsilon_N] = \exp\left(-\sum_{i=1}^{N} \epsilon_i^{-\eta_s}\right), \quad (4)$$

We assume the distribution function is common across workers, conditional on their origin region n and skill type s. The location parameters are normalized to one, while the skill-specific shape parameter η_s governs the dispersion of the idiosyncratic utility shock $\epsilon_{sni}(j)$.

Under these assumptions, the probability of s-type workers moving from region n

[16] Since the core focus of our paper is examining how tax policy affects firm and worker location choices, we simplify our analysis by abstracting from interregional trade costs.

to region i is[17]

$$\lambda_{sni} = \frac{(B_{si}w_{si}/d_{sni})^{\eta_s}}{\sum_{k=1}^{N}(B_{sk}w_{sk}/d_{snk})^{\eta_s}}. \quad (5)$$

As a result, the aggregate migration flow of s-type workers from region n to region i is $\lambda_{sni}\bar{L}_{sn}$. Accordingly, the labor supply function in region i becomes $L_{si} = \sum_{n=1}^{N}\lambda_{sni}\bar{L}_{sn}$, with a labor supply elasticity of $\partial \ln L_{si}/\partial \ln w_{si} = \eta_s$.

4.3. Firms

A firm's decision-making occurs in two sequential stages: location selection followed by production planning. In the first stage, the firm evaluates and chooses an optimal location. In the second stage, it determines its production scale and scope at the selected site.

Consider a firm that has ownership type o, operates in region i, and produces a final good variety ω. Drawing from Suárez Serrato and Zidar (2016) and Gaubert (2018), the firm employs a Cobb-Douglas production function:

$$y_{oi}(\omega) = \varepsilon_{oi}(\omega)A_{oi}\ell_{oi}(\omega)^{\alpha_o}k_{oi}(\omega)^{1-\alpha_o}, \quad (6)$$

where $k_{oi}(\omega)$ is the measure of capital employed by firm ω. Here capital market is assumed to be global and perfectly competitive with a uniform rental rate, r, across regions within the economy. A_{oi} is a productivity shifter common to all firms of ownership type o in region i. $\varepsilon_{oi}(\omega)$ is an idiosyncratic productivity shock, which follows a multivariate Fréchet distribution with the following CDF:

$$\Pr[\varepsilon_{o1}(\omega) \le \varepsilon_1, \ldots, \varepsilon_{oN}(\omega) \le \varepsilon_N] = \exp\left(-\sum_{i=1}^{N}\varepsilon_i^{-\theta_o}\right). \quad (7)$$

Specifically, the above distribution function is assumed to be common across firms

[17] Given that workers are *ex ante* homogenous conditional on their origin region n and skill type s, we can drop the worker identifier j.

conditional on their ownership type o, and the value of $\varepsilon_{oi}(\omega)$ is realized after firm ω selects its location.

$\ell_{oi}(\omega)$ represents the measure of labor (including both low-skilled and high-skill) employed by firm ω. Following Khanna et al. (2025) and Setzler and Tintelnot (2021), we assume that workers of different skill levels are aggregated into a composite CES labor bundle:

$$\ell_{oi}(\omega) = \left[\delta_{uoi}^{\frac{1}{\rho}} \ell_{uoi}(\omega)^{\frac{\rho-1}{\rho}} + \delta_{hoi}^{\frac{1}{\rho}} \ell_{hoi}(\omega)^{\frac{\rho-1}{\rho}}\right]^{\frac{\rho}{\rho-1}}, \tag{8}$$

where $\ell_{uoi}(\omega)$ and $\ell_{hoi}(\omega)$ denote the measures of low-skilled and high-skilled labor employed by firm ω, δ_{soi} is the skill-specific technology, and $\rho > 0$ is the elasticity of substitution between skill levels. The local labor markets are perfectly competitive. Cost minimization by firms yields

$$\ell_{soi}(\omega) = \delta_{soi} \ell_{oi}(\omega) W_{oi}^{\rho} w_{si}^{-\rho}, \tag{9}$$

where w_{si} is the wage rate of skill level s in region i, and $W_{oi} = \left(\delta_{uoi} w_{ui}^{1-\rho} + \delta_{hoi} w_{hi}^{1-\rho}\right)^{\frac{1}{1-\rho}}$ is the CES price index for the labor bundle ℓ_{oi}. The optimal skill-specific labor cost share is denoted by $\xi_{soi} = w_{si}\ell_{soi}(\omega)/W_{oi}\ell_{oi}(\omega) = \delta_{soi}(w_{si}/W_{oi})^{-\rho}$ for each $s \in \{h, u\}$.

In addition, firm ω of ownership type o in region i operates under a demand curve given by $y_{oi}(\omega) = YP^{\sigma-1}p_{oi}(\omega)^{-\sigma}$, where Y is the aggregate expenditure in the economy, P is the price index, and $p_{oi}(\omega)$ is the price of the final goods produced by firm ω.

Given the corporate tax rate τ_{oi}, firms make optimal location and production choices to maximize their after-tax profits. To solve the firm profit maximization

problem, we employ backward induction. First, we analyze the second-stage optimization where firm ω of ownership type o determines optimal input combinations and production level to maximize its profit given its location in region i:[18]

$$\max_{\ell_{oi}(\omega),k_{oi}(\omega)} \pi_{oi}(\omega) = (1-\tau_{oi})[y_{oi}(\omega)p_{oi}(\omega) - W_{oi}\ell_{oi}(\omega)] - rk_{oi}(\omega) \quad (10)$$

From this optimization process, we obtain:

$$\ell_{oi}(\omega) = \left(\frac{\sigma-1}{\sigma}\right)^{\sigma} YP^{\sigma-1}\varepsilon_{oi}(\omega)^{\sigma-1}A_{oi}^{\sigma-1}\left(\frac{\alpha_o}{W_{oi}}\right)^{\alpha_o(\sigma-1)+1}\left(\frac{(1-\alpha_o)(1-\tau_{oi})}{r}\right)^{(1-\alpha_o)(\sigma-1)}, \quad (11)$$

$$k_{oi}(\omega) = \left(\frac{\sigma-1}{\sigma}\right)^{\sigma} YP^{\sigma-1}\varepsilon_{oi}(\omega)^{\sigma-1}A_{oi}^{\sigma-1}\left(\frac{\alpha_o}{W_{oi}}\right)^{\alpha_o(\sigma-1)}\left(\frac{(1-\alpha_o)(1-\tau_{oi})}{r}\right)^{(1-\alpha_o)(\sigma-1)+1}, \quad (12)$$

$$p_{oi}(\omega) = \frac{\sigma}{\sigma-1}\frac{1}{\varepsilon_{oi}(\omega)A_{oi}}\left(\frac{W}{\alpha_o}\right)^{\alpha_o}\left(\frac{r}{(1-\alpha_o)(1-\tau_{oi})}\right)^{1-\alpha_o}, \quad (13)$$

$$\pi_{oi}(\omega) = \left(\frac{\sigma-1}{\sigma}\right)^{\sigma-1}\frac{Y}{\sigma}P^{\sigma-1}\varepsilon_{oi}(\omega)^{\sigma-1}A_{oi}^{\sigma-1}\left(\frac{\alpha_o}{W_{oi}}\right)^{\alpha_o(\sigma-1)}\left(\frac{(1-\alpha_o)(1-\tau_{oi})}{r}\right)^{(1-\alpha_o)(\sigma-1)}(1-\tau_{oi}). \quad (14)$$

The optimal employment of each skill level $\ell_{soi}(\omega)$ is then given by equation (9).

We then move backward to the first stage where firm ω compares the maximum attainable profits across all potential locations and selects the region that yields the highest profit by solving $\max_i\{\pi_{oi}(\omega)\}$. Given that $\varepsilon_{oi}(\omega)^{\sigma-1}$ follows a Fréchet distribution with shape parameter $\theta_o/(\sigma-1)$, the probability that a firm of ownership type o selects region i as its operating location is:

$$\chi_{oi} = \frac{\left[A_{oi}^{\sigma-1}W_{oi}^{-\alpha_o(\sigma-1)}(1-\tau_{oi})^{(1-\alpha_o)(\sigma-1)+1}\right]^{\theta_o/(\sigma-1)}}{\sum_{k=1}^{N}\left[A_{ok}^{\sigma-1}W_{ok}^{-\alpha_o(\sigma-1)}(1-\tau_{ok})^{(1-\alpha_o)(\sigma-1)+1}\right]^{\theta_o/(\sigma-1)}}. \quad (15)$$

Since all firms of a given ownership type o in region i share the same distribution

[18] Following the approach of Suárez Serrato and Zidar (2016), we incorporate the tax treatment of equity returns into our model. Due to the fact that returns to equity holders are not tax-deductible, changes in corporate tax rates can potentially impact firms' capital cost. To account for this nondeducibility of equity returns, we structure our firm profit function in a manner consistent with Suárez Serrato and Zidar (2016).

of idiosyncratic productivity shocks, for simplicity, we can drop the firm identifier ω in our subsequent analysis. The conditional expected value of $\varepsilon_{oi}(\omega)^{\sigma-1}$ is thus given by

$$E[\varepsilon_{oi}^{\sigma-1}|i=\arg\max_{g}\{\pi_{og}\}]=\Gamma\left(1-\frac{\sigma-1}{\theta_o}\right)\left(\frac{1}{\chi_{oi}}\right)^{(\sigma-1)/\theta_o}. \quad (16)$$

Consequently, the demand for s-skill-type labor in region i's local labor market is

$$L_{si}=\sum_{o\in\{d,f\}}L_{soi}=\sum_{o\in\{d,f\}}E[\ell_{soi}|i=\arg\max_{g}\{\pi_{og}\}]\chi_{oi}M_o. \quad (17)$$

For a firm of ownership type o, the *ex-ante* expected profit is

$$E\left[\max_{g}\{\pi_{og}\}\right]=\left(\frac{\sigma-1}{\sigma}\right)^{\sigma-1}\Gamma\left(1-\frac{\sigma-1}{\theta_o}\right)\frac{Y}{\sigma}P^{\sigma-1}\alpha_o^{\alpha_o(\sigma-1)}\left(\frac{1-\alpha_o}{r}\right)^{(1-\alpha_o)(\sigma-1)}\left(\sum_{i=1}^{N}\left[A_{oi}^{\sigma-1}W_{oi}^{-\alpha_o(\sigma-1)}(1-\tau_{oi})^{(1-\alpha_o)(\sigma-1)+1}\right]^{\theta_o/(\sigma-1)}\right)^{(\sigma-1)/\theta_o}. \quad (18)$$

As such, the total profits for firms of ownership type o can be expressed as $\Pi_{oi}=E[\pi_{oi}|i=\arg\max_{g}\{\pi_{og}\}]\chi_{oi}M_o$ at the region level, and $\Pi_o=E[\max_{g}\{\pi_{og}\}]M_o$ at the national level. The aggregate CES price index of final goods can be expressed as:

$$P^{1-\sigma}=\sum_{i=1}^{N}\sum_{o\in\{d,f\}}P_{oi}^{1-\sigma}=\sum_{i=1}^{N}\sum_{o\in\{d,f\}}E[p_{oi}^{1-\sigma}|i=\arg\max_{g}\{\pi_{og}\}]\chi_{oi}M_o. \quad (19)$$

4.4. General Equilibrium

The economy reaches a general equilibrium when all markets, including local labor markets, capital market, and final goods market, clear simultaneously. Specifically, the local labor market clearing condition for s-type labor in region i is given by:

$$L_{si}=\sum_{n=1}^{N}\lambda_{sni}\bar{L}_{sn}=\sum_{o\in\{d,f\}}L_{soi}. \quad (20)$$

Let K be the aggregate capital endowment in the economy, the capital market clearing condition requires:

$$K=\sum_{i=1}^{N}\sum_{o\in\{d,f\}}K_{oi}=\sum_{i=1}^{N}\sum_{o\in\{d,f\}}E[k_{oi}|i=\arg\max_{g}\{\pi_{og}\}]\chi_{oi}M_o. \quad (21)$$

The market for final goods market must clear:

$$Y = \sum_{i=1}^{N} \sum_{s\in\{u,h\}} w_{si} L_{si} + rK + \sum_{o\in\{d,f\}} \Pi_o + G, \tag{22}$$

where G represents total government expenditure in the economy.

Let t_{oi} be the corporate tax paid by a firm of ownership type o in region i, conditional on its productivity shock $\varepsilon_{oi}^{\sigma-1}$:

$$t_{oi} = \left(1 - \frac{\sigma-1}{\sigma}\alpha_o\right)\left(\frac{\sigma-1}{\sigma}\right)^{\sigma-1} Y P^{\sigma-1} \varepsilon_{oi}(\omega)^{\sigma-1} A_{oi}^{\sigma-1} \left(\frac{\alpha_o}{W_{oi}}\right)^{\alpha_o(\sigma-1)} \left(\frac{(1-\alpha_o)(1-\tau_{oi})}{r}\right)^{(1-\alpha_o)(\sigma-1)} \tau_{oi}. \tag{23}$$

Total government tax revenue is thus given by $T = \sum_{i=1}^{N} \sum_{o\in\{d,f\}} T_{oi}$, where $T_{oi} = E[t_{oi} | i = \arg\max_g \{\pi_{og}\}]\chi_{oi} M_o$. We assume that the government has a balanced budget: $G = T$.

The equilibrium wages for skill type s (w_{si}), the equilibrium rental rate (r), and the equilibrium aggregate expenditure (Y) must satisfy the three market-clearing conditions in equations (20), (21), and (22), for given values of corporate tax rates (τ_{oi}) and the measure of firms (M_o). This represents a system of $(2N + 2)$ equations in $(2N + 2)$ unknowns.

4.5. Comparative Statics

We employ the exact-hat algebra methodology developed by Dekle et al. (2008) to reformulate the equilibrium conditions in terms of relative changes and derive the corresponding quantitative results. We denote the post-shock value of variable x as x' and define the relative change operator as $\hat{x} = x'/x$. The equilibrium system can be solved for the vector of relative changes $\{\hat{w}_{si}, \hat{r}, \hat{Y}\}$ given model parameters $\{\eta_s, \alpha_o, \rho, \bar{L}_{sn}, \sigma, \theta_o, \tau_{oi}\}$, observables from the initial equilibrium

$\{\lambda_{sni}, L_{soi}, \chi_{oi}, Y, rK_{oi}, \Pi_o, w_{si}, \xi_{soi}, T_{oi}, P_{oi}\}$, and exogenous shocks $\{\hat{\tau}_{oi}, \widehat{M}_o, \hat{d}_{sni}\}$:

$$\sum_{n=1}^{N} w_{si}\lambda_{sni}\bar{L}_{sn}\widehat{w}_{si}\hat{\lambda}_{sni} = \sum_{o\in\{d,f\}} w_{si}L_{soi}\widehat{w}_{si}\hat{L}_{soi}, \tag{24}$$

$$\hat{r}rK = \sum_{i=1}^{N}\sum_{o\in\{d,f\}} \hat{r}\hat{K}_{oi}rK_{oi}, \tag{25}$$

$$\hat{Y}Y = \sum_{i=1}^{N}\sum_{s\in\{u,h\}} \widehat{w}_{si}\hat{L}_{si}w_{si}L_{si} + \hat{r}rK + \sum_{o\in\{d,f\}} \widehat{\Pi}_o\Pi_o + \sum_{i=1}^{N}\sum_{o\in\{d,f\}} \hat{T}_{oi}T_{oi}, \tag{26}$$

where

$$\hat{\lambda}_{sni} = \frac{(\widehat{w}_{si}/\hat{d}_{sni})^{\eta_s}}{\sum_{k=1}^{N}\lambda_{snk}(\widehat{w}_{si}/\hat{d}_{sni})^{\eta_s}}, \tag{27}$$

$$\hat{L}_{soi} = E[\ell_{o\iota}|\iota = \widehat{\arg\max_g}\{\pi_{og}\}]\widehat{W}_{oi}^{\rho}\widehat{w}_{si}^{-\rho}\hat{\chi}_{oi}\widehat{M}_o, \tag{28}$$

$$E[\ell_{o\iota}|\iota = \widehat{\arg\max_g}\{\pi_{og}\}] = \hat{Y}\hat{P}^{\sigma-1}\hat{\chi}_{oi}^{-\frac{\sigma-1}{\theta_o}}\widehat{W}_{oi}^{-\alpha_o(\sigma-1)-1}\left(\frac{\widehat{(1-\tau_{o\iota})}}{\hat{r}}\right)^{(1-\alpha_o)(\sigma-1)}, \tag{29}$$

$$\widehat{W}_{oi} = \left(\xi_{uoi}\widehat{w}_{ui}^{1-\rho} + \xi_{hoi}\widehat{w}_{hi}^{1-\rho}\right)^{\frac{1}{1-\rho}}, \tag{30}$$

$$\hat{\chi}_{oi} = \frac{\left[\widehat{W}_{oi}^{-\alpha_o(\sigma-1)}\widehat{(1-\tau_{o\iota})}^{(1-\alpha_o)(\sigma-1)+1}\right]^{\theta_o/(\sigma-1)}}{\sum_{k=1}^{N}\chi_{ok}\left[\widehat{W}_{ok}^{-\alpha_o(\sigma-1)}\widehat{(1-\tau_{ok})}^{(1-\alpha_o)(\sigma-1)+1}\right]^{\theta_o/(\sigma-1)}}, \tag{31}$$

$$\widehat{K}_{oi} = \hat{Y}\hat{P}^{\sigma-1}\widehat{W}_{oi}^{-\alpha_o(\sigma-1)}\left(\frac{\widehat{(1-\tau_{o\iota})}}{\hat{r}}\right)^{(1-\alpha_o)(\sigma-1)+1}\hat{\chi}_{oi}^{1-\frac{\sigma-1}{\theta_o}}\widehat{M}_o, \tag{32}$$

$$\widehat{\Pi}_o = \hat{Y}\hat{P}^{\sigma-1}\hat{r}^{-(1-\alpha_o)(\sigma-1)}\left(\sum_{i=1}^{N}\chi_{oi}\left[\widehat{W}_{oi}^{-\alpha_o(\sigma-1)}\widehat{(1-\tau_{o\iota})}^{(1-\alpha_o)(\sigma-1)+1}\right]^{\theta_o/(\sigma-1)}\right)^{\frac{\sigma-1}{\theta_o}}\widehat{M}_o, \tag{33}$$

$$\hat{T}_{oi} = \hat{Y}\hat{P}^{\sigma-1}\widehat{W}_{oi}^{-\alpha_o(\sigma-1)}\left(\frac{\widehat{(1-\tau_{o\iota})}}{\hat{r}}\right)^{(1-\alpha_o)(\sigma-1)}\hat{\tau}_{oi}\hat{\chi}_{oi}^{1-\frac{\sigma-1}{\theta_o}}\widehat{M}_o. \tag{34}$$

$$\hat{P}^{1-\sigma}P^{1-\sigma} = \sum_{i=1}^{N}\sum_{o\in\{d,f\}}\hat{P}_{oi}^{1-\sigma}P_{oi}^{1-\sigma}, \tag{35}$$

$$\hat{P}_{oi}^{1-\sigma} = \widehat{W}_{oi}^{-\alpha_o(\sigma-1)}\left(\frac{\widehat{(1-\tau_{o\iota})}}{\hat{r}}\right)^{(1-\alpha_o)(\sigma-1)}\hat{\chi}_{oi}^{1-\frac{\sigma-1}{\theta_o}}\widehat{M}_o. \tag{36}$$

4.6. Calibration

We calibrate our model to the pre-reform equilibrium using two primary datasets. The first dataset is China's 2005 mini-Census. This dataset provides individual-level information on place of origin, current residence, education attainment, and wages. We define high-skilled labor as workers with a four-year university degree or above. From this data, we compute at the prefecture level and for each skill type: native labor

endowment ($\bar{L}_{sn}$), bilateral migration share (λ_{sni}), local labor size (L_{si}), and average wage (w_{si}). The second dataset is the 2004 AIES. This dataset contains detailed firm-level information on location, ownership structure, and labor skill composition. We use this data to calculate the prefecture-level domestic labor share and foreign labor share for each skill type. By combining the labor shares from the AIES with the local labor size from the mini-Census, we derive the prefecture-level employment measures (L_{soi}) for each skill type and ownership category.

4.6.1. Independently Calibrated Parameters

We beginning by calibrating the aggregate labor measure for the entire economy using data from the 2005 mini-Census. Specifically, we calculate the aggregate labor measure by summing the prefecture-level skill-specific native labor endowment across all prefectures and skill types: $\sum_{i=1}^{N}\sum_{s\in\{u,h\}}\bar{L}_{sn}$. This aggregate labor measure is then normalized to one.

Next, we calibrate the elasticity of substitution for the final goods bundle (σ) based on average markups observed in Chinese manufacturing firms. Lu and Yu (2015) estimate that manufacturing firms in the 2004 AIES data have an average markup of approximately 1.18, with a median markup of about 1.16. In our model, the markup is equal to $\sigma/(\sigma-1)$. To align with the empirical estimate of a 1.18 average markup in Lu and Yu (2015), we set the value of the elasticity of substitution (σ) to 6.6 in our quantitative model.

We calibrate the parameters in the production function based on input cost shares for each ownership type from the AIES data. We first compute the labor share as $\alpha_o =$

$\frac{\sigma}{\sigma-1}\frac{\text{wage bill}_o}{\text{value added}_o}$, and then determine the cost shares ξ_{soi} based on prefecture-level skill-specific wage payments: $\frac{\xi_{uoi}}{\xi_{hoi}} = \frac{w_{ui}L_{uoi}}{w_{hi}L_{hoi}}$. The elasticity of substitution between low-skilled and high-skilled labor (ρ) is set to 1.3, according to the estimate of Khanna et al. (2025) based on the Chinese census data.[19]

Leveraging equations (11) to (14) and (23), we establish proportional relations between wage payment ($\sum_{s\in\{u,h\}} w_{si}L_{soi}$) and other key economic variables at the prefecture-ownership level: capital expenditure (rK_{oi}), profit (Π_{oi}), and tax payment (T_{oi}).[20] These relationships, combined with the observed wage payment as well as our calibrated parameters $\{\alpha_o, \sigma, \tau_{oi}\}$, allow us to compute the values of these variables. Here the corporate tax rate (τ_{oi}) is set to its pre-reform level: 15% for foreign firms and 33% for domestic firms.

The pre-reform aggregate expenditure (Y) is calculated by summing wage payments, capital expenditure, profits, and tax payments across all prefectures and ownership types. Given the aggregate expenditure, we can solve for the price index of final goods produced by o-type firms in prefecture i relative to the aggregate price index as follows:

$$\frac{P_{oi}^{1-\sigma}}{P^{1-\sigma}} = \frac{\sum_{s\in\{u,h\}} w_{si}L_{soi}}{\alpha_o}\frac{\sigma}{\sigma-1}\frac{1}{Y}. \tag{37}$$

Finally, we derive the probability of firm location decisions. From equations (14) to (16), we solve for the probability of an o-type firm operating in prefecture i:

[19] This value falls within the commonly accepted range of 1 to 2 in the existing literature (Autor et al., 1998; Katz and Murphy, 1992; Caselli and Coleman, 2006).

[20] Specifically, $rK_{oi} = \frac{1-\alpha_o}{\alpha_o}(1-\tau_{oi})\sum_{s\in\{u,h\}} w_{si}L_{soi}$, $\Pi_{oi} = \frac{1-\tau_{oi}}{\sigma-1}\frac{\sum_{s\in\{u,h\}} w_{si}L_{soi}}{\alpha_o}$, and $T_{oi} = \left(\frac{\sigma}{\sigma-1} - \alpha_o\right)\tau_{oi}\frac{\sum_{s\in\{u,h\}} w_{si}L_{soi}}{\alpha_o}$.

$$\chi_{oi} = \frac{\Pi_{oi}^{\frac{\theta_o}{\sigma-1}} \chi_{oi}^{1-\frac{\theta_o}{\sigma-1}}}{\sum_{k=1}^{N} \Pi_{ok}^{\frac{\theta_o}{\sigma-1}} \chi_{ok}^{1-\frac{\theta_o}{\sigma-1}}}. \quad (38)$$

In the pre-reform equilibrium, given the observed profit (Π_{oi}), this location decision probability simplifies to the ratio of the firms' profit in a given prefecture to the sum of its profits across all prefectures: $\chi_{oi} = \Pi_{oi} / \sum_{k=1}^{N} \Pi_{ok}$.

4.6.2. Parameters Calibrated with Model-Predicted Moments

Productivity dispersion. Given the value of the elasticity of substitution for the final goods bundle (σ), the shape parameter of idiosyncratic productivity shocks (θ_o) plays a crucial role in determining the elasticities of firm location choices, as illustrated in equation (22).

Following Deng et al. (2023), we calibrate θ_o using the elasticity of prefecture-level total firm revenues to corporate tax rates. In our model, the total revenue of o-type firms in prefecture i can be expressed as $X_{oi} = E[y_{oi} p_{oi} | i = \arg\max_g \{\pi_{og}\}] \chi_{oi} M_o$, where

$$y_{oi} p_{oi} = \left(\frac{\sigma-1}{\sigma}\right)^{\sigma-1} Y P^{\sigma-1} \varepsilon_{oi}^{\sigma-1} A_{oi}^{\sigma-1} \left(\frac{\alpha_o}{W_{oi}}\right)^{\alpha_o(\sigma-1)} \left(\frac{(1-\alpha_o)(1-\tau_{oi})}{r}\right)^{(1-\alpha_o)(\sigma-1)}. \quad (39)$$

Substituting equations (15) and (16) into X_{oi} yields the elasticity of X_{oi} with respect to $(1-\tau_{oi})$ as: $(1-\alpha_o)\theta_o + \frac{\theta_o}{\sigma-1} - 1$. To solve for the value of θ_o, we set this elasticity expression to 12.37 to match its empirical estimate in Deng et al. (2025).

Migration elasticity. We calibrate η_s by ensuring the model-predicted wage changes induced by the tax reform are consistent with our empirical estimates in Section 3.2. To provide intuition for the validity of this identification strategy, we log-linearize the local labor market equilibrium condition (equation 20) and derive the resulting changes to a first-order approximation as follows:

$$(\eta_s + \rho)d\ln w_{si} + \sum_{n=1}^{N} \frac{\lambda_{sni}\bar{L}_{sn}}{L_{si}} \mu_{sn} = \sum_{o\in\{d,f\}} \frac{L_{soi}}{L_{si}} \Big[(\rho - \alpha_o\theta_o)d\ln W_{oi} + \Big((1-\alpha_o)\theta_o + \frac{\theta_o}{\sigma-1} - 1\Big) d\ln(1-\tau_{oi}) + \mu_o\Big], \quad (40)$$

where μ_{sn} and μ_o are skill-prefecture fixed effects and ownership fixed effects. As evident from equation (40), η_s governs the magnitude of local wage responses to tax rate shocks. Given skill type s, a larger value of η_s is associated with a smaller magnitude of log wage changes and, consequently, reduced dispersion of log wage changes across prefectures with different pre-reform foreign exposures.

Given a guess value of η_s, we can simulate the wage responses to the tax reform in the quantitative model. We then define the model-predicted log wage change for skill type s as $\ln\widehat{w}_{si}$ and regress it on our prefecture-level foreign exposure indicator $(ForExposure_i)$, separately for high-skilled and low-skilled labor. The estimated coefficients on the foreign exposure indicator ($\hat{\beta}_u$ and $\hat{\beta}_h$) reflect the cross-prefecture difference in log wage change (from before to after the tax reform) associated with different initial exposures to foreign investment across prefectures for high-skilled and low-skilled labor, respectively. Both coefficient estimates are expected to be negative.

To calibrate our model, we match the two coefficients $(\hat{\beta}_u, \hat{\beta}_h)$ to our reduced-form estimates in columns (2) and (3) of Table 3, which is $(-0.061, -0.038)$. By matching the targeted moments, we obtain $\eta_u = 1.3$ and $\eta_h = 5.6$. This result suggests that high-skilled workers have greater spatial mobility than low-skilled workers, consistent with findings from recent studies (e.g., Diamond, 2016; Fan, 2019; Cucu, 2025; Khanna et al., 2025).[21] Table 5 summarizes our calibrated parameter values.

[21] Our calibrated migration elasticities are largely comparable with those reported in the literature. Assuming identical preference dispersion across all workers, estimates of migration elasticity from the US data show

4.7. Validation

In this subsection, we evaluate the validity of our calibrated model through two sets of exercises. First, we assess the model's ability to reproduce observed wage change patterns in responses to the tax reform. Specifically, we compute two equilibrium scenarios using this model: one with the pre-reform corporate tax rates and another with post-reform rates. For each equilibrium, we calculate the real wage for each prefecture-skill cell (w_{si}/P) and the average real wage for each prefecture ($\overline{w}_i/P = \left(\sum_{s\in\{u,h\}} L_{si} w_{si}\,/P\right)/\left(\sum_{s\in\{u,h\}} L_{si}\right)$).

Panel A of Figure 4 plots the model-predicted change in log average real wage ($\ln(\overline{w}_i/P)$) between the pre- and post-equilibria for each prefecture against its initial foreign labor share. A clear negative association emerges between the two variables, consistent with the qualitative pattern observed in the data, shown in panel B of Figure 1 and column (1) of Table 1. In panel B of Figure 4, we further present the relationship between the prefecture-level initial foreign labor share and the model-predicted changes in log real wage for low- and high-skilled workers ($\ln(w_{ui}/P)$ and $\ln(w_{hi}/P)$), respectively. There is a negative relationship between wage changes and initial foreign labor share for both types of workers. Notably, the wage response of low-skilled

considerable variation. Suárez Serrato and Zidar (2016) report elasticities between one and two, while Monte et al. (2018) find a value of 3.3. At the higher end, Allen and Donaldson (2022) and Farrokhi and Jinkins (2019) report relatively large estimates of 11.7 and 13.8, respectively. Outside the U.S., Morten & Oliveira (2024) find a migration elasticity of 4.5 using Brazilian data, while Tombe and Zhu (2019) estimate a value of 1.5 for the entire labor force in China. Bryan and Morten (2019) estimate the migration elasticity to be 27.6 for the U.S. and 12.5 for Indonesia. When allowing for heterogeneity in migration elasticity across difference skill levels, the estimates of migration elasticity also vary. In the U.S., Diamond (2016) finds that the migration elasticity is about 3.26 for noncollege workers and 4.98 for college workers, with even greater differences for immigrants (1.68 for noncollege and 7.05 for college). Cucu (2025) estimates that, in the U.S., skilled workers have a migration elasticity of 4.8, while low-skilled workers have a value of 3.3. In the case of China, Fan (2019) reports a migration elasticity of 3.1 for low-skilled workers and an elasticity of 4.3 for high-skilled workers, while Khanna et al. (2025) estimate these elasticities to be 1.01 for low-skilled workers and 1.30 for high-skilled workers, respectively.

workers to the tax reform is much more pronounced than that of high-skilled workers. These patterns align well with the heterogeneous wage effects of the tax reform we documented in Table 3.

Second, we further evaluate our model's performance by examining its ability to replicate observed labor allocation patterns. Importantly, the responses of labor allocation between foreign and domestic firms within local labor markets to the tax reform were not targeted in our calibration exercise. For each prefecture, we calculate two key ratios for the pre-reform and post-reform equilibria: (1) the foreign-to-domestic employment ratio ($\sum_{s\in\{u,h\}} L_{sfi}/\sum_{s\in\{u,h\}} L_{sdi}$) and (2) the foreign-to-domestic firm number ratio (χ_{fi}/χ_{di}, rescaled by M_d/M_f). We then analyze the changes in these ratios from pre-reform to post-reform equilibria, plotting them against the prefecture-level initial foreign labor share. Figure 5 illustrates these relationships, revealing that changes in both foreign-to-domestic ratios are negatively correlated with initial foreign labor shares. This finding aligns well with the empirical patterns demonstrated in Table 4, providing additional support for our model's validity.

Overall, the above validation exercises demonstrate that our calibrated model successfully reproduces key empirical findings, confirming its accuracy and relevance. This strong alignment between model predictions and observed data bolsters our confidence in the model's capabilities.

5. Quantitative Results

Having established the validity of our quantitative model, we now employ this

structural framework to examine the distributional effects of the corporate tax reform within a general equilibrium context. To maintain consistency with our empirical analysis in Section 3, our quantitative analysis focuses on the changes in average real wage resulting from the tax reform in prefectures located in China's non-western regions.[22] Specifically, we utilize this model to offer new insights into the distributional impacts of the FDI-related tax incentives.

5.1. Baseline Results

Column (1) of Table 6 presents the baseline results of the tax reform's wage effects from our quantitative model. As shown in panel A, the tax reform reduces the average real wage by 0.29% for all workers.

In panel B, we group prefectures into high-foreign-exposure and low-foreign-exposure ones based on our high-foreign-exposure indicator. The results reveal substantial cross-prefecture variations in wage responses to the tax reform: the low-exposure prefectures witness an average real wage increase of 5.31%, while the high-exposure ones experience a decline in average real wage of 2.67%. This observed divergence in wage responses led to a reduction in between-prefecture wage gap after the tax reform, consistent with our reduced-form evidence of the tax reform's wage effect shown in column (1) of Table 1. These findings are intuitive, as the tax reform increased corporate tax rates for foreign-owned firms and reduced them for domestically-owned firms. Consequently, high-exposure prefectures generally faced a

[22] For workers with s-type skills in prefecture i, their real wages are denoted as w_{si}/P. For both pre-reform and post-reform equilibria, we compute average real wage for each stratified labor group by dividing the group's total real wage payments by its total employment size.

tax increase, while low-exposure ones experienced a tax reduction.

Panel C presents the real wage changes for low-skilled and high-skilled workers following the tax reform. Both worker types experience a real wage decline, but high-skilled workers suffer a significantly larger decrease (1.10%) compared to low-skilled workers (0.08%). This differential wage change can be attributed to two primary factors. One is related to the geographical distribution of workers in China. Low-skilled workers are more concentrated in inland regions where exposure to foreign investment is lower. Due to the nature of the tax reform, these inland regions benefit disproportionately from the tax cut for domestically-owned firms, resulting in larger gains (or smaller losses) for low-skilled workers. The other concerns the skill intensity difference between firm ownership types. Domestically-owned firms, which received a tax cut, typically have lower skill intensity compared to foreign-owned firms that faced a tax rate hike. This structural difference is well documented in the literature (e.g., Setzler and Tintelnot, 2021) and also predicted by our model, where the average value of relative skill intensity between foreign and domestic firms ($\frac{\xi_{hfi}/\xi_{ufi}}{\xi_{hdi}/\xi_{udi}}$) across prefectures is 1.1. As a result of this skill intensity difference, the benefits from the tax cut for domestic firms are concentrated among low-skilled workers, while high-skilled workers are more likely to be affected by the tax rate increase imposed on foreign-owned firms.

Panel D further explores the heterogeneity in wage responses to the tax reform across different skill-region subgroups. Following the tax reform, high-skilled workers experience a real wage decline of 1.74% in prefectures with high foreign exposure, while seeing a real wage increase of 3.92% in prefectures with low foreign exposure.

Low-skilled workers' real wages turn out to be more responsive to the tax reform, showing a sharper decline of 2.82% in high-exposure prefectures and a greater increase of 5.38% in low-exposure prefectures.

Panel E examines the reform-induced changes in the inter-regional real wage gap for each skill type. We calculate this by subtracting the wage change in low-exposure regions from that in high-exposure regions. The results show negative values for both skill types, indicating a reduction in cross-region wage inequality for both high-skilled and low-skilled workers.[23] It is worth mentioning that the magnitude of the inter-regional wage gap change is substantially larger for low-skilled workers (8.21%) than for high-skilled workers (5.66%). This result suggests that low-skilled workers experience a more pronounced inter-regional relative wage growth slowdown than their high-skilled counterparts, aligning with our reduced-form empirical results on heterogeneous wage effects of the tax reform, as reported in Section 3.2.

The differential responsiveness of wages to the tax reform across skill levels also has important implications for the skill wage premium within each prefecture. Prior to the tax reform, high-skilled workers generally earned higher wages than low-skilled workers within the same prefecture. However, the greater responsiveness of low-skilled wages to the tax reform leads to divergent effects on the skill wage premium: an increase in high-exposure regions and a decrease in low-exposure regions. Consequently, this results in a widened inter-regional disparity in skill wage premium,

[23] In the pre-reform equilibrium, both high-skilled and low-skilled worker earned higher wages in high-exposure regions than in low-exposure regions. The average wages of high-skilled workers in high- and low-exposure regions are 2.24 and 1.15, respectively. The low-skilled average wage in high- and low-exposure regions are 0.77 and 0.46, respectively.

as evidenced in the last row of panel E.

5.2. The Role of Skill-Specific Migration Elasticity

To further explore how skill-specific labor supply elasticity shapes the trade reform's wage effects, we conduct a quantitative assessment using our spatial general equilibrium model. In the model, the skill-specific labor supply elasticity is micro-founded by the skill-specific migration elasticity (η_s). As such, we consider two counterfactual scenarios: one with *equally low* migration elasticities for all workers, and another with *equally high* migration elasticities for all workers, and compare each of the two counterfactual scenarios with the baseline scenario.[24]

Equally Low Migration Elasticity. We reduce high-skilled workers' migration elasticity (η_h) from 5.6 to 1.3, matching the low mobility level of low-skilled workers. Column (2) of Table 6 reports the results from this exercise. The tax reform leads to a decline in average real wage nationwide, with high-exposure regions experiencing a wage decline and low-exposure regions seeing a wage increase. Compared to low-skilled workers, high-skilled workers now witness a greater wage growth slowdown. These patterns presented in panels A to C are similar to those observed in the baseline scenario.

Under the assumption of *equally low* migration elasticities, however, we find that, compared to the baseline scenario, the wage responses of high-skilled workers are amplified in both high-exposure and low-exposure regions. As shown in panel D, high-skilled workers now face a 2.34% real wage decline in high-exposure regions (larger than the 1.74% decrease in the baseline scenario) and a 4.82% real wage increase in

[24] In Appendix A7, we provide a formal proof to demonstrate that the patterns observed in each counterfactual scenario align with the predictions derived from the partial equilibrium model outlined in Appendix A6.

low-exposure regions (greater than the 3.92% rise in the baseline scenario). Consequently, the inter-regional gap of high-skilled wages decreases further from -5.66% in the baseline scenario to -7.16% in this low mobility case.

For low-skilled workers, their wage responses to the tax reform are influenced by the reduced migration elasticity of high-skilled workers, even though their own migration elasticity remains constant. This interaction leads to slightly attenuated wage responses for low-skilled workers in both regions. Specifically, we observe a 2.73% real wage decline in high-exposure regions and a 5.26% wage increase in low-exposure regions. As a result of these adjusted wage responses, the reduction in the inter-regional low-skilled wage gap is smaller compared to the baseline scenario.

The reduced mobility of high-skilled workers also has a notable impact on inter-regional disparity in skill wage premium. In high-exposure regions, the wage declines are more comparable between high- and low-skilled workers. Meanwhile, in low-exposure regions, the gap in wage gains between the two skill groups is also smaller. As a consequence, the low mobility scenario results in only a small increase (0.83%) in the inter-regional disparity of skill wage premium. This stands in stark contrast to the baseline scenario, where the inter-regional skill wage premium disparity shows a more substantial increase of 2.55%.

Equally High Migration Elasticity. We increase the migration elasticity of low-skilled workers (η_u) from 1.3 to 5.6, matching the high mobility level of high-skilled workers. Column (3) of Table 6 presents the quantitative results from this "equally high mobility" scenario. Comparing this to the baseline scenario, we continue to observe similar

patterns of wage responses to the tax reform at the national level, between skill types, and across regions, as shown in panels A to C.

However, the wage responses across skill-region groups (shown in panels D and E) now differ markedly from those observed in the baseline scenario. Under the assumption of equally high migration elasticities, high-skilled workers now face a sharper wage decline in high-exposure regions and a greater wage increase in low-exposure regions after the tax reform, which leads to a more sizable decline in the inter-regional wage gap for high-skilled workers. Meanwhile, compared to the baseline scenario, the increased mobility of low-skilled workers allows them to suffer a smaller wage decline in high-exposure regions and achieve similar-sized wage gains in low-exposure regions, generating a smaller reduction in the inter-regional wage gap for low-skilled workers.[25]

Notably, in the high-mobility case, high-skilled wages now decline more substantially than low-skilled wages within high-exposure regions, but increase by less than low-skilled wages within low-exposure regions. As a result, the skill wage premium decreases in both high- and low-exposure regions. Now that the changes in the skill premium are comparable across regions in this high-mobility case, the inter-regional disparity of skill wage premium changes little, in contrast to the baseline

[25] To further validate our findings on the inter-regional wage change disparities, for each skill type, we also present binned scatter plots for the relationship between model-predicted log real wage responses to the tax reform and observed initial foreign labor shares in prefectures in Appendix Figure A8. We also include linear fits for these relationships. In the equal migration elasticity scenarios, the linear fits for low-skilled workers show flatter slopes compared to the baseline scenario. This indicates smaller regional differences in low-skilled wage responses when migration elasticities are equalized. By contrast, the linear fits for high-skilled workers exhibit steeper slopes than in the baseline scenario, suggesting larger inter-regional differences in high-skilled wage changes in the counterfactual scenarios. These visual representations corroborate our earlier findings, highlighting the role of skill-specific migration elasticity in shaping wage responses across skill levels and regions.

scenario where the inter-regional gap of skill wage premium increases significantly.

Overall, our counterfactual scenarios with *identical* migration elasticities for all workers yield an important insight: regardless of the specific level of migration elasticity assumed, both skill types experience similar-sized reduction in the inter-regional wage gap after the tax reform. However, this contrasts with our empirical observation that low-skilled workers are disproportionately affected by the tax reform. The discrepancy between the counterfactual results and empirical evidence underscores the importance of accounting for skill-specific migration elasticity in explaining the observed heterogeneous wage responses across skill levels.

5.3. Robustness

In this subsection, we conduct three additional counterfactual analyses to check the robustness of our main results to different model assumptions.

Firm location choices. To assess whether our findings are sensitive to firms' endogenous location choices, we shut down this channel and evaluate wage responses to the tax reform in such an environment.[26] In our baseline scenario, the elasticity of firm location choices is governed by the shape parameter of idiosyncratic productivity shock (θ_o), which is calibrated to the model-predicted moment. By shutting down firm location choices, the calibration of θ_o is no longer required. As such, this counterfactual analysis also serves as a robustness check against the calibrated value of θ_o.

Tax shocks of different nature. In the baseline scenario, the tax reform under study

[26] To eliminate firms' endogenous location choice, we remove idiosyncratic productivity shocks to firms, ensuring that firms with the same ownership type within a specific region have identical productivity levels. By doing this, we assume no endogenous firm entry or exit occurs, keeping the number of firms in each region constant.

involves a simultaneous increase in corporate tax rate for foreign-owned firms and a decrease in corporate tax rate for domestically-owned firms. To better isolate the effects of these changes, we conduct two counterfactual analyses by imposing foreign tax hike and domestic tax cut separately.

Columns (4) to (6) of Table 6 summarize the results from the above sensitivity analyses. Despite the variations in model assumptions, our main findings regarding the wage effects of the tax reform remain robust: (i) workers in high-exposure regions experience a real wage decline, while those in low-exposure regions see a real wage increase; (ii) high-skilled workers on average suffer a considerably larger real wage decline than low-skilled workers; (iii) the inter-regional wage gap shrinks more for low-skilled workers than for high-skilled workers; (iv) the inter-regional disparity of the skill wage premium rises after the reform.

5.4. Reduction of Migration Costs

In the model, workers of different skill types face varying levels of migration costs when moving from one place to another. To enhance our understanding of the interaction between migration policy and the tax reform, we consider a hypothetical scenario in which there is a significant reduction in migration costs, such as the abolishment of the Hukou system in China. Specifically, we follow Tombe and Zhu (2019) to assign a uniform reduction of migration costs, $\hat{d}_{sni} = 0.22$, for all worker types and across all prefectures $n \neq i$.

Column (1) of Table 7 reports the counterfactual results obtained by eliminating tax policy effects while allowing migration costs to decline. Overall, reducing migration

costs results in an increase in average real wage at the aggregate level. However, regions with high exposure experience a substantial wage decline, while regions with low exposure see a slight wage increase. When analyzing the impact by skill levels, this migration policy change significantly benefits high-skilled workers by increasing their wages, while slightly harming low-skilled workers through a minor wage decline.

Further dividing workers into skill-region subgroups reveals that high-skilled workers experience significant wage gains in both regions, with much larger increases in low-exposure areas compared to high-exposure ones. By contrast, low-skilled workers face wage declines in both regions, with a more pronounced decrease in high-exposure areas. These trends result in a reduction of the inter-regional wage gap for both skill types, with a more pronounced effect for high-skilled workers. Additionally, although the skill wage premium increases in both high- and low-exposure regions, the rise is more substantial in low-exposure regions, leading to a decrease in the inter-regional disparity of skill wage premium.

Next, we analyze a counterfactual scenario where the economy undergoes both the reduction of migration costs and the tax reform concurrently. Column (2) of Table 7 presents the estimated combined effects of these dual policy changes. Overall, the wage responses exhibit patterns similar to those observed when only the migration cost reduction policy is implemented. However, a notable difference emerges: low-exposure regions experience a significantly larger real wage increase, primarily driven by low-skilled workers there.

To assess the effects of the tax reform conditional on the implementation of the

migration policy, we subtract the estimated effects in column (1) from their counterparts in column (2) and present the results in column (3) of Table 7. When the migration cost reduction policy is enacted simultaneously, the wage impacts of the tax reform generally become more favorable for workers across different regions and skill types, compared to the baseline scenario. At the aggregate level and across skill types, average real wages now increase in response to the tax reform, contrasting with the wage declines observed in the baseline scenario. Across regions, the real wage decline in high-exposure regions is now substantially smaller, and the wage increase in low-exposure regions is greater.

Furthermore, when examining the tax reform's wage effects across skill-region subgroups, we notice that when the migration cost reduction policy is in place, the tax reform would produce a smaller decrease in the inter-regional real wage gap for both skill types compared to the baseline scenario. This is expected, as lower migration costs increase labor mobility for both skill groups, leading to more balanced wage adjustments across regions.

Finally, implementing the migration cost reduction policy also affects the inter-regional disparity in skill wage premium. In high-exposure regions, high-skilled workers now experience a slight increase in their real wages, while low-skilled workers see a decline, leading to a rise in the skill wage premium there. By contrast, in low-exposure regions, high-skilled workers witness a smaller wage increase than low-skilled worker, which reduces the skill wage premium. As a result, the inter-regional disparity in skill wage premium increases significantly – by 4.45% – compared to a

2.55% increase in the baseline scenario.

6. Conclusions

This study evaluates the local labor market effects of preferential tax policies designed to attract FDI in developing countries, using China's corporate tax unification reform as a natural experiment.

Our reduced-form empirical analysis, utilizing both prefecture-level and individual-level data, reveals that the tax reform led to a more significant slowdown of real wage growth in prefectures with high initial foreign exposure than those with low initial foreign exposure. This contributed to a reduction in the inter-regional real wage gap. Notably, this reduction is more pronounced among low-skilled workers than high-skilled workers, resulting in an increased skill wage premium in high-exposure regions relative to low-exposure regions. Complementary evidence from China's prefecture-level employment and firm registration data indicates labor reallocation from foreign-invested to domestic firms, primarily affecting low-skilled sectors.

Our spatial general equilibrium model, calibrated with detailed micro-level data, corroborates these empirical findings and illustrates underlying mechanisms. The model highlights the greater migration elasticity of high-skilled workers than that of low-skilled workers. In localized labor markets, due to limited mobility of low-skilled workers, their wages are more responsive to the tax reform than high-skilled wages, which causes the inter-regional wage gap to diminish more for low-skilled workers. Furthermore, the tax reform's impact on skill wage premiums varies across regions,

with high-exposure regions experiencing an increase and low-exposure areas seeing a reduction.

Our counterfactual simulations further underscore the importance of skill-specific labor mobility, showing that equalizing migration elasticities across skills would diminish the heterogeneity in wage effects. In addition, we find that reducing migration costs helps to alleviate the tax reform's negative wage impacts. Interestingly, with reduced migration costs, the tax reform would produce a smaller decrease in the inter-regional real wage gap for both skill types. However, it would simultaneously lead to a significant increase in the inter-regional disparity of skill wage premiums.

Overall, our study emphasizes that FDI-related tax incentives have important distributional impacts on host countries, especially those with significant migration frictions and segmented labor markets. Therefore, policymakers should consider these labor market implications when designing and implementing preferential tax policies for FDI. Meanwhile, enhancing labor mobility and reducing migration costs could serve as effective strategies to mitigate adverse wage effects and promote more balanced regional development.

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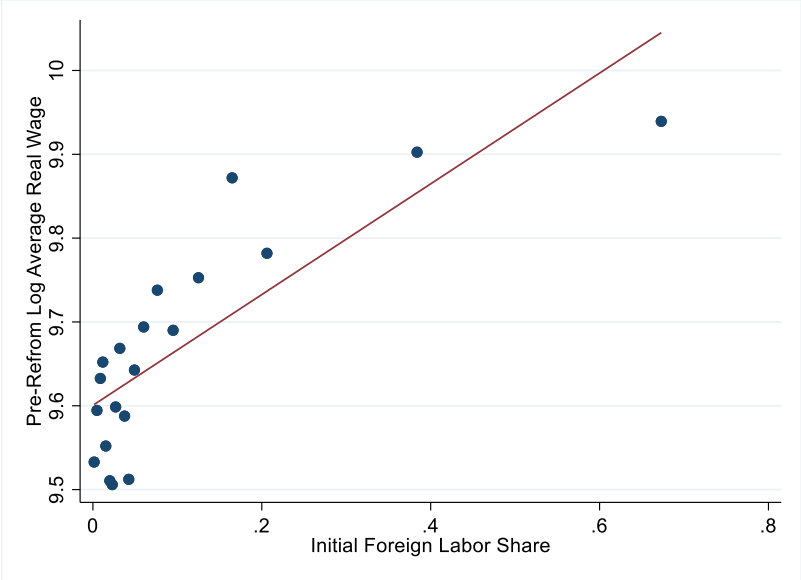
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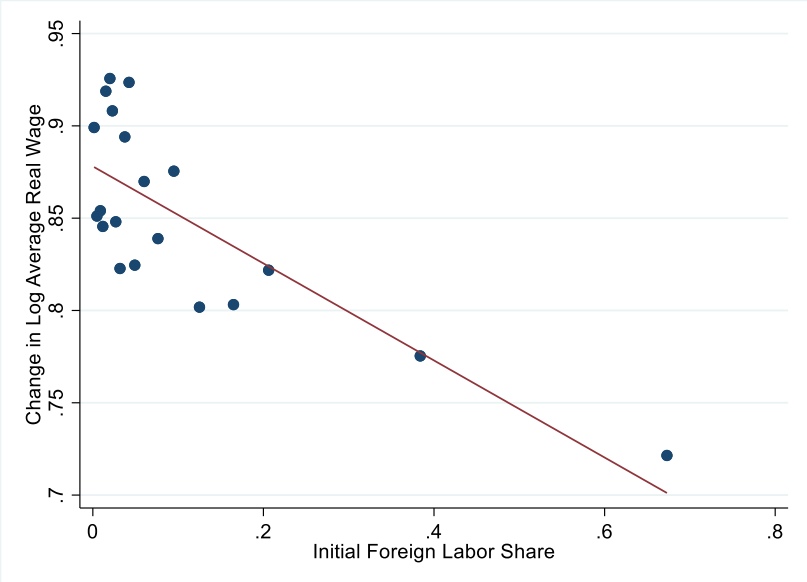
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Figure 1. Average Wage and Foreign Labor Share at the Prefecture-Level

Panel A. Pre-Reform Wage Distribution across Prefectures

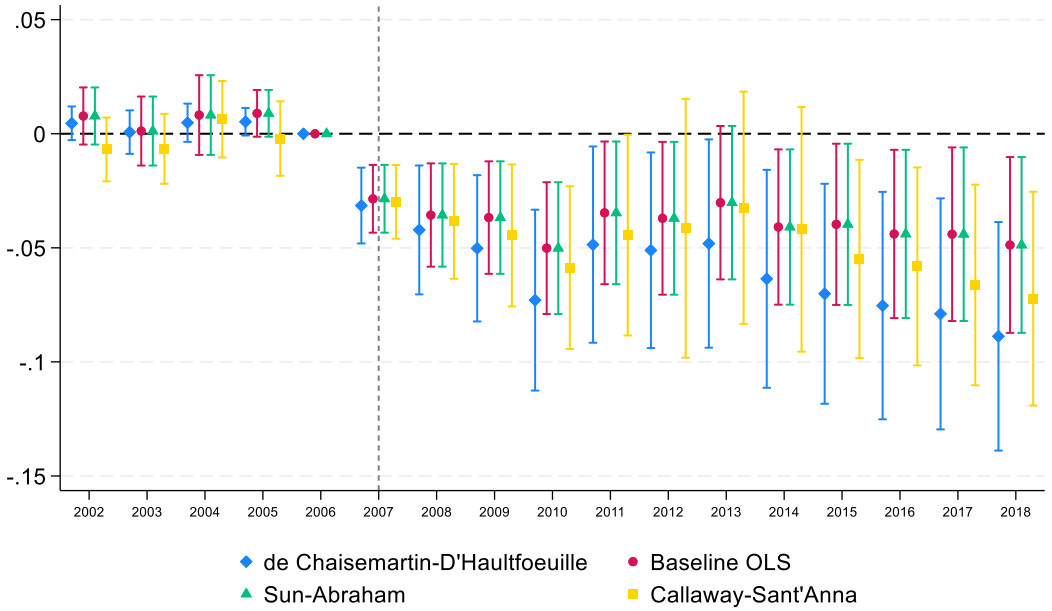


Panel B. Pre-Post Wage Changes across Prefectures



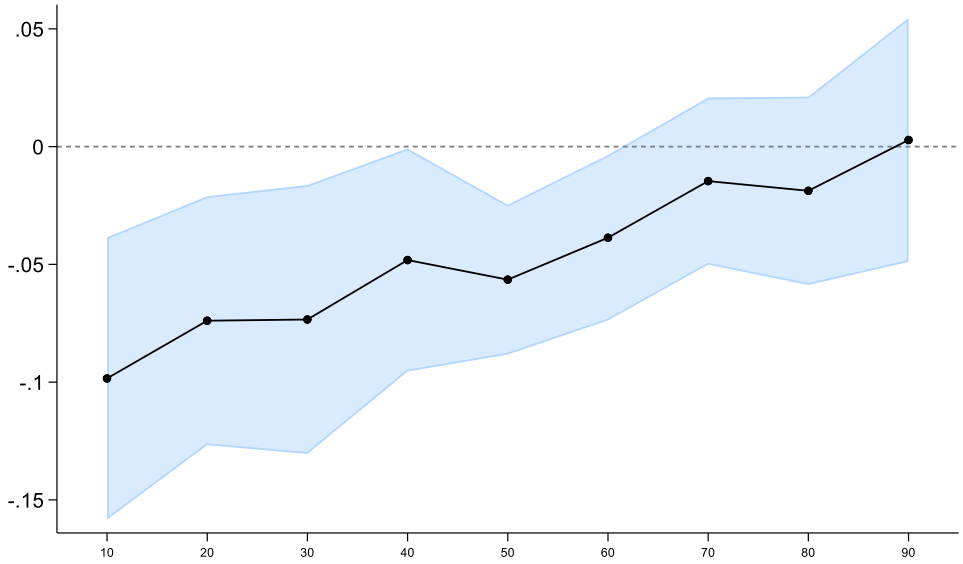
Notes. Panel A graphs the binned scatterplot for the prefecture-level log real wage averaged over the pre-reform period (2002-2006) against each prefecture's foreign labor share in 2002. Panel B graphs the binned scatterplot for the change in prefecture-level log real wage before and after the tax reform against each prefecture's foreign labor share in 2002. The solid line in each panel represents the fitted regression line. Data sources: China City Statistics Yearbooks and AIES.

Figure 2. Dynamic Treatment Effects



Notes. This figure plots time-varying treatment effects of the CIT reform using four different estimators. Circle markers denote the OLS estimates from a dynamic version of the baseline specification. Diamond markers denote the estimates obtained by using the method in de Chaisemartin and D' Haultfœuille (2020). Triangle markers denote the estimates obtained by using the method in Sun and Abraham (2021). Square markers denote the estimates obtained by using the method in Callaway and Sant'Anna (2021). The outcome variable is prefecture's log real average wage. The treatment group is the prefectures with their initial foreign labor shares above the mean. The bars represent 90 percent confidence intervals. Standard errors are clustered at the prefecture level.

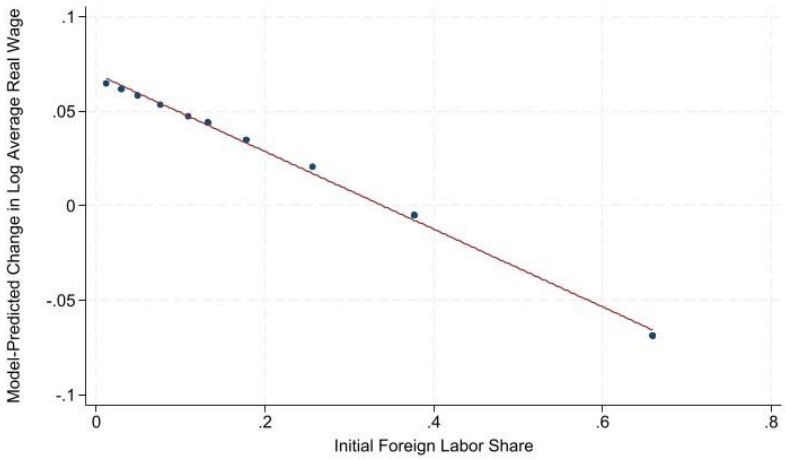
Figure 3. Estimated Wage Effect from Quantile Regression



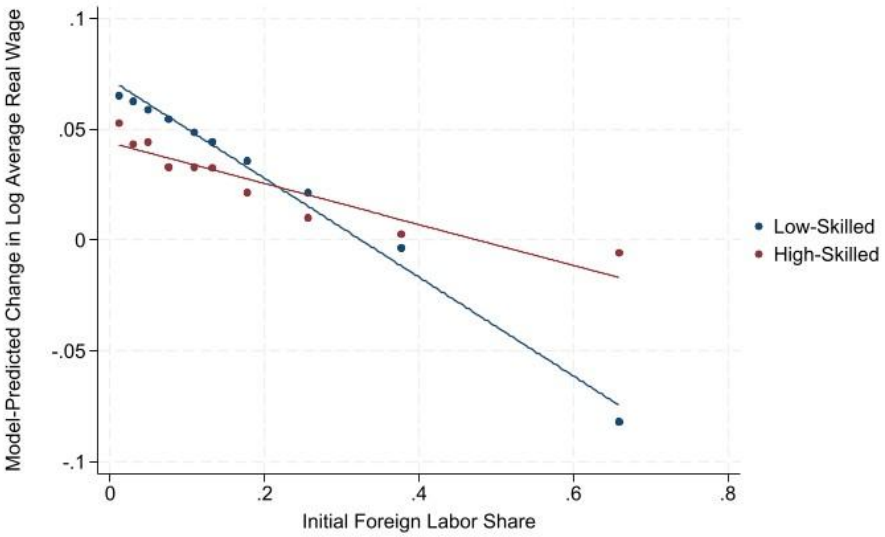
Notes. This figure graphs the estimated unconditional quantile effects of the tax reform on the real wage distribution from the UHS sample over the period 2002-2009. The solid black line represents the point estimates at different quantiles and the shaded area represents the 90 percent confidence intervals constructed using bootstrapped standard errors.

Figure 4. Model-Predicted Wage Changes

Panel A. Average Wage Changes across Prefectures



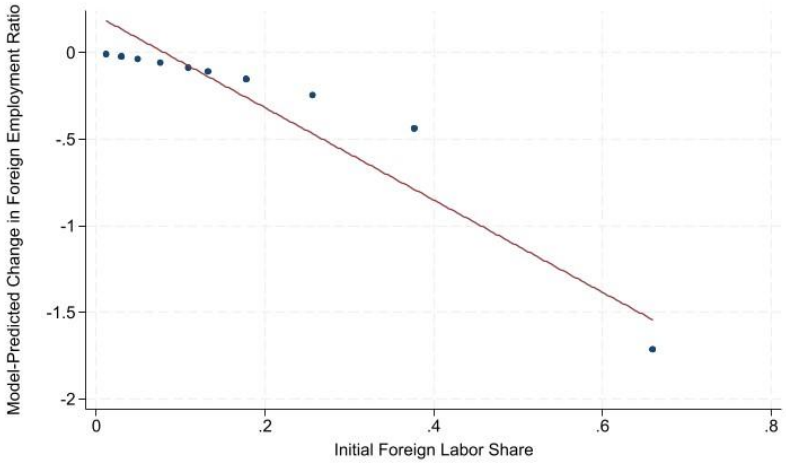
Panel B. Wage Changes across Prefectures by Skill Type



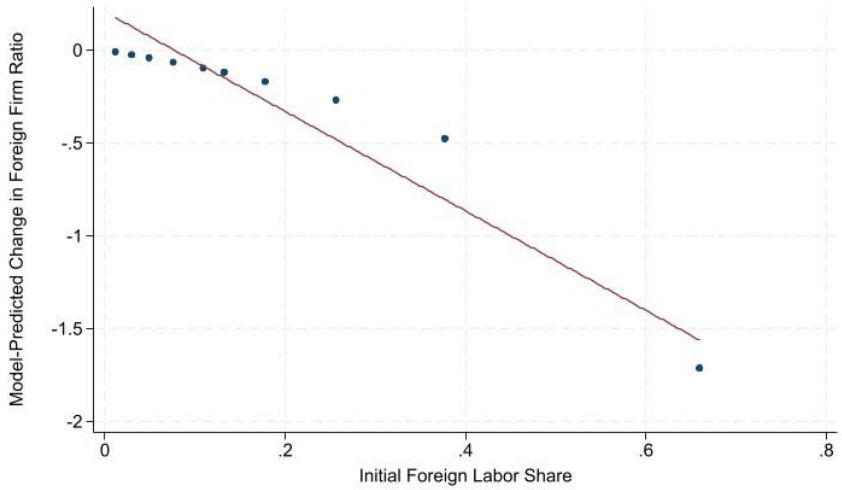
Notes. Panel A graphs the binned scatterplot for the model-predicted change in log average real wage before and after the tax reform for each prefecture against its initial foreign labor share. Panel B graphs the binned scatterplot for the model-predicted change in log real wage against the initial foreign labor share for low-skilled and high-skilled workers, respectively. The solid line in each panel represents the fitted regression line.

Figure 5. Model-Predicted Labor Allocation Changes

Panel A. Changes in Foreign-to-Domestic Labor Ratio across Prefectures



Panel B. Changes in Foreign-to-Domestic Firm Number Ratio across Prefectures



Notes. Panel A graphs the binned scatterplot for the model-predicted foreign-to-domestic labor ratio before and after the tax reform for each prefecture against its initial foreign labor share. Panel B graphs the binned scatterplot for the model-precited change in foreign-to-domestic firm number ratio before and after the tax reform against initial foreign labor share.

Table 1. Basic Results

Dependent variable:	Log Real Wage			
	(1) Baseline	(2) Average Exposure	(3) Statutory Tax Rate	(4) Pre-Reform Period
ForExposure×*Post*	-0.044**	-0.043**		0.001
	(0.018)	(0.020)		(0.006)
ForExposure×*CITGap*			-0.002**	
			(0.001)	
N	3,374	3,374	3,374	995
Baseline controls	√	√	√	√
Prefecture fixed effects	√	√	√	√
Region-year fixed effects	√	√	√	√

Notes. This table estimates the effect of the corporate income tax rate change on the prefecture-level real wage using the prefecture-level data from China's city statistics yearbooks over the period 2002-2018. Column (1) estimates the baseline specification. Column (2) uses an alternative measure of high foreign exposure based on prefecture-level average foreign labor share over the pre-reform period. Column (3) replaces the post-reform dummy (*Post*) with the corporate income tax gap (*CITGap*) computed by using the statutory tax rate. Column (4) conducts a falsification test by seting 2004 as the pseudo reform year and re-estimating the baseline specification over the pre-reform period only. All regressions include a constant, region-year fixed effects, and prefecture fixed effects. Baseline controls are the interactions of year dummies with pre-reform real GDP growth, pre-reform real wage growth, initial population size, initial SOE labor share, and initial skilled labor share. Standard errors clustered at the prefecture level are reported in parentheses. ***, ** and * denote significance at the 1%, 5% and 10%, respectively.

Table 2. Robustness to Additional Controls

Dependent variable:	Log Real Wage						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Female labor Share	Unemployment Rate	Trade Openness	Government Expenditure	Value Added Taxes	Accelerated Depreciation	Global Financial Crisis
ForExposure×Post	-0.046***	-0.042**	-0.036**	-0.039**	-0.042**	-0.041**	-0.046**
	(0.018)	(0.018)	(0.018)	(0.018)	(0.018)	(0.016)	(0.021)
N	3,374	3,374	3,374	3,374	3,374	3,374	3,374
Baseline controls	√	√	√	√	√	√	√
Prefecture fixed effects	√	√	√	√	√	√	√
Region-year fixed effects	√	√	√	√	√	√	√

Notes. This table examines the sensitivity of our results to additional controls. All regressions use the prefecture-level data over the period 2002-2018. Column (1) includes the interactions of initial female labor share with year dummies. Column (2) includes the interactions of pre-reform average unemployment rate with year dummies. Column (3) includes the interactions of pre-reform average trade openness with year dummies. Column (4) includes the interactions of pre-reform average ratio of local government expenditure to GDP with year dummies. Column (5) includes the interactions of pre-reform log value added tax rate with year dummies. Column (6) includes the interactions between the high-exposure indicator and the post-accelerated-depreciation-policy dummy. Column (7) includes the interaction of the high-exposure indicator with the global financial crisis (*GFC*) dummy. All regressions include a constant, baseline controls, region-year fixed effects, and prefecture fixed effects. Baseline controls are the interactions of year dummies with pre-reform real GDP growth, pre-reform real wage growth, initial population size, initial SOE labor share, and initial skilled labor share. Standard errors clustered at the prefecture level are reported in parentheses. ***, ** and * denote significance at the 1%, 5% and 10%, respectively.

Table 3. Heterogeneous Wage Effects

Dependent variable:	Log Real Wage						
		Education		Occupation		Experience	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Overall	High-Skilled	Low-Skilled	Professional	Non-Professional	More	Less
ForExposure×Post	-0.047***	-0.038*	-0.061**	-0.045*	-0.053**	-0.029	-0.065***
	(0.020)	(0.022)	(0.024)	(0.024)	(0.023)	(0.020)	(0.021)
N	266,164	100,539	165,625	68,913	197,251	119,854	146,309
Individual controls	√	√	√	√	√	√	√
Prefecture controls	√	√	√	√	√	√	√
Prefecture fixed effects	√	√	√	√	√	√	√
Region-year fixed effects	√	√	√	√	√	√	√

Notes. This table examines the heterogeneities in the wage effect using the individual-level UHS data over the period 2002-2009. Column (1) presents results for the full sample. Columns (2) and (3) divide the full sample into high-skill and low-skill subsamples based on educational backgrounds. Columns (4) and (5) split the full sample into professional and non-professional subsamples according to occupation types. Columns (6) and (7) separate the full sample into more-experienced and less-experienced subsamples according to the median level of work experience. All regressions include a constant, individual-level controls, prefecture-level controls, region-year fixed effects, and prefecture fixed effects. Individual-level controls are gender, experience, education, marital status, ethnicity, Hukou status, industrial affiliation, and occupation. Prefecture-level controls are the interactions of year dummies with pre-reform real GDP growth, pre-reform real wage growth, initial population size, initial SOE labor share, and initial skilled labor share. Standard errors clustered at the prefecture level are reported in parentheses. ***, ** and * denote significance at the 1%, 5% and 10%, respectively.

Table 4. Effects on Prefecture-Level Labor Allocations

	A. Foreign-to-Domestic Employment Ratio			B. Foreign-to-Domestic Firm Number Ratio		
	(1)	(2)	(3)	(4)	(5)	(6)
	All	High-Skilled	Low-Skilled	All	High-Skilled	Low-Skilled
ForExposure×*Post*	-0.052*	0.022	-0.124***	-0.002***	-0.001	-0.002***
	(0.027)	(0.035)	(0.027)	(0.001)	(0.001)	(0.001)
N	2,150	2,141	2,146	2,771	2,765	2,768
Baseline controls	√	√	√	√	√	√
Prefecture fixed effects	√	√	√	√	√	√
Region-year fixed effects	√	√	√	√	√	√

Notes. This table examines the effects on labor allocation at the prefecture level. The dependent variable in Panel A is the prefecture-level foreign-to-domestic employment ratio, constructed from the ASIE data over 2002-2013. The dependent variable in Panel B is the prefecture level foreign-to-domestic firm number ratio, calculated from China's Business Registration data over 2002-2015. Columns (1) and (4) use the sample of all sectors. Columns (2) and (5) use the subsample of high-skilled sectors. Columns (3) and (6) use the subsample of low-skilled sectors. All regressions include a constant, baseline controls, region-year fixed effects, and prefecture fixed effects. Baseline controls are the interactions of year dummies with pre-reform real GDP growth, pre-reform real wage growth, initial population size, initial SOE labor share, and initial skilled labor share. Standard errors clustered at the prefecture level are reported in parentheses. ***, ** and * denote significance at the 1%, 5% and 10%, respectively.

Table 5. Calibration Results

A. Parameters Calibrated Independently

Parameter	Definition	Value	Source of Identification
$\bar{L}_{sn}$	Labor endowment	-	2005 Census data
α_o	Labor share	-	Firm expenditure shares in 2004 AIES
σ	Elasticity of substitution between final goods	6.6	Average markup in 2004 AIES
ρ	Elasticity of substitution between skill types	1.3	Khanna et al. (2025)
τ_{oi}	Corporate tax rate	-	China's Corporate Tax Policies

B. Parameters Calibrated with Model-Predicted Moments

Parameter	Definition	Value	Source of Identification
θ_d	Shape parameter of idiosyncratic productivity shocks to domestically-owned firms	14.1	Tax elasticity of regional sales revenues of domestically-owned firms
θ_f	Shape parameter of idiosyncratic productivity shocks to foreign-owned firms	14.2	Tax elasticity of regional sales revenues of foreign-owned firms
η_u	Migration elasticity for low-skilled labor	1.3	Model-predicted low-skilled wage changes
η_h	Migration elasticity for high-skilled labor	5.6	Model-predicted high-skilled wage changes

Table 6. Distributional Effects of the Tax Reform

	Baseline	$\eta_h = 1.3$	$\eta_u = 5.6$	No location choice	τ_{fi} change only	τ_{di} change only
	(1)	(2)	(3)	(4)	(5)	(6)
A. Aggregate Wage Change						
All workers	-0.29	-0.23	-0.33	-0.82	-0.30	0.49
B. Wage Change by Regions						
High-exposure prefectures	-2.67	-2.57	-2.06	-4.46	-1.83	-0.77
Low-exposure prefectures	5.31	5.22	5.28	7.56	3.36	3.47
C. Wage Change by Skill Types						
High-skilled workers	-1.10	-1.11	-1.94	-2.54	-0.85	-0.07
Low-skilled workers	-0.08	-0.06	-0.02	-0.41	-0.14	0.62
D. Wage Changes by Skill-Region Groups						
High-skilled & High-exposure	-1.74	-2.34	-2.74	-3.61	-1.24	-0.39
High-skilled & Low-exposure	3.92	4.82	4.33	5.35	2.47	2.62
Low-skilled & High-exposure	-2.82	-2.73	-2.09	-4.54	-1.90	-0.83
Low-skilled & Low-exposure	5.38	5.26	5.34	7.65	3.41	3.51
E. Changes in Inter-Regional Wage Gap						
High-skilled workers	-5.66	-7.16	-7.07	-8.96	-3.71	-3.01
Low-skilled workers	-8.21	-7.99	-7.42	-12.20	-5.31	-4.34
Skill wage premium	2.55	0.83	0.35	3.23	1.60	1.33

Notes. This table reports the average real wage change (in percent) resulting from the tax reform under different scenarios. Inter-regional disparities are computed by taking the differences in wage changes between high-exposure and low-exposure regions. Skill wage premium changes are calculated as the difference in wage changes between high-skilled and low-skilled workers. Column (1) reports the results from

baseline scenario where high-skilled workers exhibit greater migration elasticity than low-skilled workers. Column (2) reduces the high-skilled migration elasticity to the same low level as the low-skilled migration elasticity. Column (3) increases the low-skilled migration elasticity to the same high level as the high-skilled migration elasticity. Column (4) shuts down firms' endogenous location choices. Column (5) examines the effect of the tax rate hike on foreign firms while keeping the tax rate on domestic firms unchanged. Column (6) examines the effect of the tax rate cut on domestic firms while keeping the tax rate on foreign firm unchanged.

Table 7. The Effect of Migration Cost Reduction

	Migration policy only (1)	Migration policy & the tax reform (2)	Conditional effect of the tax reform (3)
A. Aggregate Wage Change			
All workers	1.30	1.35	0.05
B. Wage Changes by Regions			
High-exposure prefectures	-5.91	-7.23	-1.32
Low-exposure prefectures	0.21	6.36	6.15
C. Wage Changes by Skill Types			
High-skilled workers	10.09	10.42	0.33
Low-skilled workers	-0.69	-0.56	0.13
D. Wage Changes by Skill-Region Groups			
High-skilled & high foreign exposure	2.25	2.85	0.60
High-skilled & low foreign exposure	14.72	18.71	3.99
Low-skilled & high foreign exposure	-7.51	-9.15	-1.64
Low-skilled & low foreign exposure	-0.42	5.78	6.20
E. Changes in Inter-Regional Wage Gap			
High-skilled workers	-12.47	-15.86	-3.39
Low-skilled workers	-7.09	-14.93	-7.84
Skill wage premium	-5.38	-0.93	4.45

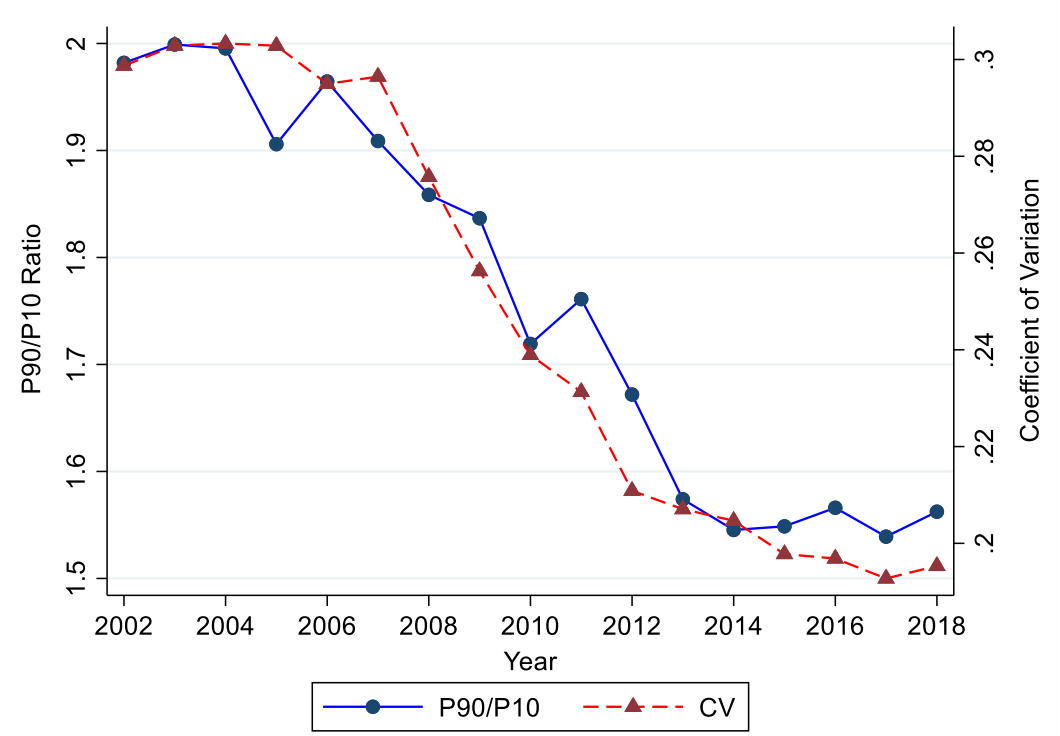
Notes. This table reports the average real wages (in percent) resulting from different policy shocks. Inter-regional disparities are computed by taking the differences in wage changes between high-exposure and low-exposure regions. Skill wage premium changes are calculated as the difference in wage changes between high-skilled and low-skilled workers. Column (1) reduces the migration costs only. Column (2) reduces the migration costs and introduces the tax reform. Column (3) computes the effect of the tax reform conditional on the reduction of migration costs by taking the difference between columns (2) and (1).

Appendix Tables & Figures

Table A1. Summary Statistics of Key Variables

Variable	N	Mean	SD	Min	Max
(a) Prefecture-level:					
Log average real wage	3,374	10.263	0.525	8.865	11.707
Foreign exposure (*ForExposure*)	3,374	0.377	0.485	0	1
Average foreign exposure	3,374	0.398	0.490	0	1
Statutory tax rate differential	3,374	-7.306	8.137	-18	0
Foreign-to-domestic employment ratio	2,150	0.228	0.378	0	2.665
Foreign-to-domestic employment ratio in high-skilled sectors	2,141	0.211	0.381	0	3.058
Foreign-to-domestic employment ratio in low-skilled sectors	2,146	0.233	0.372	0	2.369
Foreign-to-domestic firm number ratio	2,771	0.002	0.006	0	0.108
Foreign-to-domestic firm number ratio in high-skilled sectors	2,765	0.003	0.010	0	0.301
Foreign-to-domestic employment ratio in low-skilled sectors	2,768	0.002	0.006	0	0.112
(b) Individual-level:					
Log real wage	266,164	14.203	0.734	12.044	16.258
College	266,164	0.378	0.485	0	1
Years of work experience	266,164	22.047	9.336	0	44
Female	266,164	0.441	0.497	0	1
Professional worker	266,164	0.259	0.438	0	1

Figure A2. Cross-Prefecture Wage Dispersion in China (2002 – 2018)



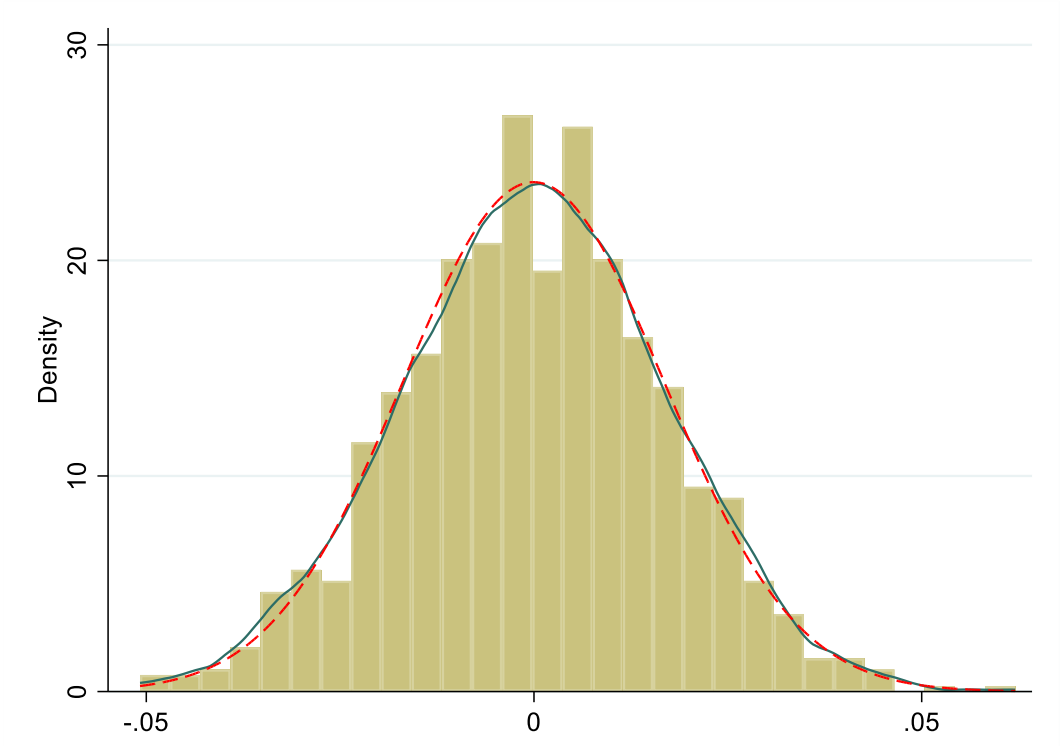
Notes. This figure graphs the cross-prefecture real wage dispersion in China over the period from 2002 to 2018. The solid line with circles represents the 90/10 wage ratio, which is the ratio of the 90th percentile wage to the 10th percentile wage. The dashed line with triangles represents the coefficient of variation of real wages across prefectures. The left axis denotes the 90/10 wage ratio and the right axis denotes the coefficient of variation.

Table A3. Alternative Estimators and Falsification Tests

Dependent variable	Log Real Wage		
	(1) CH Estimator	(2) SA Estimator	(3) CS Estimator
ForExposure×Post	-0.060***	-0.039**	-0.049**
	(0.020)	(0.016)	(0.023)
N	3,374	3,374	3,374
Baseline controls	√	√	√
Prefecture fixed effects	√	√	√
Region-year fixed effects	√	√	√

Notes. This table conducts robustness checks by using alternative estimators. All regressions are estimated using the prefecture-level data over the period 2002-2018. Column (1) estimates the baseline specification using the estimators proposed in de Chaisemartin and D'Haultfœuille (2020). Column (2) estimates the baseline specification using the estimators proposed in Sun and Abraham (2021). Column (3) estimates the baseline specification using the estimators proposed in Callaway and Sant'Anna (2021). All regressions include a constant, baseline controls, region-year fixed effects, and prefecture fixed effects. Baseline controls are the interactions of year dummies with pre-reform real GDP growth, pre-reform real wage growth, initial population size, initial SOE labor share, and initial skilled labor share. Standard errors clustered at the prefecture level are reported in parentheses. ***, ** and * denote significance at the 1%, 5% and 10%, respectively.

Figure A4. Distribution of Estimates from the Placebo Test



Notes. This figure plots the distribution of the estimated coefficient on the interaction between the foreign-exposure indicator and the post dummy from a placebo test. We randomly assign the foreign-exposure indicator across prefectures and re-estimate the baseline specification using the artificially generated data. This simulation is repeated 1,000 times. The dashed line plots the normal distribution. The solid line plots the kernel density estimates produced using the Epanechnikov kernel.

Appendix Table A5. Robustness Checks in the UHS Sample

Dependent variable:	Log Real Wage						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Average Exposure	Statutory Tax Rate	Female Labor Share	Trade Openness	Unemployment Rate	Government Expenditure	Value Added Taxes
ForExposure×Post	-0.049**	-0.005**	-0.049**	-0.041**	-0.046**	-0.048**	-0.051**
	(0.020)	(0.002)	(0.020)	(0.020)	(0.019)	(0.020)	(0.020)
N	266,164	266,164	266,164	266,164	266,164	266,164	266,164
Individual controls	√	√	√	√	√	√	√
Prefecture controls	√	√	√	√	√	√	√
Prefecture fixed effects	√	√	√	√	√	√	√
Region-year fixed effects	√	√	√	√	√	√	√

Notes. This table examines the robustness of estimated average wage effect to additional controls in the UHS sample over the period 2002-2009. Column (1) measures a prefecture's foreign exposure based on the average foreign labor share between 1998 and 2006. Columns (2) and (3) replace the post-reform dummy (*Post*) with the corporate income tax gap (*CITGap*) computed by using the statutory and effective tax rates, respectively. Column (4) includes the interactions of initial female labor share with year dummies. Column (5) includes the interactions of initial unemployment rate with year dummies. Column (6) includes the interactions of initial trade openness with year dummies. Column (7) includes the interactions of initial log value added taxes with year dummies. Column (8) includes the interactions of initial local government expenditure to GDP ratio with year dummies. All regressions include a constant, individual-level controls, prefecture-level controls, region-year fixed effects, and prefecture fixed effects. Individual-level controls are gender, experience, education, marital status, ethnicity, Hukou status, industrial affiliation, and occupation. Prefecture-level controls are the interactions of year dummies with pre-reform real GDP growth, pre-reform real wage growth, initial population size, initial SOE labor share, and initial skilled labor share. Standard errors clustered at the prefecture level are reported in parentheses. ***, ** and * denote significance at the 1%, 5% and 10%, respectively.

Appendix A6. Assessing Tax Reform Impacts: A Partial Equilibrium Approach

Consider a local labor market with two types of workers: high-skilled (h) and low-skilled (u), denoted as $s \in \{h, u\}$, and a single type of firms. On the supply side, we assume that each worker inelastically supplies one unit of labor, which is homogeneous within each worker type s. The aggregate measure of s-type workers is represented by the labor supply function $L_s^S(w_s)$, where w_s denotes the wage rate for s-type labor. On the demand side, the aggregate demand for s-type labor is represented by the function $L_s^D(w_u, w_h, 1-\tau)$, which depends on the wages of low-skilled (w_u) and high-skilled (w_h) workers, as well as the corporate tax rate, τ. To facilitate derivation, we follow the literature (e.g., Khanna et al., 2025; Setzler and Tintelnot, 2021) and assume that low-skilled and high-skilled labor are aggregated into a composite labor bundle with a constant elasticity of substitution (CES): $L^{\mathcal{D}} = \left[\delta_u^{\frac{1}{\rho}}(L_u^{\mathcal{D}})^{\frac{\rho-1}{\rho}} + \delta_h^{\frac{1}{\rho}}(L_h^{\mathcal{D}})^{\frac{\rho-1}{\rho}}\right]^{\frac{\rho}{\rho-1}}$, where $\rho > 0$, δ_u and δ_h represent technologies specific to low-skilled and high-skilled labor, respectively.[27]

Let W denote the wage index for the composite bundle. Firms' demand for the composite labor bundle can be expressed as $L^{\mathcal{D}}(W, 1-\tau)$. Cost minimization by firms implies that the wage index is $W = \left(\delta_u w_u^{1-\rho} + \delta_h w_h^{1-\rho}\right)^{\frac{1}{1-\rho}}$ and the demand for s-type labor is $L_s^D = \delta_s L^{\mathcal{D}} W^{\rho} w_s^{-\rho}$.

A first-order approximation of the labor demand function $L_s^{\mathcal{D}}$ yields:

$$d\ln L_s^{\mathcal{D}} = d\ln L^{\mathcal{D}} + \rho d\ln W - \rho d\ln w_s, \tag{A.1}$$

[27] This structural assumption on the labor demand function is also consistent with our quantitative model in Section 4.

$$d\ln L^{\mathcal{D}} = \mathcal{E}_W^{\mathcal{D}} d\ln W + \mathcal{E}_{1-\tau}^{\mathcal{D}} d\ln(1-\tau), \tag{A.2}$$

$$d\ln W = \xi_u d\ln w_u + \xi_h d\ln w_h, \tag{A.3}$$

where $\mathcal{E}_W^{\mathcal{D}} = d\ln L^{\mathcal{D}}(W, 1-\tau)/d\ln W$ and $\mathcal{E}_{1-\tau}^{\mathcal{D}} = d\ln L^{\mathcal{D}}(W, 1-\tau)/d\ln(1-\tau)$ are the demand elasticities with respect to the wage index and after-tax rate, $\xi_u = w_u L_u^{\mathcal{D}}/WL^{\mathcal{D}} = \delta_u (w_u/W)^{-\rho}$ and $\xi_h = w_h L_h^{\mathcal{D}}/WL^{\mathcal{D}} = \delta_h (w_h/W)^{-\rho}$ are the low-skilled and high-skilled labor cost shares, respectively.

The labor market clearing conditions are:

$$L_u^{\mathcal{S}}(w_u) = L_u^{D}(w_u, w_h, 1-\tau), \tag{A.4}$$

$$L_h^{\mathcal{S}}(w_h) = L_h^{D}(w_u, w_h, 1-\tau). \tag{A.5}$$

Now consider an exogenous shock on the tax rate τ. The comparative static changes in the labor market clearing conditions suggest $d\ln L_s^{\mathcal{S}} = d\ln L_s^{\mathcal{D}}$. From equations (A.1) to (A.3), we have:

$$d\ln w_u = \frac{(\mathcal{E}_h^{\mathcal{S}}+\rho)\mathcal{E}_{1-\tau}^{\mathcal{D}}}{(\mathcal{E}_u^{\mathcal{S}}+\rho)(\mathcal{E}_h^{\mathcal{S}}+\rho)-(\mathcal{E}_W^{\mathcal{D}}+\rho)[(\mathcal{E}_u^{\mathcal{S}}+\rho)\xi_h+(\mathcal{E}_h^{\mathcal{S}}+\rho)\xi_u]} d\ln(1-\tau), \tag{A.6}$$

$$d\ln w_h = \frac{(\mathcal{E}_u^{\mathcal{S}}+\rho)\mathcal{E}_{1-\tau}^{\mathcal{D}}}{(\mathcal{E}_u^{\mathcal{S}}+\rho)(\mathcal{E}_h^{\mathcal{S}}+\rho)-(\mathcal{E}_W^{\mathcal{D}}+\rho)[(\mathcal{E}_u^{\mathcal{S}}+\rho)\xi_h+(\mathcal{E}_h^{\mathcal{S}}+\rho)\xi_u]} d\ln(1-\tau). \tag{A.7}$$

We can easily show that $\frac{d\ln w_s}{d\ln(1-\tau)} > 0, s \in \{h, u\}$, which means that an increase in tax rate (and hence a decrease in the after-tax rate, $1-\tau$) is associated with a negative change in wage rates for both types of workers within the local labor market.[28]

Next, we compare the wage responses to the tax reform between two regions: one with high exposure to foreign investment and the other with low exposure. For ease of understanding, we assume 100% foreign exposure in the high-exposure region (region H) and 0% foreign exposure in the low-exposure region (region L). Since the tax reform

[28] When $\mathcal{E}_W^{\mathcal{D}} + \rho < 0$, this is readily apparent. When $\mathcal{E}_W^{\mathcal{D}} + \rho > 0$, it follows that $(\mathcal{E}_W^{\mathcal{D}} + \rho)[(\mathcal{E}_u^{\mathcal{S}} + \rho)\xi_h + (\mathcal{E}_h^{\mathcal{S}} + \rho)\xi_u] < \rho^2 + \rho\max\{\mathcal{E}_u^{\mathcal{S}}, \mathcal{E}_h^{\mathcal{S}}\} < \rho^2 + \rho(\mathcal{E}_u^{\mathcal{S}} + \mathcal{E}_h^{\mathcal{S}}) + \mathcal{E}_u^{\mathcal{S}}\mathcal{E}_h^{\mathcal{S}} = (\mathcal{E}_u^{\mathcal{S}} + \rho)(\mathcal{E}_h^{\mathcal{S}} + \rho)$.

raised the corporate tax rates for foreign-owned firms while lowering them for domestically-owned firms, we expect to see a decline in the after-tax rate ($d\ln(1-\tau_f)<0$) in the high-exposure region, and an increase in the after-tax rate ($d\ln(1-\tau_d)>0$) in the low-exposure region. Consequently, for both types of workers, wages would decrease in the high-exposure region ($d\ln w_s^H<0$) and increase in the low-exposure region ($d\ln w_s^L>0$), resulting in a negative wage change gap between the two regions:

$$d\ln w_s^H - d\ln w_s^L = \frac{d\ln w_s}{d\ln(1-\tau)}\left[d\ln\left(1-\tau_f\right) - d\ln(1-\tau_d)\right] < 0. \quad \text{(A.8)}$$

Proposition 1. *The tax reform results in slower growth of average wages for both low-skilled and high-skilled workers in regions with higher foreign exposure compared to those with lower foreign exposure.*

To further illustrate the differential wage responses to the tax reform between high-skilled and low-skilled workers, we calculate the ratio of the cross-region wage change gap between the two types of workers as:

$$\frac{d\ln w_u^H - d\ln w_u^L}{d\ln w_h^H - d\ln w_h^L} = \frac{d\ln w_u}{d\ln(1-\tau)} \Big/ \frac{d\ln w_h}{d\ln(1-\tau)} = \frac{\varepsilon_h^S+\rho}{\varepsilon_u^S+\rho}. \quad \text{(A.9)}$$

As the literature (e.g., Fuest et al., 2018; Fan, 2019; Khanna et al., 2025) have shown that high-skilled workers generally exhibit greater mobility than low-skilled workers, we can reasonably assume that labor supply elasticity is higher for high-skilled workers ($\varepsilon_h^S > \varepsilon_u^S$). This difference in labor supply elasticity implies that low-skilled workers will experience a larger cross-region wage change gap compared to their high-skilled counterparts. When considered alongside Proposition 1, this indicates that the tax reform will result in a significantly greater decline in relative wage growth between

high- and low-exposure regions for low-skilled workers than for high-skilled workers.

Proposition 2. *The slowdown in relative wage growth between regions with high foreign exposure and those with low foreign exposure is more pronounced for low-skilled workers compared to high-skilled workers*.

Appendix A7. Effects of Migration Elasticity Changes on Inter-Regional Wage Response Differences

Own-Migration-Elasticity Effect. From equation (A.7), since $\mathcal{E}_u^S + \rho > (\mathcal{E}_W^{\mathcal{D}} + \rho)\xi_u$, we can demonstrate that the marginal effect of high-skilled labor supply elasticity on their own tax elasticity of wage is negative:

$$\frac{\partial}{\partial \mathcal{E}_h^S}\left(\frac{d\ln w_h}{d\ln(1-\tau)}\right) = \frac{-(\mathcal{E}_u^S+\rho)\mathcal{E}_{1-\tau}^{\mathcal{D}}[\mathcal{E}_u^S+\rho-(\mathcal{E}_W^{\mathcal{D}}+\rho)\xi_u]}{\{(\mathcal{E}_u^S+\rho)(\mathcal{E}_h^S+\rho)-(\mathcal{E}_W^{\mathcal{D}}+\rho)[(\mathcal{E}_u^S+\rho)\xi_h+(\mathcal{E}_h^S+\rho)\xi_u]\}^2} < 0. \quad \text{(A.10)}$$

Given that $d\ln(1-\tau_f) < 0$ and $d\ln(1-\tau_d) > 0$, this implies a positive marginal effect of high-skilled labor supply elasticity ($\mathcal{E}_h^S$) on the difference in wage responses to the tax reform between high- and low-exposure regions:

$$\frac{\partial}{\partial \mathcal{E}_h^S}(d\ln w_h^H - d\ln w_h^L) = \frac{\partial}{\partial \mathcal{E}_h^S}\left(\frac{d\ln w_h}{d\ln(1-\tau)}\right)\left[d\ln(1-\tau_f) - d\ln(1-\tau_d)\right] > 0, \quad \text{(A.11)}$$

where $d\ln w_h^H$ and $d\ln w_h^L$ represent the log wage change for high-skilled workers in regions with high and low foreign exposures, respectively.

Since $d\ln w_h^H - d\ln w_h^L < 0$ (equation A.8) and the labor supply elasticity is micro-founded by the migration elasticity (η_s) in our quantitative model, the positive marginal effect in equation (A.11) indicates that as high-skilled labor supply elasticity ($\mathcal{E}_h^S$) decreases (equivalent to a decrease in high-skilled migration elasticity, η_h, in our quantitative model), the negative gap in high-skilled wage responses between high- and low-exposure regions widens.

Similarly, for low-skilled workers, we have $\frac{\partial}{\partial \mathcal{E}_u^S}\left(\frac{d\ln w_u}{d\ln(1-\tau)}\right) < 0$ and $\frac{\partial}{\partial \mathcal{E}_u^S}(d\ln w_u^H - d\ln w_u^L) > 0$. These imply that when low-skilled labor supply elasticity ($\mathcal{E}_u^S$) increases (i.e., low-skilled migration elasticity, η_u, rises), the negative gap in their wage responses between high- and low-exposure regions narrows. The observed patterns in

panel E of columns (2) and (3) in Table 6 are consistent with these predictions.

Cross-Migration-Elasticity Effect. From equation (6), we can show that the marginal effect of high-skilled labor supply elasticity on low-skilled workers' tax elasticity of wage is:

$$\frac{\partial}{\partial \mathcal{E}_h^S}\left(\frac{d\ln w_u}{d\ln(1-\tau)}\right) = \frac{-(\mathcal{E}_u^S+\rho)(\mathcal{E}_W^{\mathcal{D}}+\rho)\xi_u\mathcal{E}_{1-\tau}^{\mathcal{D}}}{\{(\mathcal{E}_u^S+\rho)(\mathcal{E}_h^S+\rho)-(\mathcal{E}_W^{\mathcal{D}}+\rho)[(\mathcal{E}_u^S+\rho)\xi_h+(\mathcal{E}_h^S+\rho)\xi_u]\}^2}. \quad \text{(A.12)}$$

The sign of $\frac{\partial}{\partial \mathcal{E}_h^S}\left(\frac{d\ln w_u}{d\ln(1-\tau)}\right)$ depends on that of $\mathcal{E}_W^{\mathcal{D}}+\rho$. If $\mathcal{E}_W^{\mathcal{D}}+\rho<0$, indicating that the demand elasticity of the composite labor bundle dominates the elasticity of substitution among different skill levels within the bundle, then $\frac{\partial}{\partial \mathcal{E}_h^S}\left(\frac{d\ln w_u}{d\ln(1-\tau)}\right)>0$. Conversely, if the skill levels within the bundle are highly substitutable, the cross-migration-elasticity effect yields $\frac{\partial}{\partial \mathcal{E}_h^S}\left(\frac{d\ln w_u}{d\ln(1-\tau)}\right)<0$. According to our calibration, we have $\rho=1.3$, and $\mathcal{E}_W^{\mathcal{D}}$ is given by $-\alpha_o\theta_o-1$, which equals -4.3 and -4.4 for domestic and foreign firms respectively. [29] Therefore, it is readily established that $\frac{\partial}{\partial \mathcal{E}_h^S}\left(\frac{d\ln w_u}{d\ln(1-\tau)}\right)>0$.

Combining equation (A.12) with different tax rate changes across regions, we:

$$\frac{\partial}{\partial \mathcal{E}_h^S}(d\ln w_u^H - d\ln w_u^L) = \frac{\partial}{\partial \mathcal{E}_h^S}\left(\frac{d\ln w_u}{d\ln(1-\tau)}\right)\left[d\ln\left(1-\tau_f\right) - d\ln(1-\tau_d)\right] > 0. \quad \text{(A.13)}$$

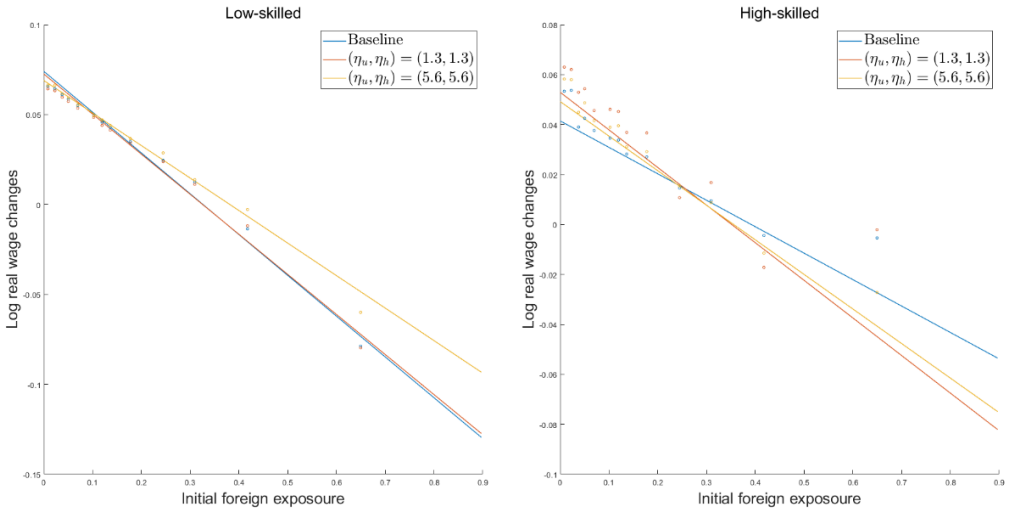
Given that $(d\ln w_u^H - d\ln w_u^L)<0$ as indicated in equation (A.8), equation (A.13) implies that the size of the inter-regional wage response gap for low-skilled workers decreases as the high-skilled labor supply elasticity (i.e., high-skilled workers' migration elasticity) is reduced.

Likewise, we can show that $\frac{\partial}{\partial \mathcal{E}_u^S}(d\ln w_h^H - d\ln w_h^L)>0$, which, combined with $(d\ln w_h^H - d\ln w_h^L)<0$, would suggest that an increase in low-skilled labor supply

[29] In the alternative model without firm location choices, we have $\mathcal{E}_W^{\mathcal{D}} = -\alpha_o(\sigma-1)-1 = (-2.3,-2.3)$.

elasticity (i.e., a rise of the low-skilled migration elasticity) amplifies the magnitude of the inter-regional wage response difference for high-skilled workers. Our quantitative results in columns (2) and (3) of panel E in Table 6 are consistent with these predicted patterns.

Figure A8. The Role of Skill-Specific Migration Elasticity



Notes. This figure presents two binned scatter plots illustrating the relationship between model-predicted log real wage changes and the observed initial foreign labor shares in prefectures, along with their linear fits. The left chart focuses on low-skilled workers, while the right one represents high-skilled workers. The blue dots and line represent the baseline scenario where low-skilled workers have lower migration elasticity than high-skilled workers. The red dots and line depict the first counterfactual scenario, where both skill types have equally low migration elasticities. The orange dots and line show the second counterfactual scenario, where both skill types have equally high migration elasticities.