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Impact of Property Tax on Labor Mobility—Empirical Study Based on Synthetic Control Method

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Abstract: *Reforming property taxes scientifically is a genuine task that requires research. Based on the 2011 property tax reform that was put into place in Chongqing, this study investigates the effect of the property tax on labor mobility, which is measured by the relative employment rate and relative output using a synthetic control method. The following findings are included in this article. Property tax can increase the relative employment rate of Chongqing. The effect of the property tax is noticeable at the beginning of its implementation and then begins to exhibit a level change. In addition, the property tax can also make a significant contribution to the relative output, particularly in the tertiary sector. Both demonstrate how the property tax facilitates labor mobility and draws workers to Chongqing. Based on a heterogeneous perspective on the labor force, it is found that the property tax policy has a positive absorption effect on the labor force with secondary and tertiary education and a negative crowding effect on the labor force with primary education. This article examines the policy consequences of the property tax policy on labor mobility, which can give policymakers some theoretical and practical support to implement property tax reforms throughout the country.*

Keywords: *Property tax; labor mobility; relative employment rate; synthetic control method*

1. Introduction

The real estate sector has grown rapidly in the last 10 years as a result of the reform and urbanization of China's economic system. Although bringing about economic advantages, several real-world issues, most notably the soaring cost of housing, have also surfaced. Statistics show that between 2000 and 2020, China's housing prices increased by 406.16%, from RMB 1,948 to RMB 9,860. Studies already conducted have found that increasing home prices have a substantial impact on a variety of elements that affect social stability and living standards in China, such as domestic consumption,[1-2] price levels,[3] economic growth, [4-5]and industrial structure.[6-7] In order to protect people's lives, the government must guide property prices back to a reasonable level. It must also promote social justice and the healthy development of the real economy. For these reasons, the government reiterates the objective of "three stability" in its work report for 2021. China started a property tax reform in Shanghai and Chongqing in 2011 in an effort to find a long-term constraint on the real estate market. It has been a major concern for academics to determine whether the property tax is beneficial in reducing the real estate bubble and what policy implications its introduction has had.

In terms of the effects of the implementation of property tax policy, studies have focused on its impact on economic growth, housing prices, and the impact of the property tax on the economy,[8] housing prices,[9-10] income distribution[11-13] and residential consumption.[14] Few studies have specifically examined how property taxes affect labor mobility. Based on this, this article uses the 2011 Chongqing property tax reform event as a quasi-natural experiment to examine the effects of property tax policies on labor mobility using panel data from 35 large and medium cities from 2006 to 2018 and a synthetic control method, taking into account the limitations of previous studies. Furthermore, the effect of property taxes on a diverse labor force is investigated in terms of educational attainment. The two potential breakthroughs presented in this report are based on current research. Firstly, to reduce the error caused by subjective judgments, this article uses the synthetic control method, a recent advancement in programme evaluation. This method creates a "counterfactual" control group for each individual policy intervention through a weighted average of the control groups. Second, the heterogeneous labor force perspective is used to explain the variations in the effects of the policies in pilot cities, providing some theoretical and practical support for policymakers to implement property tax reforms across the nation.

The research in this article is discussed in five parts. The first part is an introduction. The second part

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is the theoretical analysis, which sorts out the internal logic of property tax affecting labor mobility. The third part is the research design, which introduces the data sources, variable selection, and empirical methods of this article. The fourth part is the empirical analysis, which first conducts an empirical study on the impact of property tax on relative employment rate and relative output, followed by robustness tests and heterogeneity analysis. The fifth section provides conclusions and policy recommendations while criticizing the article's flaws.

2. Theoretical analysis

Property tax is intimately correlated with the cost of living of the labor force and the cost of production of enterprises. The impact of property tax policy on labor mobility is mainly achieved by reducing both the cost of living of the labor force and the cost of production of enterprises, thus attracting labor inflow. Overall, the relative employment rate and relative output in Chongqing will then increase.

2.1. Labor cost of living

Housing prices can have some impact on labor aggregation and distribution.[15] Clarifying how home prices affect labor migration decisions is necessary to examine the impact of property tax policies on labor mobility. This effect is initially seen in the way house prices affect the cost of living of the labor force. Workers' wages make up a sizable portion of housing costs, particularly in areas with higher levels of growth. For tenants, the primary impact of rising housing costs is higher rent; for homebuyers, the primary impact is higher mortgage payments, which limit other areas of spending. The poll found that nearly one third of households pay their mortgage with more than half of their monthly income. Prices are rising much faster in those large cities with stronger economies. Younger generations are moving to large cities in search of better living conditions and a favorable area for growth, further increasing the cost of housing. Renters and buyers will have a higher cost of living as a result, which squeezes out other consumer spending and lowers people's real income levels. Moreover, rising property prices have an effect on pricing levels, which in turn impacts consumer utility and raises people's costs of living. Because most Chinese retail enterprises currently operate out of rented accommodation, rent for commercial real estate makes up a sizable amount of the sector's expenses. Rent increases are partially passed on to consumers as housing costs rise, and company rents rise in tandem. As a result, the prices of some commodities' prices are pushed up.[16] As a result, consumers' real expenditure increases to maintain their previous level of consumption, resulting in an ever increasing cost of living. Overall, increasing housing expenditure and price levels increase the cost of living of the workforce. With this high cost in place, people have to rely on higher incomes to maintain their living balance. And whether or not wages increase depends on labor market supply and demand conditions. Many workers cannot afford the high cost of living due to housing prices and are moving to cities with lower prices, resulting in a labor exodus.[17-18]

The property tax is an important tax system for regulating the real estate market, which can facilitate the fall of house prices or promote reasonable and stable house prices. Liu Jiayan and Fan Ziying [9] conducted an empirical analysis on this and came to the conclusion that the Chongqing property tax has a significant suppressive effect on the growth of house prices. Therefore, in theory, through the formulation of appropriate property tax policies, urban house prices can be curbed to some extent, which in turn reduces their cost of living and induces them to make better mobility decisions. As a result, in general, labor that is less able to afford high house prices tends to move to cities with lower house prices, and the relative share of labor in the places they move increases, as evidenced by higher relative employment rates and relative output.[19]

2.2. Enterprise production costs

Based on life cycle theory, each company has its own distinct geographical strategy. For enterprises, the impact of property prices on their production costs is reflected mainly in their labor costs and land use costs.[20] Firstly, the rise in house prices increases the labor cost of enterprises. The rise in house prices will cause labor to flow to areas with low house prices, resulting in a decline in labor supply.[21] Based on Krugman's 'centre-periphery' theory,[22] Helpman[23] initially incorporated components of the home market into the new economic geography by analyzing the effects of real estate prices on labor aggregation. Rabe and Taylor's investigation into the volatility of house prices in the UK found that high house prices discourage labor mobility, which is a major factor contributing to labor shortages in the South East of the UK.[24] Secondly, rising house prices drive up the cost of land use. Land prices are

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essentially a form of rent and both land and house prices depend on housing demand, which leads to demand for land for housing construction. As house prices rise, housing demand rises as well, driving up land prices and ultimately driving up company land usage expenses.

To some extent, property taxes can regulate housing supply and demand, lowering the cost of labor for enterprises. On the one hand, property taxes are levied on the holding portion of a home, which can increase the cost of ownership or maintenance for homebuyers. As a result, buyers may choose to purchase smaller homes or sell their larger ones to lessen their demand for real estate. Also, the higher cost of the property tax may increase the demand for properties in the rental market, which may have an impact on the demand for homes when homebuyers project their future capital.[25] On the other hand, an increase in production costs for companies can lead to a decrease in the opportunity for companies to make a profit, which in turn leads investors to invest more money in other high-yielding sectors. The speculative trend of real estate can be effectively restrained by a property tax, which can also encourage a fall or rationalization and stabilization of property prices.[26] From the perspective of real estate developers, a property tax can effectively alleviate the phenomenon of hoarding and covering up by real estate developers and promote the growth of real estate and the market, thus increasing the supply of housing. In general, corporations will reallocate output and investment due to the effect that production costs have on them. A property tax policy can go some way toward curbing urban house prices, alleviating the burden caused by rapidly rising production costs for firms, rationalising the flow of labor, and attracting other industries to move into the area. At the regional level, the result is an increase in relative employment and relative output.

In summary, rising house prices raise the cost of living for labor and production for enterprises, while property taxes can, to a certain extent, rationalise house prices and therefore have a certain effect on reducing the cost of living for labor and production for enterprises, thus promoting labor mobility and increasing the relative proportion of labor in the place of migration. This article uses the relative employment rate and the relative output to measure labor mobility. As two different indicators of labor mobility, both can reflect the transfer of labor between cities and at the same time can strengthen the empirical findings. Based on this, the following hypothesis is proposed in this article.

Hypothesis 1: Property tax can increase the relative employment rate of Chongqing, with the result being a boost to labor inflows.

Hypothesis 2: Property tax can increase the relative output of Chongqing, the result of which is a boost in labor flows.

3. Study design

3.1. Data sources

This article uses balanced panel data from 2006-2018 for 35 large and medium-sized cities[1] , with Chongqing as the treatment group and 33 large and medium cities other than Shanghai as the control group. Data for the article are obtained from the China Statistical Yearbook, the China City Statistical Yearbook, and the websites of the statistical bureaus of each prefecture-level city. This article simulates labor mobility in Chongqing without the implementation of property tax by using the weighted average of control group cities and then comparing it with the actual situation after the implementation of property tax. There are two reasons for selecting 35 large and medium cities for the study. On the one hand, large and medium-sized cities are the main centers of labor concentration in China, and labor migration occurs mainly between large and medium-sized cities. On the other hand, the synthetic control method is applicable to small samples and requires the situation of other samples to be as close as possible to the treatment group; therefore, 35 large and medium-sized cities selected by the National Bureau of Statistics are chosen.

3.2. Description of variables

In this article, labor mobility is explained by two different metrics: the relative employment rate and the relative output. The former is obtained by dividing the number of urban jobs by the average of urban

[1]The 35 large and medium-sized cities are Beijing, Tianjin, Shijiazhuang, Taiyuan, Hohhot, Shenyang, Dalian, Changchun, Harbin, Shanghai, Nanjing, Hangzhou, Ningbo, Hefei, Fuzhou, Xiamen, Nanchang, Jinan, Qingdao, Zhengzhou, Wuhan, Changsha, Guangzhou, Shenzhen, Nanning, Haikou, Chengdu, Guiyang, Kunming, Chongqing, Xi'an, Lanzhou, Xining, Yinchuan and Urumqi.

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employment in all sample cities, and the latter is obtained by dividing the GDP by the average of the GPD in all sample cities. The control variables selected are the number of hospital and health centre beds, relative wages, population density, GDP per capita, fiscal expenditure as a proportion of GDP, number of international internet users, year-end financial institution deposit balances and education investment, which represent health care, labor productivity, labor costs, agglomeration effect of cities, degree of government intervention in the market, information infrastructure situation, financial and education conditions, respectively.

3.3. Empirical methods

The synthetic control method used in this article is a new policy evaluation method that constructs a "counterfactual" control group for each individual policy intervention through a weighted average of the control groups. This control group simulates labor mobility in the pilot city without the property tax policy. The policy effect of the Chongqing property tax is obtained by subtracting the relative employment rate (or relative output) of Chongqing and the synthetic Chongqing after 2011.

Suppose that there are N+1 cities, the first of which is affected by the property tax reform at T_0 and the other N cities are not affected by the property tax reform. Y_{1it} and Y_{0it} denote the outcomes of implementing the property tax and the nonapplication of the property tax for city i at t. The policy effect of implementing the property tax is the subtraction of the two. Y_{it} is the result of the relative employment rate observed in city i at t .

$$Y_{it} = D_{it}Y_{1it} + (1 - D_{it})Y_{0it} = Y_{0it} + \tau_{it}D_{it} \tag{1}$$

In equation (1), D_{it} denotes the state of property tax policy intervention in city i at t. Since Y_{1it} is observable and Y_{0it} is not, the following model is constructed to estimate the potential outcome without the policy effect.

$$Y_{0it} = \delta_t + \theta_t Z_i + \sigma_t \mu_i + \varepsilon_{it} \tag{2}$$

In equation (2), δ_t is a time-fixed effect, and θ_t is an observable (K × 1)-dimensional covariate representing the control variables not affected by the property tax pilot. Z_i is a (1 × K)-dimensional vector of unknown parameters. σ_t is a (1 × F)-dimensional vector of unobservable common factors. The synthetic control method allows for the presence of unobservable factors that vary over time, then σ_t is not constant. μ_i is a (F × 1)-dimensional vector of coefficients and ε_{it} is a short-run shock that is unobservable in each district and is assumed to satisfy a mean of zero at the district level.

In order to find the Y_{0it}, consider an (N × 1)-dimensional non-negative weight vector W that satisfies $w_j \geq 0, j = 2, \dots, N+1$ to prevent errors due to external extrapolation. Each particular value of the vector W represents a synthetic control for the 1st city, which is a weighted average of all cities within the control group. By assigning weights, the following results can be obtained.

$$\sum_{j=2}^{N+1} w_j Y_{jt} = \delta_t + \theta_t \sum_{j=2}^{N+1} w_j Z_j + \sigma_t \sum_{j=2}^{N+1} w_j \mu_j + \sum_{j=2}^{N+1} w_j \varepsilon_{it} \tag{3}$$

Suppose that there exists a weight vector $(w_2^*, \dots, w_{N+1}^*)$ that satisfies the following equation.

$$\sum_{j=2}^{N+1} w_j^* Y_{j1} = Y_{11}, \sum_{j=2}^{N+1} w_j^* Y_{j2} = Y_{12}, \sum_{j=2}^{N+1} w_j^* Y_{jT_0} = Y_{1T_0}, \sum_{j=2}^{N+1} w_j^* Z_j = Z_1 \tag{4}$$

It can be shown that for $T_0 < t \ll T$, the counterfactual results for City 1 can be approximated by a synthetic control group. Y_{0it} can be evaluated with $\sum_{j=2}^{N+1} w_j^* Y_{jt}$. The estimated effect of the policy is represented by Y.

$$\tau_{1t} = Y_{1t} - \sum_{j=2}^{N+1} w_j^* Y_{jt}, t \in [T_0 + 1, \cdots, T] \tag{5}$$

The synthetic control method has the following characteristics. First, the synthetic control method is a nonparametric method that can extend the traditional DID model. Second, when constructing the control group, the weights are determined by the data, thus reducing the error caused by subjective judgment and avoiding the problem of policy endogeneity. Third, by weighting multiple cities to simulate the situation in Chongqing before the implementation of the policy, the contribution of each city to the "counterfactual" event can be clearly reflected.

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4. Empirical evidence analysis

4.1. Baseline analysis

4.1.1 Impact of property tax on relative employment rates

Synthetic control is carried out with the predictor variables of the relative employment rate. Table 1 shows the combination of weights for synthetic Chongqing under several predictors, which results in weighting factors for four cities. The weights are zero for all cities except Beijing, Tianjin, Harbin, and Wuhan. The cities that make a greater contribution to the composition of the synthetic control cities are given greater weights. For example, under the indicator of relative employment rate, Harbin (with a weight of 0.404) makes a greater contribution. Table 2 shows a comparison of the different predictor variables for Chongqing and synthetic Chongqing before 2011. It can be seen that for the selected predictor variables or the selected relative employment rates for 2006, 2008, and 2010, the differences between real and synthetic Chongqing are small, indicating that real and synthetic Chongqing are better adapted and that the synthetic control method is suitable for estimating the effects of property tax policies.

Table 1: City weights for synthetic control cities.

City	Relative employment rate	Relative employment rate in the secondary sector	Relative employment rate in the tertiary sector
Beijing	0.193	0.492	0.065
Tianjin	0	0	0.935
Harbin	0.404	0.221	0
Wuhan	0.403	0.087	0

Table 2: Fitting and comparison under different predictor variables.

Predictor variables	Chongqing	Synthetic Chongqing
Relative employment rate (2006(1)2010)	1.862	1.862
Relative Wages	0.831	0.999
Ln GDP per capita	9.905	10.581
Fiscal expenditure as a percentage of GDP	0.196	0.115
Ln Population density	5.977	6.165
Ln Financial institution deposit balances at the end of the year	18.251	18.104
Ln Number of hospital health centre beds	11.272	10.719
Ln International Internet users	5.242	5.107
Ln Investment in education	11.421	11.415
Relative employment rate (2006)	1.861	1.874
Relative employment rate (2008)	1.912	1.878
Relative employment rate (2010)	1.792	1.811

Figure 1 shows the policy effect of the property tax in Chongqing. The solid line here represents the real Chongqing, the dashed line represents the synthetic Chongqing, and the vertical dashed line represents the property tax reform in 2011. As can be seen in the figure, before 2011, Chongqing had a relatively similar relative employment rate compared to each of its synthetic cities and had a good fit effect. However, after the implementation of the property tax policy, a large deviation occurs. The relative employment rate of synthetic Chongqing is lower than that of real Chongqing, and the difference between them exactly reflects the policy effect of property tax. The Chongqing property tax policy has contributed significantly to the increase in the relative employment rate in Chongqing, indicating that the property tax has promoted labor mobility in Chongqing. Hypothesis 1 is verified. The effects of the property tax policy on the relative employment rates of the secondary and tertiary industries in Chongqing have the same effect and both have a significant boosting effect.

The trend in the policy effect shows less volatility and near-level changes in relative employment after 2012 and 2013. This is mainly due to lower expectations of property taxes and the weakness of government incentives. The results of existing research suggest that the effects of fiscal taxes are correlated with the degree of public expectations and policy incentives. At the beginning of the property tax reform, people had higher expectations of the property tax, thus producing better policy effects. However, during the implementation process, it was noted that the incentive for the property tax was not as strong as expected. As a result, some indicators showed cross-sectional oscillations. A similar situation was observed in a study by Liu Jiayan and Fan Ziying [9] exploring the impact of property tax on house

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prices in Chongqing.

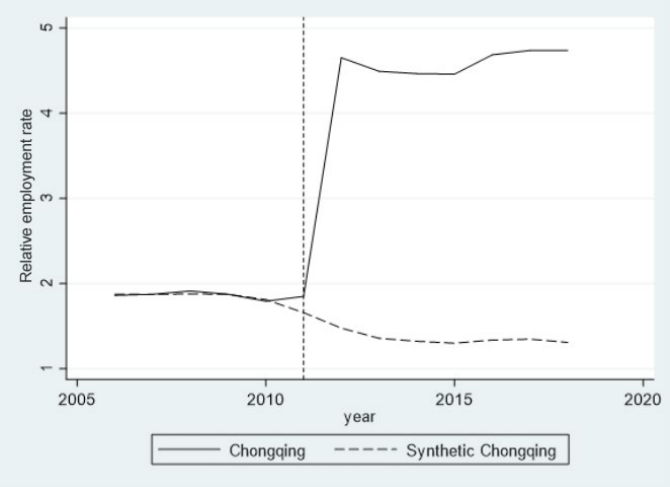

Figure 1: Relative employment rate.

4.1.2 Impact of property tax on relative output

The effects of Chongqing's property tax policy on relative output are depicted in Figures 2 and 3. After the implementation of the property tax, there is some deviation in both the relative output and the relative output of the tertiary sector. The results suggest that the implementation of the property tax can increase the relative output of Chongqing, and Hypothesis 2 is tested. The relative output of the tertiary sector deviates to a greater extent, indicating that the property tax policy has a more significant effect on the increase in tertiary output.

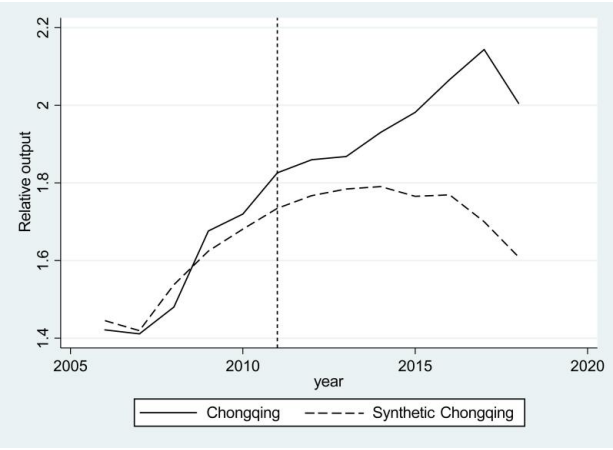

Figure 2: Relative output.

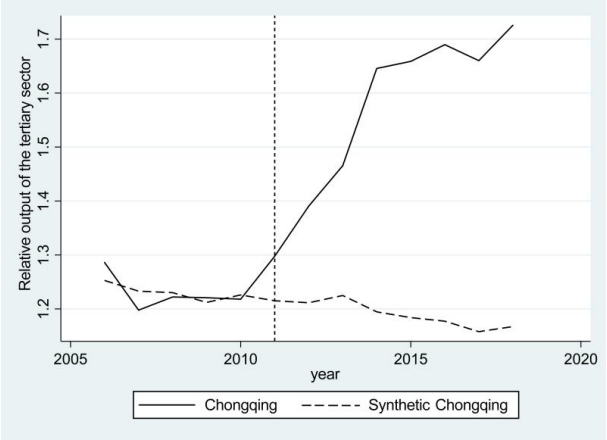

Figure 3: Relative output of the tertiary sector.

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Overall, the property tax has had a significant contribution to Chongqing's relative employment rate as well as to the increase in relative output, attracting labor flows to Chongqing, and this conclusion is more convincing given the relatively good fit effect in Chongqing.

Looking at the implementation details of the property tax, Chongqing's property tax policy limits the exemption to households, causing residents who had intended to purchase large homes to also look at smaller homes for tax avoidance purposes, thus expanding the demand for smaller homes in the short term and leading to higher prices for such homes. On the contrary, the increased cost of larger and upscale homes will lead to a decrease in demand for larger and higher-end homes. Meanwhile, some developers who had been concentrating on luxurious and spacious homes start to consider modest homes, expanding the supply of such housing. This will result in lower capital gains for companies, prompting non-real estate companies to invest more capital in their main business. Compared to Shanghai, Chongqing has a higher property tax rate, stronger policy implementation, and a larger tax levy. Excessive house price increases will affect the development of the rest of the real economy, and with the current house prices in Chongqing. Property tax regulation can better alleviate the real estate market bubble and shorten the profit gap between the real estate and non-real estate sectors, which in turn will reduce investment in the real estate sector by non-real estate enterprises and increase productive investment, and overall Chongqing's relative employment rate and relative output will be improved.

4.2. Robustness tests

This article uses ranking tests to exclude other policy confounders and chance factors. The ranking test detects the importance of the policy effect and whether the same situation exists elsewhere as in the pilot cities. The rationale for the ranking test is to assume that each major city within the control group will implement a property tax from 2011 onwards, construct its own synthetic city to assess the impact of the policy, and compare it to the actual policy effect in Chongqing. If there is a sufficiently large difference in the policy effects, it suggests that the policy effect of the property tax is significant and not a condition that has arisen by chance. Cities with poor fits before 2011 are excluded before the ranking test is conducted. RMSPE is used to measure how well the cities matched the synthetic cities. When RMSPE is high, even the larger differences in the predictive variable obtained later in the policy do not reflect the effect of the policy. Therefore, when a city's synthetic control object does not fit well before the policy, the ranking test for that city is no longer analysed.

Taking the relative employment rate as an example, this article excludes cities where the RMSPE exceeded four times that of Chongqing before 2011, including four cities, Beijing, Hangzhou, Haikou, and Shanghai. The result is shown in Figure 4. Here the solid line indicates Chongqing, and the dashed line indicates the cities after excluding the four cities mentioned above. The robustness results show that the relative employment rates between Chongqing and the other major cities fit better before the implementation of the policy, while the gap gradually widens after the implementation of the policy, with Chongqing's relative employment rate in the periphery. This suggests that Chongqing's relative employment rate improves as a result of the property tax passing the robustness test. Furthermore, the probability of this difference is only 1/31, or 3.23%, which is similar to statistical significance, so the improvement in relative employment in Chongqing can be considered significant at the 5% level. Similarly, the effect of the property tax on relative output passed the robustness test. The result is shown in Figure 5.

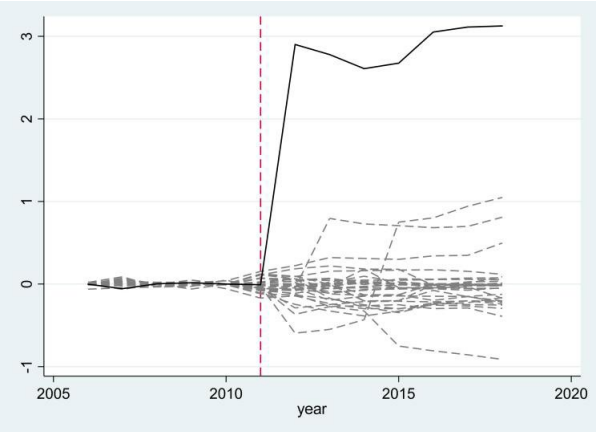

Figure 4: Ranking test for relative employment rate.

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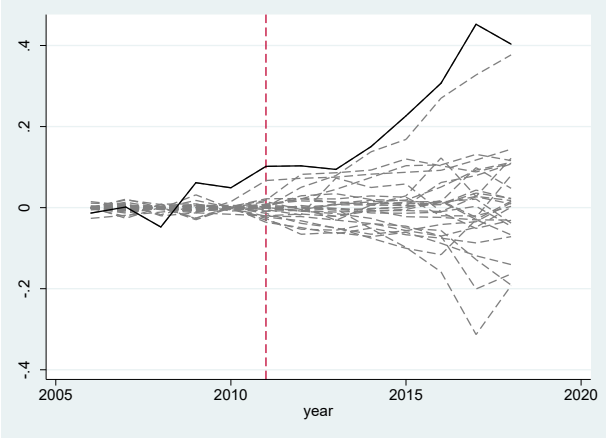

Figure 5: Ranking test for relative output.

4.3. Explanations based on a heterogeneous labor force perspective

The "flight of the peacock to the south-east" vividly depicts the mass migration of the working population from the countryside to the towns and cities, from the midwest to the south-east coast. With the development of society and the high concentration of production, the heterogeneity of the labor force has gradually come to the fore.[27-28] The labor force based on the new economic geography is assumed to be homogeneous and is not suitable for the Chinese labor market situation. As the choice of labor migration is a subjective decision of individuals, differences between labor forces are inevitable as labor forces pursue different levels of utility. Therefore, this assumption of a heterogeneous labor force is consistent with objective facts. Therefore, this article analyzes the impact of the property tax on the mobility of heterogeneous workers based on the perspective of a heterogeneous labor force with different levels of education, which is an exploration in line with the situation of the labor market in China.

This article uses synthetic control methods to analyse the impact of the property tax policy on heterogeneous labor migration. Initially, based on the share of urban employed workers in education and the total number of urban employed workers in each city, the number of people employed with various levels of education is determined. Second, those employed with no formal education or only primary education are considered to be in the primary education labor force. Those employed in junior and senior secondary education are considered to be in the secondary education labor force. Those employed with specialist, undergraduate, or postgraduate education are considered to be in the tertiary education labor force. Lastly, the relative employment rates of different levels of the labor force are used as predictor variables to measure different types of labor mobility. The control variables chosen are GDP per capita, population size, relative wages, investment intensity of fixed assets, and industrial structure. The policy effects generated by Chongqing's property tax on a heterogeneous labor force are demonstrated in Figures 6 to 8.

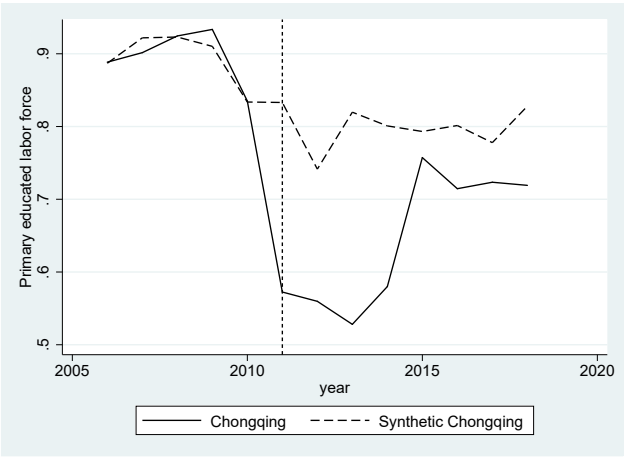

Figure 6: Relative employment rates of the primary educated workforce.

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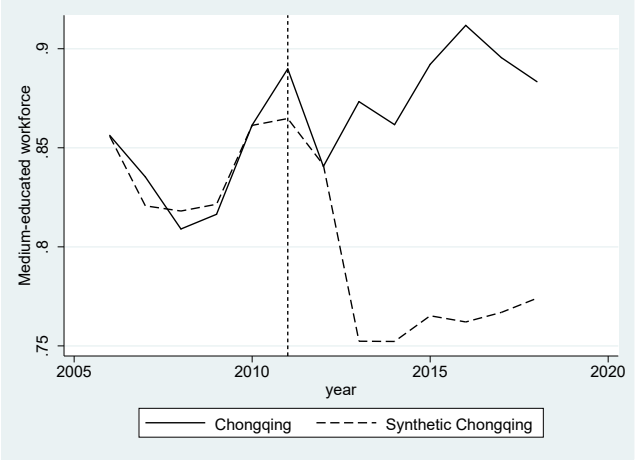

Figure 7: Relative employment rate of the medium-educated workforce.

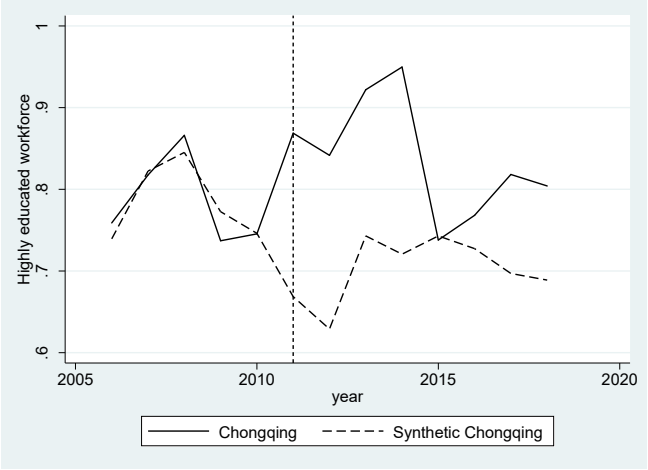

Figure 8: Relative employment rate of the highly educated workforce.

As can be seen in the graph, the relative employment rate for primary education is higher in synthetic Chongqing than in Chongqing, while the relative employment rate is higher in Chongqing for those with secondary education. This suggests that Chongqing's property tax policy has dampened the inflow of primary educated labor and facilitated the inflow of secondary and tertiary educated labor. However, over time, the property tax has weakened somewhat for the higher educated labor force. Possible reasons for the negative impact of property tax on the inflow of primary educated labor are that low-skilled labor face pressure of budget constraints compared to middle and higher skilled labor and prefer to rent as opposed to purchase, so they are less affected by excessive house prices and are also subject to crowding out of middle and higher skilled labor. For migrant workers, in particular, due to various constraints, such as the household registration system and social security system, they choose to live in urban villages and other places where housing costs are minimal in order to save on housing costs. Their unique consumption patterns and lifestyles lead to little relationship between them and housing prices, and high housing prices have not led to a corresponding increase in nominal income levels. This conclusion is confirmed by Zhang Li et al.[15] who argue that house prices have a greater depressing effect on the higher educated labor force than the primary ones.

5. Conclusions and policy recommendations

5.1. Conclusions

Using panel data for 35 large and medium cities from 2006 to 2018, this article empirically investigates whether the property tax reform event implemented in Chongqing in 2011 has an impact on labor mobility. The results of this article are as follows. First, Chongqing's property tax policy significantly influences both the promotion of the relative employment rate and the relative output, making a significant contribution to the relative output of the tertiary industry. Second, based on a

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heterogeneous labor force perspective, it is found that property tax policy has an absorbing effect on the labor force at secondary and tertiary levels, while it has a negative effect on the labor force at primary level. The possible reasons for this are that the primary education workforce is under pressure from budget constraints, has little need and desire to purchase a house, so excessive house prices have less impact on them. On the whole, the property tax has had a catalytic effect on labor mobility, attracting labor to Chongqing. The effect of the implementation of the property tax provides a certain theoretical and practical foundation for the growth and improvement of China's real estate market.

5.2. Policy recommendations

This article confirms that Chongqing's property tax policy can have a positive impact on labor inflows, which has implications for property tax reform in China. For the implementation of the property tax, this article makes the following policy recommendations.

Firstly, it is critical to encourage the implementation of China's property tax policy and aggressively investigate the property tax reform. Most Chinese cities are currently in the middle of their industrial development and must strengthen the development of productive service industries to curb excessive prices in the real estate sector. As far as China's major cities are concerned, it is still a good time to implement property taxes. At the same time, it is important to get a handle on the intensity of the tax levy in line with the current level of property prices and to plan a reasonable levy range for cities with high property prices.

Secondly, the property tax should be fully utilised to draw in new workers, particularly middle- and high-end talents. Research based on a heterogeneous workforce has found that property taxes have different effects on workforces with different levels of education. Urban development and human resource availability are closely intertwined. In the process of formulating property tax policies, factors conducive to the inflow of labor need to be taken into account, and the tax rate and type of tax reformed. Prevent the squeeze on other sectors caused by the rapid rise in property prices and improve the city's industrial agglomeration capacity and its ability to absorb middle- and high-end talent.

Third, we should take into account social equity and strengthen social protection for low-skilled labor. Building affordable housing is a more successful preventive tactic. To accommodate migrant workers and other low-skilled laborers, the constraints on household registration for low-cost housing should be loosened. The means of financing low-cost housing should be increased to improve the supply of housing. Adequate housing supply is a prerequisite for the full implementation and enforcement of low-cost housing. In addition, for special groups, tax breaks or tax incentives should also be implemented, etc.

Finally, there are shortcomings in this article and the following two areas could be further improved. First, due to the limitation of data availability, this article does not use individual labor mobility data to explore the impact of property tax on labor mobility. Microdata on labor mobility would have made the findings more credible and would have allowed for more detailed policy formulation. Second, the implementation of property tax policies involves all aspects of social life, and this article only focuses on whether property taxes can promote labor mobility. In China's property tax reform, it is crucial to take into account a diversity of viewpoints in order to make the property tax system more scientific and reasonable.

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