State Retreats and Labor Market Advances? Evidence from China*

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Abstract

Policymakers often implement stricter migration policies compared to trade policies. This paper examines how the development of the state sector influences Chinese local authorities' decisions to reduce barriers for internal migrants. A simple conceptual framework suggests that a smaller state sector incentivizes local governments to dismantle migration barriers. Using a unique dataset on the timing of pro-migration policies by Chinese prefecture-level governments and a discrete time hazard model, the study finds that prefectures with a smaller state sector removed migration barriers more rapidly. Controlling for factors like public service expenditures, labor misallocation, and labor absorption capacity does not significantly change the main results, emphasizing the crucial role of fiscal subsidies to the state sector in this relationship. Furthermore, the use of a control-function methodology to address potential issues with the state sector variable reinforces the main argument. Thus, policies favoring the state sector may hinder local labor market development by perpetuating higher migration barriers.

JEL classification: P30; O24; R23; J45
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1 Introduction

Ronald Reagan's inauguration as U.S. President in January 1981 marked a significant shift towards market-driven economics, famously encapsulated in his declaration: "Government is not the solution to our problem; government is the problem"(Reagan (1981)). Over the following three decades, this ethos guided economic policy, prioritizing markets and enterprises over state intervention. However, the 2008 financial crisis prompted a temporary resurgence of state interventions, challenging the prevailing narrative (Igan *et al.* (2019)).

More recently, the combined impact of the global pandemic and the Ukraine crisis suggests a potential long-term shift in the role of government. These developments align with a recent study by Juhasz *et al.* (2023), which reveals a surge in industrial policy interventions worldwide over the past decade. According to Li and Maskin (2021), government has become an active and influential participant in modern market economies. In China, the declining dominance of the state sector in the economy has been reversed since the early 2010s.[1] For instance, the percentage of private investment in fixed assets fell from 64% in 2014 to 50% in 2023. Despite the fluctuations in the government's role, the labor market implications of state sector development remain unclear.

This paper investigates the labor market impact of state sector development in a developing country that has undergone significant state sector restructuring since the late 1990s. Specifically, I examine whether and how the development of the state sector influences the removal of migration barriers for millions of internal migrants.[2] To conduct this analysis, I leverage unique pro-migration policies implemented by Chinese local authorities at various points in time since the early 2000s.[3]

China's internal migration policy, known as the Hukou System, provides a unique context for examining migration barriers faced by internal migrants. Since the early 2000s, internal migration within China has surged dramatically.[4] This period also witnessed significant shifts in migration policies, most notably the decentralization of policy-making authority from the

[1] In this paper, the state sector is defined as consisting of state-owned enterprises (SOEs), while the non-state sector includes all non-SOE entities.

[2] According to the National Bureau of Statistics, migrants are defined as those individuals that have lived away from their registered place (village, township or street) for more than 6 months.

[3] According to the Constitution of the People's Republic of China, the country's administrative units are currently based on a three-tier system. 1. The country is divided into provinces, autonomous regions and municipalities directly under the Central Government. 2. Provinces and autonomous regions are divided into autonomous prefectures, counties, autonomous counties and cities; 3. Counties, autonomous counties and cities are divided into townships, ethnic minority townships and towns. In this paper, local policymakers refer to prefecture-level city governments, and prefecture-level city and prefecture are interchangeable.

[4] The 2015 population census reported a total of 292 million migrants in China, representing a staggering increase of 148 million, or 102%, compared to the year 2000.

central government to local levels. This shift granted local policymakers greater autonomy in implementing pro-migration policies (Jin (2018)). Consequently, some local policymakers have been more willing to adopt such policies than others.

This paper extends the framework of Casarico *et al.* (2018) by incorporating heterogeneous sectors within the economy to investigate how the development of the state sector influences policymakers' incentives to eliminate migration barriers. In this framework, policymakers aim to maximize local revenues (Jin *et al.* (2005); Li and Zhou (2005)). On one hand, implementing pro-migration policies leads to an influx of migrants, which places significant pressure on fiscal expenditures allocated to local public services—a concern known as welfare leakage. On the other hand, such policies reduce labor market misallocation by promoting greater labor mobility, resulting in efficiency gains, and enhance employment by reallocating redundant labor to sectors with unmet labor demand. Both improved matching efficiency and increased employment contribute to higher local revenues. However, a relatively smaller state sector may be associated with fewer fiscal subsidies, leading to higher potential for revenue expansion after removing migration barriers. [5]

To empirically assess the impact of state sector development on the adoption of pro-migration policies, I utilize two distinct econometric approaches. First, I construct an early adoption variable to indicate whether a prefecture has implemented pro-migration policies at a specific point in time. By comparing prefectures that adopted these policies early to those that did not, I estimate how state sector development influences the likelihood of early adoption using a logit model. Second, I employ a discrete-time hazard model to examine how state sector development affects the duration until the adoption of pro-migration policies. This approach accounts for variations in the precise adoption dates across local policymakers, allowing for an estimation of the impact of state sector development on the time taken to adopt pro-migration policies.[6]

To address the issue of potential omitted variables bias, I conduct a sensitivity analysis by examining how the treatment effects change with the inclusion of observed controls. If the coefficient remains consistent after adding these controls, it indicates that omitted variable bias is likely minimal. However, if the primary coefficient decreases in magnitude after introducing control variables, I undertake a more detailed sensitivity analysis. This analysis follows the approaches outlined by Altonji *et al.* (2005), Oster (2019) and Diegert *et al.* (2023), which evaluate the bias by comparing the influence of observed versus unobserved variables. In this process, I calculate Altonji-Oster statistics, focusing on coefficient stability and the R-squared values.

To address potential endogeneity or measurement issues with the state sector variable in the

[5] While the theoretical framework proposed by Casarico *et al.* (2018) considers the channels of welfare leakage and efficiency gains, it does not account for the capacity of the labor absorption channel.

[6] A similar approach has been adopted by Kroszner and Strahan (1999) and Deng and Zanjani (2018).

hazard model, I adopt several approaches. Specifically, I employ a control-function methodology developed by Palmer (2024), which effectively addresses endogenous or mismeasured regressors in hazard models. For this analysis, I construct various instruments related to the state sector, based on historical variations in central government investments from the 1950s during the planned economy era. These instruments are designed to be independent of contemporaneous shocks to the state sector or the adoption of pro-migration policies.

This study presents several key findings. First, the logit model indicates that a one-standard-deviation decrease in the size of the state sector corresponds to a 5.9 percentage point increase in the likelihood of early adoption of pro-migration policies, which equates to a 17.4% rise at the sample mean. Second, the hazard model reveals that a smaller state sector is associated with a faster adoption of these policies, with a one-standard-deviation decrease leading to a 3.4% reduction in the time until adoption. Third, the results remain robust even after accounting for factors such as expenditures on public services, labor misallocation, and labor absorption capacity, emphasizing the crucial role of fiscal subsidies to the state sector in this relationship. Furthermore, the robustness of the primary estimates regarding the effect of state sector size is confirmed using the approach developed by Oster (2019), which moves beyond mere statistical association. However, the method proposed by Diegert *et al.* (2023), which operates under less stringent assumptions than those of Oster (2019), does not entirely rule out the possibility of omitted-variable bias. Finally, by addressing potential endogeneity through a control-function methodology, the analysis finds that a one-standard deviation decrease in the state sector size correlates with a 8.5% to 10% reduction in the time until policy adoption, further reinforcing the main argument. Additionally, the study shows that higher public service expenditures tend to delay the adoption of pro-migration policies, while greater labor misallocation and higher labor absorption capacity accelerate it, consistent with the conceptual framework discussed in Section 2.

The main contributions of the study are as follows. First, it enriches the literature on the labor market consequences of state sector development (Song *et al.* (2011); Brandt *et al.* (2013); Hsieh and Song (2015); Berkowitz *et al.* (2017); Feng and Guo (2021); Chassamboulli and Gomes (2023)). In many developed countries, migration policies have been less open compared to trade policies in recent years (Hanson *et al.* (2007); Hatton and Williamson (2007); Mayda (2008)). Given the increasing role of state intervention worldwide over the past decade, to what extent does the state sector development influence policymakers' support for or opposition to pro-migration policies remains unclear. While numerous studies have investigated the impact of state sector development on the capital market (Song *et al.* (2011); Brandt *et al.* (2013)), much less is known about its effects on the labor market (Feng and Guo (2021)). This paper provides some of the

first evidence underscoring that the expansion of the state sector can significantly dissuade local policymakers from implementing pro-migration policies. This resistance may, in turn, impede the development of the local labor market by maintaining higher migration barriers.

Second, it adds to the literature on the determinants of pro-migration policy adoption. While numerous studies have provided valuable insights into the determinants of individual attitudes towards pro-migration policies (Scheve and Slaughter (2001); Mayda (2006); Dustmann and Preston (2007); Hainmueller *et al.* (2015)), they often fall short in offering direct evidence on factors influencing policymakers' decisions to adopt or oppose these policies. Relying on aggregated individual attitudes may not accurately predict actual migration policy outcomes (Facchini and Mayda (2008)), highlighting the need for a deeper understanding of the dynamics behind policymaking.

Although some studies have investigated the voting behavior of representatives regarding support or opposition to specific pro-migration policies (Facchini and Steinhardt (2011); Milner and Tingley (2011); Facchini *et al.* (2016); Casarico *et al.* (2018); Tabellini (2020); Facchini *et al.* (2024)), they do not directly address of process of policy adoption. Much of this literature focuses on international migration. By investigating internal migration policies, this study mitigates identification concerns associated with unobservable factors present in international migration, such as political issues. An exception is Tian (2024), who examines the impact of trade liberalization on internal migration regulations implemented by Chinese local governments. Unlike Tian (2024), this paper leverages a unique pro-migration policy adopted by local policymakers at different times to further explore what determines the speed and timing of adopting pro-migration policies. This study also aligns with prior research from developed countries, which highlights that concerns about both welfare leakage and efficiency gains are crucial in shaping the adoption of pro-migration policies (Dustmann and Preston (2007); Facchini and Mayda (2008, 2009); Casarico *et al.* (2018)).

Third, this study contributes to our understanding of the factors that influence Chinese policymakers' decisions to reduce labor market distortions. While recent years have seen a surge in research on the Chinese Hukou System published in top economics journals, much of this literature focused on the consequences rather than the causes of changes in the Hukou System (Kinnan *et al.* (2018); Fan (2019); Ngai *et al.* (2019); Tombe and Zhu (2019); Imbert *et al.* (2022); Sieg *et al.* (2023); Adamopoulos *et al.* (2024); An *et al.* (2024)).[7] Unlike Tian (2024), who emphasizes the

[7]Recent studies have significantly advanced the measurement of the hukou system over time (Zhang *et al.* (2019); Chen *et al.* (2024); Tian (2024)), particularly in tracking changes in entry requirements. However, this study adopts the approach of Jin and Zhang (2023), which recognizes that some entry requirements are qualitative and challenging to quantify. These include unwritten rules known only to local officials responsible for hukou decisions, which are not formally documented.

role of external labor demand (i.e., trade liberalization) in reducing migration barriers, this study examines the impact of domestic reforms, particularly state sector restructuring, on the easing of these barriers. Furthermore, by demonstrating the close association between the timing and pace of pro-migration policy adoption and local economic conditions, this paper offers new insights into how Chinese policymakers use local knowledge, as suggested by Hayek (1945), to address market distortions (Huang *et al.* (2017)). This understanding also helps explain why Chinese policymakers often opt for a gradual approach rather than "a big bang" approach to correct market distortions on a national scale (Wei (1997); Lau *et al.* (2000); Roland (2002)).

The remaining contents are structured as follows: the next section offers some institutional backgrounds and provides a simple conceptual framework elucidating local policymakers' decisions regarding the adoption of pro-migration policies; Section 3 presents the data used, describes the variables, and provides summary statistics; Section 4 outlines the empirical methods employed; Section 5 presents the results of the analysis, and the final section concludes.

2 Restructuring of the State Sector and Pro-migration Policy Adoption

This section is divided into two parts. The first part provides an overview of the institutional backgrounds of state sector restructuring and pro-migration policy adoption in China. The second part presents a simple conceptual framework for analyzing how the development of the state sector influences the adoption of pro-migration policies.

2.1 Institutional backgrounds

2.1.1 State Sector Restructuring

Since the early 1990s, China's reform of the state-owned enterprises (SOEs) has evolved from delegating decision-making authority to restructuring ownership and corporate governance, eventually leading to privatization and corporatization (Xu *et al.* (2005)). This shift was driven by the deteriorating financial performance of SOEs in the 1990s, despite earlier productivity gains in the 1980s (Lardy (1998)).

Beginning in 1995, and intensifying after the Fifteenth Communist Party Congress in 1997, the government adopted the policy of "seizing the large and letting go of the small" (Hsieh and Song (2015)). This policy aimed to privatize small and medium-sized SOEs while retaining control over large SOEs to enhance their financial performance and market competitiveness. As a result, numerous small SOEs were privatized or closed, while large SOEs were corporatized and merged into larger industrial groups under central government control. The privatization or restructuring

of small SOEs was achieved through various means, including internal restructuring, bankruptcy, employee shareholding, auctions, leasing, and joint ventures. Some SOEs were also delegated to lower-level governments (Huang *et al.* (2017)).

2.1.2 Internal Migration Policies

Internal migration in China is strictly controlled by the Hukou System, which was formally established in 1958 (Chan and Zhang (1999)). Under the initial Hukou System, every individual was registered at birth to a specific place, and relocating from this registered place was prohibited without permits of authorities in both sending and receiving regions. More importantly, access to public services was closely tied to one's registered location. Consequently, the Hukou System discourages internal migration by restricting access to local public services and job opportunities, thus deterring labor reallocation from rural to urban areas as well as within urban sector (Meng and Zhang (2001); Au and Henderson (2006); Kamal and Lovely (2013); Ngai *et al.* (2019); Jin and Zhang (2023)).

Since the mid-1980s, gradual reforms to the Hukou System have allowed rural residents to temporarily relocate to other areas. However, these migrants can only access public services in their new locations if they change their registered place to the local one, which remains nearly impossible for most migrants. Beginning in the early 2000*s*, further reforms of the Hukou System were implemented by local policymakers at the prefecture level , adhering to general guidelines set by provincial government. The primary change introduced by these pro-migration policy adoption was the replacement of the annual quota system with specific entry criteria. After these reforms, migrants who met certain criteria could apply to convert their Hukou to a local one, regardless of their original Hukou type. In other words, the adoption of pro-migration policies made it easier for (some) migrants to obtain local Hukou status.

2.2 A Simple Conceptual Framework

This subsection aims to explore how the development of the state sector influences the removal of migration barriers. I present a straightforward conceptual framework to formally demonstrate two conflicting objectives that shape local policymakers' incentives to eliminate these barriers. Using this framework, I analyze the impact of state sector development on the adoption of pro-migration policies. This analysis extends the framework of Casarico *et al.* (2018) by incorporating heterogeneous sectors within the economy, specifically the state sector and the non-state sector.

In a representative prefecture c, domestic production factors (such as labor) and migrant

workers are used to produce a single good. Domestic production factors are owned by either the state sector or the non-state sector. In each sector, domestic labor and migrant workers are assumed to be complements.[8] For simplicity, I refer to some natives as domestic factor owners, or entrepreneurs. Labor supply to the city is limited by the city's working-age population, and additional inflows of non-local labor are discouraged by the Hukou System. Labor market efficiency is low due to institutional obstacles that prevent labor reallocation from rural to urban sectors as well as within the urban sector. To capture labor misallocation, I adopt a framework whereby individual abilities and a vacancy's skill requirement are not necessarily perfectly matched. Consequently, some qualified migrant workers might end up in jobs with lower skill requirements, and similarly, some low-skilled native workers might end up in jobs with higher skill requirements.

A city has N natives, including entrepreneurs, and M migrant workers. The proportion of domestic production factors owned by the state sector is z. Some fraction of migrant workers has converted to a local Hukou (Hukou migrants). Hukou migrants are defined as migrants who have converted successfully to a local Hukou, effectively becoming permanent residents of their new location with the same rights as natives. If migrant workers are employed by entrepreneurs, a realized match value $v(i,j)$ is created and shared between natives (including entrepreneurs) and migrants.

$$v(i,j) = \begin{cases} (1-\sigma)v(j) & \text{if } j \neq i \\ v(j) & \text{if } j = i \end{cases} \tag{1}$$

where i is the skill requirement of a job, j is the ability of a worker, and σ=$|j-i|$. The match value is highest when the skill requirement of a job is equivalent to the ability of a worker, or $\sigma = 0$.

I use the proportion of Hukou migrants to all migrants p to proxy the average probability of converting to a local Hukou. Given that the pro-migration policy adoption is associated with easier conversion to a local Hukou and a lower probability of job mismatch (Song and Li (2014)), I define the probability of achieving the highest match value as $f(p,z)$. This probability is positively associated with the proportion of Hukou migrants p, i.e., $\frac{df(p,z)}{dp} > 0$, and negatively associated with the proportion of the state sector z, i.e., $\frac{df(p,z)}{dz} < 0$. The intuition behind the latter relationship is that additional forces, such as an immature internal labor market, play a larger role in determining the match value within the state sector. The expected match value $v(i,j,p,z)$,

[8]This assumption is reasonable because most migrant workers engage in low-skilled jobs that are not attractive to local workers. Additionally, there is evidence indicating that migration has a non-negative impact on native workers' wage in China (Meng and Zhang (2010); Combes *et al.* (2015)).

depends on the probability of achieving the highest match value and the corresponding match value:

$$v(i,j,p,z) = f(p,z) \cdot v(j) + (1 - f(p,z))(1-\sigma)v(j) \tag{2}$$

where $f(p,z)$ represents the probability that the skill requirement of a job matches the ability of a worker in each sector, and $1 > f(p,z) > 0$. Since $v(j) > (1-\sigma)v(j)$, it can be easily derived that $\frac{\partial v(i,j,p,z)}{\partial p} > 0$ and $\frac{\partial v(i,j,p,z)}{\partial z} < 0$.

I assume that the aggregate match value is a linear function of the total number of matches multiplied by the expected match value:

$$V(i,j,p,z) = v(i,j,p,z) \cdot X(p,z) \tag{3}$$

where $X(p,z)$ is the total number of job matches, which are jointly determined by the number of unemployed workers $U(p)$ and the number of vacancies $V(z)$. The first term $v(i,j,p,z)$ indicates that p is likely to affect aggregate match value through increasing labor market match efficiency. A higher (lower) p implies that the local labor market is more (less) open to migrant workers (Meng and Zhang (2001)), leading to a lower (higher) degree of labor market mismatch, including both labor reallocation from the rural to urban sector as well as reallocation within the urban sector, and a higher (lower) match value.

The second term $X(p,z)$ indicates that a higher p might increase the number of job matches through labor reallocation, or $\frac{\partial X(p,z)}{\partial p} > 0$. For example, a higher p provides more incentives for unemployed individuals to move away from their registered regions and to be reemployed in another region. This is particularly true when the capacity for labor absorption is higher in destinations (Kamal and Lovely (2013)). Given that the employment elasticity is larger for the non-state sector relative to the state sector, the number of vacancies increases (decreases) along with the expansion of the non-state (state) sector.[9] Furthermore, evidence suggests that a larger state sector is linked to a more segmented product market (Poncet (2005)), which can impact the local capacity for labor absorption. Overall, a higher p increases the number of job matches, while a higher z decreases the number of job matches.

Next, I introduce the local policymaker's revenues. I assume that the local policymaker's revenues come from heterogeneous tax rates $\tau(z)$ on aggregate incomes. $\tau(z)$ decreases with the size of the state sector due to higher fiscal subsidies (e.g., easier access to the credit market) to the firms of the state sector. The total revenues of the local policymaker are then $\tau(z)V(i,j,p,z)$.[10]

[9] Lu *et al.* (2002) find that the employment elasticity of gross domestic product (GDP) is larger for the private sector relative to the state sector.

[10] A large number of migrant workers pay relatively lower income taxes relative to native workers due to tax evasion.

The local policymaker uses a proportion of its tax revenues to finance local public services through a lump-sum transfer $b(z)$ per person, and migrant workers without Hukou conversion do not receive. $b(z)$ increases with the size of the state sector due to fiscal subsidies to employees of the state sector (e.g., more decent welfare benefits). The net revenue of the local policymaker is denoted by Φ^k, with $k \in \{R, NR\}$, where R stands for the policy period and NR for the non-policy period. In the non-policy period, with a proportion of permanent migrants to total migrants p^{NR}, net government revenues are

$$\Phi^{NR} = \tau(z)V(i, j, p^{NR}, z) - b(z)(N + p^{NR}M) \tag{4}$$

Net revenues depend on tax revenues (first term on the right-hand side) and on the expenditures paid for public services (second term). Note that these expenditures only apply to natives N and Hukou migrants $p^{NR}M$, but vary between workers from state and non-state sectors. After adopting pro-migration policies, migrant workers have a higher probability to convert to a local Hukou p^R, where $1 > p^R > p^{NR} > 0$. Net revenues after policy adoption are

$$\Phi^{R} = \tau(z)V(i, j, p^{R}, z) - b(z)(N + p^{R}M) \tag{5}$$

Pro-migration policies not only increase total tax revenues but also increase the expenditures of providing local public services for Hukou migrants.

The difference between Φ^R and Φ^{NR} gives the following expression, which is the net gain of policy adoption and captures the local policymaker's incentive to adopt pro-migration policies:

$$\Phi^{R} - \Phi^{NR} = \tau(z)[V(i, j, p^{R}, z) - V(i, j, p^{NR}, z)] - b(z)M(p^{R} - p^{NR}) \tag{6}$$

Proposition 1. *A local policymaker is less likely to remove migration barriers the smaller the net gain of policy adoption through increasing the size of state sector.*

Proof. Proven in text. □

Proposition 2. *A local policymaker is more likely to remove migration barriers the bigger the gain to aggregate income through increasing the match efficiency as well as the number of job matches, and the smaller the expenditures spent on local public services.*

Proof. See the Appendix A.1. □

However, they still contribute to the local governments' revenues through other kinds of taxation such as consumption taxes. For simplicity, this paper does not distinguish between taxable income between native workers and migrant workers.

In the remainder of the paper, I investigate the empirical relevance of the development of the state sector in explaining the local policymaker's incentives to remove migration barriers.

3 Data, Variables, and Summary Statistics

This section consists of four parts. Part one introduces the data sources. Part two discusses explanatory variables. Part three describes the adoption of pro-migration policies and the last part provides summary statistics.

3.1 Data Sources

This study utilizes prefecture-level data for analyses. The primary dataset is sourced from the China City Statistical Yearbooks, covering the years 2001-2007. To enhance the dataset, I incorporate census data from 2000 to construct variables such as over-education, migration stock, fertility rate and urban unemployment rate. Additionally, I measure the size of the sector sector in each prefecture over time using the Chinese Annual Survey of Industrial Firms (CASIF) for the years 2001-2007.

According to the National Bureau of Statistics, the number of prefectures in China increased from 236 at the end of 1999 to 283 by the end of 2010. For consistency, this study focuses on 256 prefectures that did not undergo significant administrative changes between 2000 and 2010. After excluding a small number of prefectures with missing variables, the final sample consists of 248 prefectures.

3.2 Explanatory Variables

3.2.1 Size of the State Sector

This paper measures the size of the state sector in each prefecture by calculating the percentage of state-owned enterprises (SOEs) in all manufacturing firms based on output. According to data from the Chinese Annual Survey on Industrial Firm in 2001, the average percentage of SOEs in output across the entire manufacturing industry was 35.1%. The distribution of this indicator showed significant variation across prefectures, with the 5th, 50th, and 95th percentiles being 3.1%, 32.6% and 78.2%, respectively. Similar patterns were observed when considering the proportion of SOEs in terms of employment. This variation highlights the diverse landscape of the state sector's presence across different regions.

3.2.2 Expenditures on Public Services

In China, local policymakers are responsible for providing most local public services, including education and healthcare. Access to local education services is one of the most significant privileges for local natives compared to migrant workers under the Hukou System (Liu (2005); Chen and Feng (2013)). This study primarily uses expenditures on education to proxy for the cost incurred by local policymakers when granting migrants full access to local public services.

Per capita fiscal expenditures on education are calculated by dividing fiscal expenditures on education by the total registered population,[11] with both data points sourced from the China City Statistical Yearbooks. According to Table 3, the average per capita fiscal expenditures on education was 177 RMB in 2001, showing significant variation across prefectures. Income disparities among prefectures mean that higher per capita fiscal expenditures on education may simply reflect differences in per capita fiscal revenues. The data shows that the 5th, 50th, and 95th percentiles of per capita fiscal revenues are 125 RMB, 713 RMB, and 2711 RMB, respectively, indicating significant variation across prefectures.

To better reflect the actual costs of providing migrants with local public services, I use the percentage of fiscal expenditures on education relative to fiscal revenues. This percentage accounts for the local government's capability to provide public services. A higher percentage of fiscal expenditures on education relative to fiscal revenues suggests that a local policymaker is allocating a larger proportion of its revenues to education. According to the data, the average percentage is 29.1%, indicating that on average, about 29% of total fiscal revenues are allocated to education. The 5th, 50th, and 95th percentiles are 9.7%, 22.2% and 72.3%, respectively, highlighting significant variation across prefectures. This variation aligns with the unbalanced distribution of education quality across regions in China (Qian and Smyth (2008)).

3.2.3 Labor Misallocation

To proxy for the degree of labor misallocation, I construct an indicator of workers' incidence of over-education in urban area.[12] A higher incidence of over-education among workers suggests a "worse" allocation of labor across occupations and a higher degree of labor misallocation. The calculation of over-education incidence follows the methodology of Casarico *et al.* (2018). I consider the distribution of educational attainments of workers in each occupation, classifying a person as over-educated if they have a level of education one standard deviation above the

[11] This paper assumes that the fiscal expenditures for non-Hukou migrants are negligible.

[12] Both urban and suburban area are considered as a general urban area to calculate the over-education indicator based on occupational distribution. This approach is not applied to rural areas, as most rural people engage in farm work.

mode of urban natives in that occupation. I then use this measure to construct the share of over-educated workers in each prefecture.

Using micro census data from 2000, I find that the average percentage of over-educated urban workers at the prefecture level was 25%, with the 5th, 50th, and 95th percentiles being 16.4%, 24.6% and 35.1%, respectively, indicating significant variation across prefectures. These findings align with previous studies highlighting significant occupational segregation in the urban labor market (Meng and Zhang (2001)). To ensure that a higher incidence of over-education does not simply reflect a very skilled workforce, I calculate the correlation between over-education and relative expenditures on education (results shown in Table 5), finding a very small correlation of -0.05, thereby reducing concerns about multicollinearity.

To capture labor misallocation within the entire prefecture, I construct an indicator of relative labor productivity (Cai *et al.* (2002)). Prefectures consist of districts (urban areas) and counties (rural areas). Given the difficulty of converting to local Hukou in urban districts prior to pro-migration policy adoption, I separately calculate labor productivity for districts and the entire prefecture. Comparing the labor productivity of districts with that of the entire prefecture allows us to assess labor mobility barriers. Labor productivity is calculated by dividing the GDP in the secondary industry (e.g., manufacturing, construction) by the size of labor force in that industry.

According to Table 3, the average percentage of labor productivity was 71% in 2001, indicating that labor productivity in counties was 71% of that in urban district. The 5th, 50th, and 95th percentiles of relative labor productivity were 34.4%, 67.8% and 118%, respectively, showing significant variation. For about 90% of all prefectures, labor productivity in districts was higher than in counties, though about 10% prefectures saw higher productivity in counties, reflecting that some counties were more developed and productive than districts.

3.2.4 Labor Absorption Capacity

This paper uses the urban unemployment rate to measure the capacity of labor absorption in urban area. While a higher unemployment rate might indicate a higher degree of mismatch, this mismatch is likely captured by the labor misallocation variables discussed previously. A higher urban unemployment rate is associated with a lower capacity to absorb migrant workers. Local governments often protect local natives by restricting the number of migrants hired by local firms, particularly during periods of worsening employment conditions (Knight and Song, 1999). Using micro census data from 2000, I find that the average urban unemployment rate was 8.9%. The 5th, 50th, and 95th percentiles of this indicator were 3.0%, 8.4% and 16.8%, respectively, indicating significant variation across prefectures.

I also consider the U.S. granting of Permanent Normal Trade Relations (PNTR) to China as

an exogenous shock affecting local labor absorption capacity. Since the 1980s, U.S. imports from China were subject to the relatively low NTR tariff rates reserved for WTO members, but for China, these low rates required annual renewals that were uncertain and politically contentious. Without renewal, U.S. import tariffs on Chinese goods would have reverted to the higher non-NTR tariff rates assigned to non-market economies under the Smoot-Hawley Tariff Act of 1930. PNTR, along with and the subsequent China's accession to WTO, eliminated the uncertainty of these annual renewals by permanently setting U.S. duties on Chinese imports to NTR levels.

Following the methodology of previous studies (Pierce and Schott (2016); Facchini *et al.* (2019)), I use the NTR-gap to measure reductions in trade policy uncertainty faced by Chinese exporters to the U.S. after China's WTO accession. The NTR-gap is defined as the difference between NTR tariff rates (averaging 4% across industries in 1999), and the non-NTR rates they would have risen to if annual renewal had failed (averaging 36% in 1999). According to the data, the average NTR-gap across prefectures was 31%.

3.2.5 Other Control Variables

Several additional variables are crucial in determining the adoption of pro-migration policies:

1. Percentage of Fiscal Expenditures to Fiscal Revenues: A higher percentage may indicate a higher degree of fiscal deficit, providing local government with more incentives to attract migrants who contribute to fiscal revenues through taxes. The data shows that the average percentage is 186%, suggesting that fiscal expenditures generally exceed fiscal revenues, making fiscal deficits common among local policymakers. To accurately capture the relationship between expenditures on local public services and the adoption of pro-migration policies, the analysis focuses on relative expenditures on education conditional on fiscal deficit.

2. Migration Rate: This variable captures the stock of migrant workers in a prefecture. The data indicates that the average migration rate is 11.9%. with significant variation across prefectures (5th percentile: 3.3%, 50th percentile: 8.9%, and 95th percentile: 27.6%). Prefectures with higher migration rates may face higher fiscal expenditures when providing local public services to migrants. Additionally, a higher migration percentage could correlate with varying levels of labor market efficiency, depending on the sources of migration.

3. Local Fertility Rate: This variable reflects the population growth of local labor in the prefecture. A higher fertility rate indicates greater population growth among local natives, reducing the demand for external labor or migrants. The data shows that the average fertility rate is 1.21, with significant variation across prefectures (5th percentile: 0.81, 50th percentile: 1.19, and 95th percentile: 1.74).

4. Per Capita GDP: This variable is used to capture the level of local economic development.

Higher per capita GDP typically indicates a more developed local economy, which may influence the capacity and willingness to adopt pro-migration policies.

5. Total Urban Population: This variable accounts for varying migration polices across different sizes of prefectures. Prefectures with larger urban populations may have different capacities and needs for adopting pro-migration policies compared to those with smaller urban populations.

3.3 Pro-migration Policies

To determine the exact timing of pro-migration policy adoption, this paper utilized official documents, news on pro-migration policies, and information from several well-known Chinese law databases.[13] I assume that all remaining prefectures adopted pro-migration policies after 2014, given that these policies were extended to the national level in July 2014.[14]

A common change following the adoption of pro-migration policy is the shift from an annual quota system to eligibility-based entry conditions for local Hukou applications, facilitating easier conversion for some migrants. These changes are summarized in Table 1. Generally, the entry conditions include stable accommodation and a fixed job or stable source of income. However, there is variation across cities. For instance, Fuzhou require only stable accommodation, while Nanjing require either stable accommodation or a fixed job. The definition of stable accommodation also varies; in some cities like Chenzhou, renting a house qualifies, whereas in others, home ownership is required.

Furthermore, entry requirements can differ for local and non-local people. For example, Suzhou requires stable accommodation for local residents but demands both stable accommodation and a fixed job for non-local residents. More detailed information is available in Table 2. In this paper, I do not account for the heterogeneous entry conditions among cities that adopted pro-migration policies.

Another notable characteristic of these pro-migration policies is their staggered adoption by local policymakers. Typically, the provincial government sets guidelines, which the lower-tier prefecture-level governments then implement, resulting in varying adoption dates across cities, even within the same province. For example, in Fujian province, Fuzhou adopted the pro-migration policy in March 2002, while Quanzhou and Xiamen followed in July 2002 and August 2003, respectively. More details on the timing of pro-migration policy adoption can be found in Figures 1 and 2.

[13] Law databases can be found in http://www/pkulaw.cn/ and http://www.lawyee.org/.

[14] Even if the actual adoption in some prefectures occurred later, this assumption does not affect the validity of the main results.

Figure 1 illustrates the number of cities that adopted pro-migration policies from 2002 to 2014. I observe that 110 prefectures adopted these policies between 2002 and 2007, representing 38% of all prefectures. The number of cities adopting pro-migration policies increased dramatically from 2002 to 2004 and then grew steadily until 2015, driven by the national extension of the pro-migration policy.

Figure 2 shows the geographical distribution of pro-migration policy adoption over time, highlighting significant variation in the timing of adoption among neighboring regions. This variation underscores the localized nature of policy implementation and the influence of regional dynamics.

Table 1: Description of Pro-migration Policies

Institutional Framework	**Details**
Before adopting the pro-migration policy	
Annual Quota System	Conversion to a local Hukou was strictly controlled by an annual quota system, with state sector recruitment being a primary channel
After adopting the pro-migration policy	
Entry Conditions System	Migrant workers meeting the criteria of stable accommodation and a fixed job are eligible to convert to a local Hukou
Main Impacts	
Direct impact	Increased probability of converting to a local Hukou, especially for migrant workers in the non-state sector
Indirect impact	Facilitated the reallocation of redundant labor from rural to urban areas and from the state sector to the non-state sector

3.4 Summary Statistics

In the following descriptive analysis, I use a straightforward definition of the pro-migration policy adoption variable. Early adoption prefectures are defined as those that adopted the policies before 2005, while late adoption prefectures are those that adopted the policies in 2005 or later. This classification leaves us with 248 prefectures.

Table 4 shows differences in prefecture-level characteristics between early and late adoption prefectures in 2001.[15] I find that the average proportion of the state sector in terms of output was lower in early adoption prefectures than in late adoption prefectures. Similar results are

[15]This paper uses the year 2001 because it is a pre-treatment year, and prefecture-level characteristics are not likely to have been affected by pro-migration policy adoption.

Table 2: Description of Pro-migration Policies

Name of City	Name of Province	Date of Adoption	Stable Accommodation	A Fixed Job
Fuzhou	Fujian	2002-03	YES	NO
Quanzhou	Fujian	2002-07	YES	NO
Xiamen	Fujian	2003-08	YES	NO
Shijiazhuang	Hebei	2003-10	YES	YES
Hengshui	Hebei	2003-11	YES	NO
Handan	Hebei	2004-04	YES	NO
Foshan	Guangdong	2004-07	YES	YES
Mianyang	Sichuan	2003-06	YES	YES
Yibin	Sichuan	2003-07	YES	YES
Zigong	Sichuan	2004-08	YES	NO
Ezhou	Hubei	2004-11	YES	YES
Huangshi	Hubei	2005-07	YES	YES
Xiangtan	Hunan	2005-01	YES	YES
Chenzhou	Hunan	2004-05	YES*	YES
Changde	Hunan	2004-11	YES	YES
Weihai	Shandong	2004-10	YES	YES
Taian	Shandong	2005-12	YES	NO
Qingdao	Shandong	2007-08	YES	YES
Wuhu	Anhui	2003-09	YES	YES
Suzhou	Jiangsu	2003-05	YES	YES**
Nanjing	Jiangsu	2004-07	Either condition is OK	
Huaian	Jiangsu	2003-10	Either condition is OK	
Kunming	Yunnan	2008-01	YES	YES

Note: This table shows more details of pro-migration policy adoption using a number of adoption cities for illustration. * Renting a local accommodation is OK. ** Not required for local people.

observed for the proportion of the state sector in terms of employment.

Additionally, the incidence of over-education among urban workers in early adoption prefectures was higher than in late adoption prefectures, suggesting a higher degree of labor misallocation in the former. While similar results are found for migrants' incidence of over-education, the difference is not statistically significant at conventional levels. The labor productivity gap was also larger in early adoption prefectures compared to late adoption prefectures, though this

difference is not statistically significant.

The urban unemployment rate is lower in early adoption prefectures, indicating a greater capacity to absorb labor. Early adoption prefectures also have a lower migration and fertility rate, suggesting a higher potential demand for external labor or migrants compared to late adoption prefectures. Furthermore, the ratio of fiscal expenditures on education to fiscal revenues was lower in early adoption prefectures.

I do not find significant differences between early and late adoption prefectures in terms of per capita fiscal revenues, per capita fiscal expenditures on education, per capita GDP, and total urban population. In the next section, I further explore how the probability of early adoption is affected by the state sector development, conditional on these observable factors.

Table 3: Summary Statistics

	Sum	Mean	SD	Min	Max	N
Early reform adoption	84	0.34	0.47	0	1	248
Proportion of state-owned firms in employment	87	0.35	0.22	0	1	248
Proportion of state-owned firms in output	97	0.39	0.20	0	1	248
Per capita fiscal expenditures on education (RMB)	43,992	177.39	157.56	20	2,087	248
Ratio of fiscal expenditures on education to fiscal revenue	72	0.29	0.24	0	2	248
Urban workers' incidence of over-education	62	0.25	0.06	0	0	248
Migrants' incidence of over-education	63	0.25	0.08	0	1	248
Urban natives' incidence of over-education	63	0.25	0.07	0	1	248
Labor productivity gap	176	0.71	0.28	0	2	248
Urban unemployment rate	22	0.09	0.04	0	0	248
NTR gap	77	0.31	0.09	0	1	248
Fertility rate	301	1.21	0.29	1	2	248
Migration ratio (migrant/population)	30	0.12	0.10	0	1	248
Per capita fiscal revenue (RMB)	249929	1007.78	1489.06	28	20,261	248
Per capita fiscal expenditures (RMB)	342573	1381.34	1473.39	92	19,836	248
Ratio of fiscal expenditures to fiscal revenue	462	1.86	1.30	1	16	248
Per capita GDP (RMB)	2446629	9865.44	11877.27	2,245	149042	248
Total urban population (10,000)	25,580	103.14	88.20	16	758	248

Note: This table reports the summary statistics for prefecture-level variables. All the price-relevant variables are deflated. Variables such as incidence of over-education and urban unemployment rate are calculated using a 0.095% sample of the micro census 2000. Variables such as fertility rate and migration ratio are collected from the aggregated census 2000. Variables such as proportion of state-owned firms in employment and proportion of state-owned firms in output come from the Chinese Annual Survey of Industrial Firms (CASIF) data in 2001. All the remaining variables come from the China City Statistical Yearbook (2002).

Table 4: Prefecture-level Characteristics in Early and Late Adoption Prefectures

	Late	Early	Diff. (Late - Early)	s.e.	obs.
Proportion of state-owned firms in employment	0.4	0.3	0.1***	(0.0)	248
Proportion of state-owned firms in output	0.4	0.3	0.1***	(0.0)	248
Per capita fiscal expenditures on education (RMB)	177.8	176.6	1.2	(21.2)	248
Ratio of fiscal expenditures on education to fiscal revenue	0.3	0.3	0.1*	(0.0)	248
Urban workers' incidence of over-education	0.2	0.3	-0.0*	(0.0)	248
Migrants' incidence of over-education	0.2	0.3	-0.0	(0.0)	248
Urban natives' incidence of over-education	0.3	0.3	-0.0	(0.0)	248
Labor productivity gap	0.7	0.7	0.0	(0.0)	248
Urban unemployment rate	0.1	0.1	0.0***	(0.0)	248
NTR gap	0.3	0.3	-0.0***	(0.0)	248
Fertility rate	1.2	1.2	0.1**	(0.0)	248
Migration ratio (migrant/population)	0.1	0.1	0.0*	(0.0)	248
Per capita fiscal revenue (RMB)	999.2	1024.5	-25.2	(200.2)	248
Per capita fiscal expenditures (RMB)	1379.2	1385.6	-6.4	(198.1)	248
Ratio of fiscal expenditures to fiscal revenue	1.9	1.8	0.0	(0.2)	248
Per capita GDP (RMB)	10011.5	9580.3	431.2	(1596.6)	248
Total urban population (10,000)	103.7	102.1	1.6	(11.9)	248

Note: The table compares the prefecture-level characteristics between early and late adoption prefectures. The early adoption group refers to those prefectures that adopt the pro-migration policy before 2005, while the late adoption group refers to those prefectures that adopt the pro-migration policy in 2005 and afterwards. Column (1) is the variable label; Column (2) shows mean values for late adoption prefectures and Column (3) for early adoption prefectures. Column (4) and (5) test the differences in prefecture-level characteristics between late and early adoption prefectures. Column (6) reports the number of observations. Variables such as incidence of over-education, urban unemployment rate, fertility rate and migration ratio come from census 2000, while all the remaining variables are collected from the Chinese City Statistics Yearbook (2002).

4 Econometric Models

This paper uses two econometric approaches to estimate the impact of state sector development on the adoption of pro-migration policies. The first approach compares prefectures that adopted these policies early (before 2005) with those that adopted them later. Although defining early adoption as pre-2005 is somewhat arbitrary, this method allows us to examine the factors influencing support for pro-migration policies at a specific point in time, aligning with most previous studies. The second approach models the hazard rate of pro-migration policy adoption, which represents the probability of adopting the policy in a given year t, conditional on not having adopted it by the previous year $t-1$. This method enables us to explore what drives the timing of policy adoption. In both cases, I analyze whether state sector development is associated with the early or faster adoption of pro-migration policies.

Table 5: Correlation Matrix for Main Variables

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
(1) Proportion of state-owned firms in employment	1											
(2) Per capita fiscal expenditures on education (RMB)	-0.215	1										
(3) Ratio of fiscal expenditures on education to fiscal revenue	0.0811	-0.210	1									
(4) Urban workers' incidence of over-education	0.137	-0.0430	-0.0558	1								
(5) Labor productivity gap	-0.242	0.0245	0.197	-0.0459	1							
(6) Urban unemployment rate	0.146	-0.145	0.102	0.234	-0.0193	1						
(7) NTR gap	-0.202	0.123	-0.0139	-0.190	0.0213	-0.167	1					
(8) Fertility rate	0.277	-0.321	0.125	-0.137	-0.157	-0.157	-0.131	1				
(9) Migration ratio (migrant/population)	-0.217	0.708	-0.286	0.0602	0.188	-0.0604	0.0133	-0.493	1			
(10) Per capita fiscal revenue (RMB)	-0.221	0.932	-0.334	0.0146	0.0139	-0.161	0.0969	-0.345	0.731	1		
(11) Per capita fiscal expenditures (RMB)	-0.182	0.930	-0.320	0.0424	-0.0267	-0.0759	0.0910	-0.334	0.706	0.971	1	
(12) Ratio of fiscal expenditures to fiscal revenue	0.0953	-0.187	0.789	0.0406	0.0784	0.140	-0.0233	0.111	-0.244	-0.257	-0.164	1

Note: This table shows the correlation matrix for main variables.

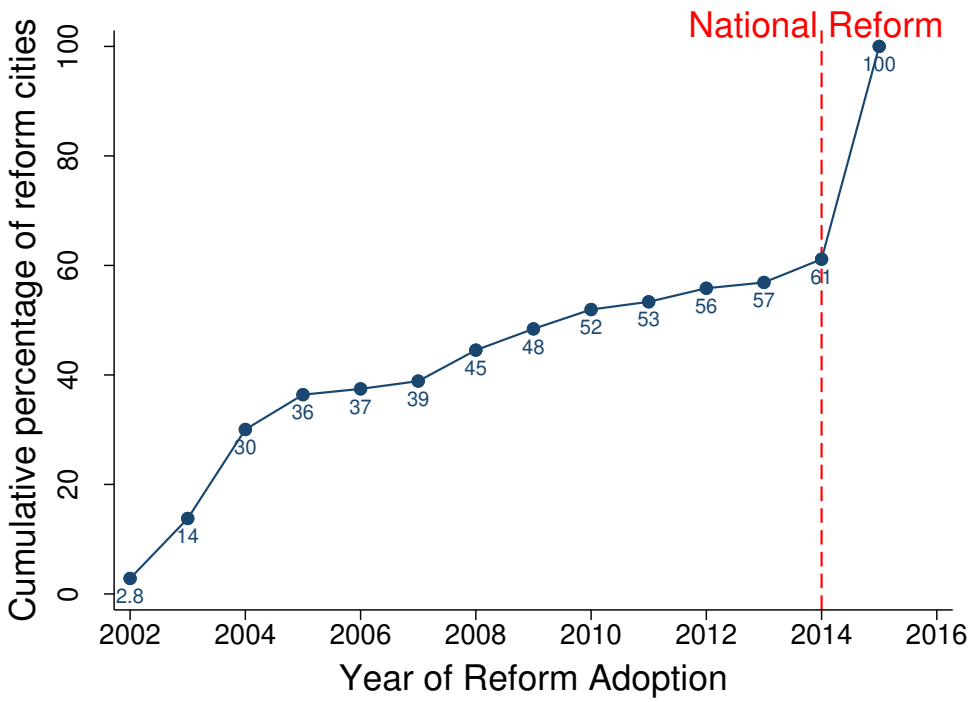


Figure 1: Percentages of Pro-migration Policy Adoption Prefectures over Time

Note: This figure shows the percentage of pro-migration policy adoption prefectures over time. I assume that all the remaining prefectures adopted the pro-migration policy after 2014 given the fact that the pro-migration policy was announced at the national level in July 2014.

To empirically explore the differences between early and late adoption prefectures, I estimate the following logit model:

$$P(\text{Reform}_i = 1 \mid x) = G(\alpha + \beta_1 \text{State sector}_i + Z_i\Phi + \varepsilon_i), \quad G(\cdot) = \frac{\exp(\cdot)}{1+\exp(\cdot)} \tag{7}$$

where Reform_i is a dummy variable indicating whether prefecture i adopted the pro-migration policy before 2005 (1 if yes, 0 otherwise); State sector_i represents the proportion of output from state-owned firms relative to the entire manufacturing industry in prefecture i. Z_i includes prefecture-level characteristics such as expenditures on public services (measured as the ratio of fiscal expenditure on education to fiscal revenues), labor misallocation (measured by the incidence of over-education among urban workers and the labor productivity gap between the prefecture and its districts), labor absorption capacity (measured by the urban unemployment rate and reductions in trade policy uncertainty), fertility rate, migration ratio, fiscal deficit, per capita GDP, and total urban population. ε_i is the error term.

The logit model relies on a potentially arbitrary threshold definition for early adoption, which

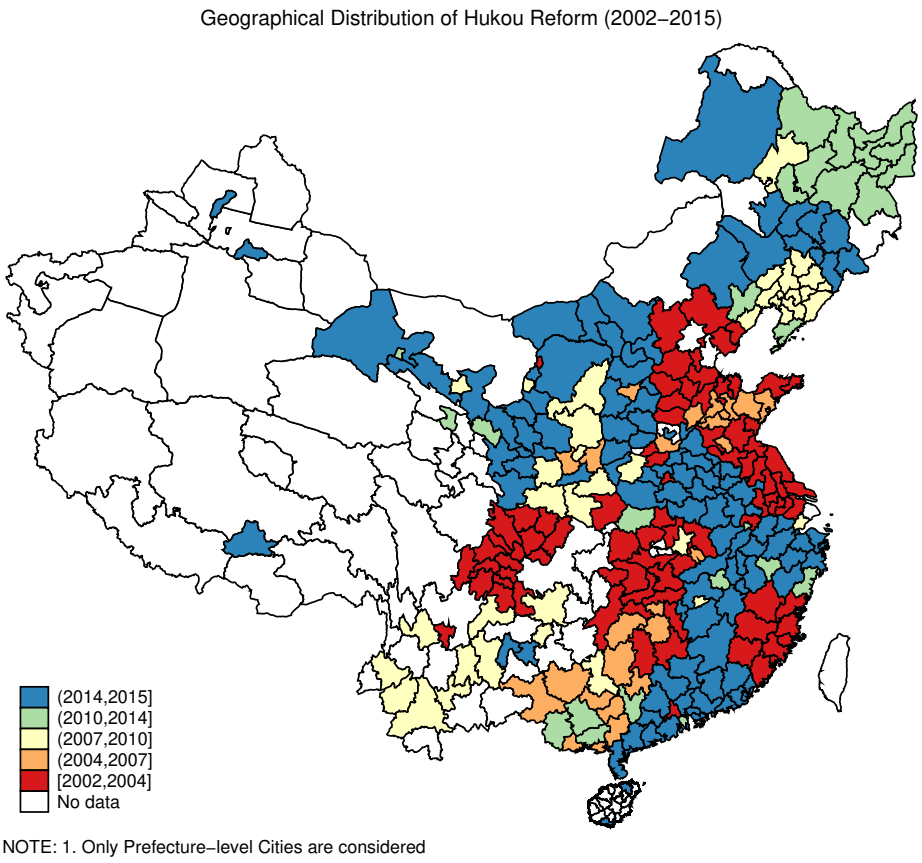


Figure 2: Geographical Distribution of Pro-migration Policy Adoption over Time

Note: This figure illustrates the geographical distribution of pro-migration policy adoption over time across various Chinese prefectures. It is important to note that the map serves solely to provide a visual description of the reform adoption and does not represent the entirety of China's administrative divisions.

does not fully utilize the variation in adoption timing across prefectures. To address this, I employ a discrete time proportional hazard model to examine how the timing of pro-migration policy adoption varies with the size of the state sector. The model is inspired by Jenkins (2005). The probability that a prefecture has not adopted the pro-migration policy by time j is given by:

$$S(j, X) = \exp\left[-\int_0^j \theta(u, X)\, du\right].$$

Assuming the hazard rate is proportional over time, satisfying the Proportional Hazards (PH) assumption, I have:

$$\theta(t, X) = \theta_0(t)e^{\beta' X} = \theta_0(t)\lambda$$

where $\beta' X = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \ldots + \beta_K X_K$ and $\lambda \equiv \exp(\beta' X)$.

The discrete time hazard can be expressed as:

$$h(j, X) = 1 - \exp\left[-\exp(\beta' X + \gamma_j)\right].$$

In this study, I assume a "piecewise constant" hazard for each j. To examine how certain characteristics of a prefecture influence the speed of pro-migration policy adoption, I use the following model specification:

$$\log\left(-\log\left[1 - h(j, X)\right]\right) = \gamma_2 D_{2003} + \gamma_3 D_{2004} + \cdots + \gamma_j D_j + \beta_1 \text{State sector}_{ij} + Z_{ij}\Phi + \varepsilon_{ij} \quad (8)$$

where D_l is a binary variable equal to one if $j = l$ and zero otherwise. j represents the year of pro-migration policy adoption. The dummy variable D_{2002} is excluded to avoid multicollinearity. The definitions of the other variables are consistent with those in the previous model.

To mitigate the risk that prefecture-level characteristics are influenced by the adoption of pro-migration policies, I estimate model (7) using data from before the policy adoption. Specifically, given that the timing of policy adoption differs across prefectures, I use control variables measured prior to 2002, which is the first year included in the sample. For model (8), I apply a complementary log-log regression model using annual data from 2002 to 2007. This period starts with the initial adoption of the policy in some prefectures. Data from 2008 onwards is excluded due to limitations in prefecture-level characteristics available. A notable advantage of the hazard model is its ability to handle censoring effectively.

To address potential biases from omitted variables, I explore the sensitivity of the treatment effects to the inclusion of observed controls. If a coefficient remains stable after including these controls, it suggests limited omitted variable bias. Conversely, if the main coefficient's magnitude decreases after adding control variables, I perform a sensitivity analysis using methods from Altonji *et al.* (2005), Oster (2019) and Diegert *et al.* (2023). These methods assess omitted variable bias by comparing the relative importance of observed and unobserved variables, and I compute Altonji-Oster statistics based on coefficient stability and R-squared values.

Lastly, I address potential challenges to identifying the coefficients in (8), such as measurement error in covariates and correlation between covariates and omitted factors. For example, using the size of the state sector as a covariate often involves calculating its proportion using manufacturing sector output, which might introduce measurement errors. Additionally, omitted variables like demand shocks or some unobserved liberalizing force (e.g., a particularly governor who is supportive of the free market) could directly affect both the adoption of pro-migration policies and the state sector size, potentially leading to spurious correlations.

To account for possible measurement errors or influences from contemporaneous shocks, I instrument for the size of the state sector. I begin by using an instrument based on state sector investments by the central government from the 1950s, during the planned economy era, which is arguably independent of recent shocks. Additionally, I assess whether alternative instruments produces similar estimates.

Figure 3 displays the estimated hazard rate for each year, calculated as the number of prefectures adopting the policy divided by the total number of non-adopting prefectures. The highest hazard rate occurs in 2004, consistent with the evidence in Figure 1.

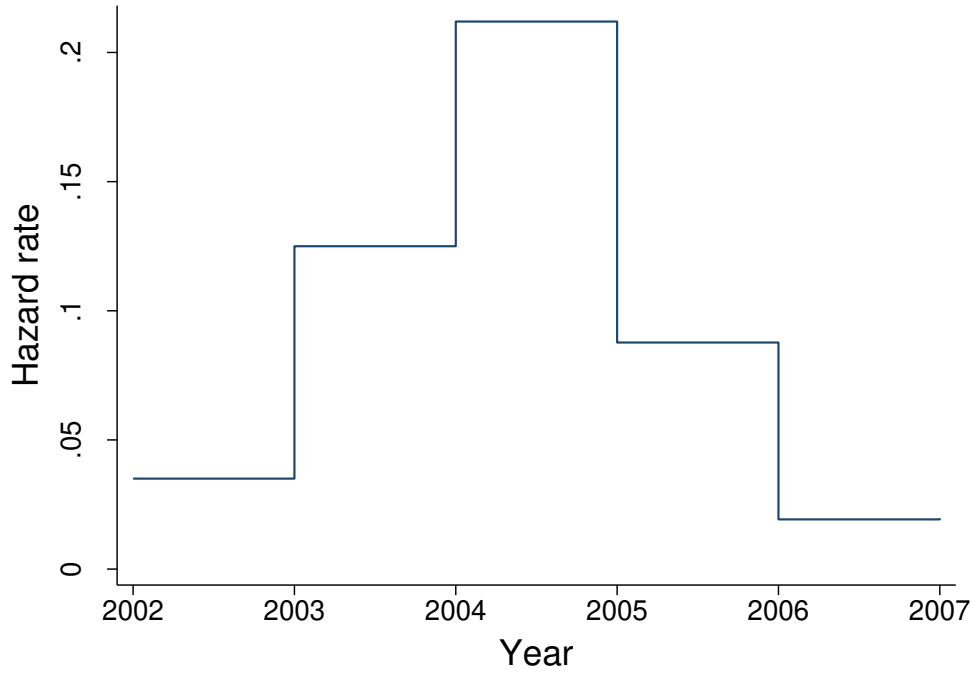


Figure 3: Estimated Hazard Rate of the Pro-migration Policy Adoption from 2002 to 2007

Note: The hazard rate for pro-migration policy adoption for each year is calculated using the number of prefectures that adopted the policies at that time, divided by the total number of prefectures that have not yet adopted.

5 Empirical Results

This section presents the empirical results. First, I examine the association between the size of the state sector and the probability of early adoption of pro-migration policies by comparing prefectures that adopted these policies early with those that adopted them later. Next, I analyze how the development of the state sector affects the time until adoption using a hazard model.

Furthermore, I assess the sensitivity of main results to omitted variable bias. Finally, I employ the control-function methodology to cope with potential endogenous or measurement errors in the state sector variable.

5.1 Impact of State Sector on the Probability of Early Adoption

To estimate the impact of the stat sector size on early policy adoption, I use a logit model. Table 6 shows the estimation results of the logit model, transformed into average marginal effects for easier interpretation. Column 1 reports the benchmark results without additional control variables, revealing that the size of the state sector is negatively associated with the probability of early adoption. Specifically, a one-standard deviation decrease in the size of the state sector corresponds to an 8.4 percentage points increase in the probability of early adoption.

Columns 2-4 introduce control variables such as public service expenditures (measured as the ratio of fiscal expenditure on education to fiscal revenues), labor misallocation (measured by the incidence of over-education among urban workers and the labor productivity gap between prefectures and districts), and labor absorption capacity (measured by the urban unemployment rate and reductions in trade policy uncertainty). The association between the size of the state sector and the probability of early adoption remains robust.

Higher expenditures on education are negatively associated with early adoption, although this result is not statistically significant. Conversely, higher incidences of over-education among urban workers and larger labor productivity gaps are positively associated with early adoption, suggesting that greater labor misallocation promotes quicker adoption of pro-migration policies. Additionally, higher urban unemployment rates are linked to lower probabilities of early adoption, while reductions in trade policy uncertainties are associated with higher probabilities.

Column 5 adds fertility rate and migration ratio as control variables, showing that both are negatively associated with early adoption. This implies that prefectures with lower population growth are more motivated to attract external labor to mitigate potential shortages.

Column 6 introduces the fiscal deficit variable. The results indicate that higher fiscal deficits increase the probability of early adoption, consistent with the idea that local policymakers seek to attract migrants to boost fiscal revenues. The inclusion of the fiscal deficit variable also renders the education expenditure variable statistically significant.

Finally, Column 7 controls for per capita GDP and total urban population, but these variables do not significantly affect the main results.

The preferred specification in Column 7 indicates that a one-standard-deviation decrease in the size of the state sector leads to a 5.9 percentage point increase in the probability of early adoption (an increase of about 17.4% at the sample mean). A one-standard-deviation increase in

education expenditures decreases the probability by 17.2 percentage points (a decrease of about 50.8% at the sample mean). A one-standard-deviation increase in over-educated urban workers increases the probability by 9.9 percentage points (an increase of about 28.9% at the sample mean). The labor productivity gap's impact is not significant. Additionally, a one-standard-deviation increase in urban unemployment rates results in a 15.5 percentage point decrease in the probability of early adoption (a decrease of about 45.8% at the sample mean). A one-standard-deviation increase in the NTR-gap increases the probability by 6 percentage points (an increase of about 17.7% at the sample mean). This finding align with Tian (2024), who also observed a positive impact of export shocks on pro-migration regulations in China. Both sets of results suggest that higher labor absorption capacity is linked to earlier policy adoption. Moreover, prefectures with higher migration ratios and fertility rates tend to adopt policies later, while those with higher fiscal deficits adopt them earlier.

Overall, the logit model results indicate that prefectures with smaller state sectors are more likely to adopt pro-migration policies early. Additionally, greater labor misallocation and higher labor absorption capacity are associated with earlier policy adoption, whereas higher education expenditures delay adoption. These findings supports the conceptual framework presented in Section 2.

Table 6: Impact of state sector development on the early adoption of pro-migration policies

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
State sector ratio	−0.390***	−0.364***	−0.451***	−0.319**	−0.273**	−0.266**	−0.275**
	(0.137)	(0.137)	(0.139)	(0.136)	(0.133)	(0.132)	(0.135)
Expenditures on education		−0.257*	−0.229	−0.142	−0.287*	−0.681***	−0.729***
		(0.154)	(0.151)	(0.142)	(0.149)	(0.224)	(0.230)
Incidence of over-education			1.092**	1.758***	1.708***	1.552***	1.662***
			(0.488)	(0.471)	(0.465)	(0.472)	(0.479)
Labor productivity gap			0.212	0.212	0.079	0.020	−0.001
			(0.149)	(0.140)	(0.146)	(0.148)	(0.151)
Urban unemployment				−2.847***	−3.038***	−3.202***	−3.525***
				(0.759)	(0.691)	(0.666)	(0.732)
Reductions in trade policy uncertainty				0.878***	0.702**	0.689**	0.693**
				(0.337)	(0.322)	(0.320)	(0.319)
Fertility rate					−0.460***	−0.472***	−0.548***
					(0.125)	(0.128)	(0.144)
Migration ratio					−1.802***	−1.793***	−1.446***
					(0.442)	(0.428)	(0.521)
Fiscal deficit						0.092**	0.093**
						(0.036)	(0.037)
Per capita GDP(log)							−0.075
							(0.080)
Urban population							−0.000
							(0.000)
Observations	248	248	248	248	248	248	248

Note: This table reports the impact of state sector development on the early adoption of pro-migration policy using a logit model. Coefficients refer to the average marginal effects. Standard errors in parentheses; * p<0.10, ** p<0.05, *** p<0.01.

5.2 Impact of State Sector on the Speed of Pro-migration Policy Adoption

The previous logit model does not consider the different adoption times of pro-migration policies across prefectures. Additionally, choosing a threshold year to classify prefectures as early or late adopters is arbitrary. To better understand local policymakers' behavior in adopting pro-migration policies, this paper estimates the hazard model specification (8) using a complementary log-log model.

Table 7 presents the estimation results of the complementary log-log model, converted into average marginal effects for easier interpretation. According to the preferred model specification in Column 7, a one-standard-deviation decrease in the size of the state sector leads to a 3.4% decrease in the time until pro-migration policy adoption. This indicates that prefectures with smaller state sectors adopt pro-migration policies more quickly.

Additionally, a one-standard-deviation increase in relative expenditures on education results in a 7.5% increase in the time until adoption, suggesting that prefectures with higher expenditures on public services adopt these policies more slowly.

Conversely, a one-standard-deviation increase in the urban workers' incidence of over-education reduces the time until adoption by 2.5%, indicating that prefectures with higher labor misallocation in the urban sector adopt policies faster. Similarly, a one-standard-deviation increase in the labor productivity gap shortens the time until adoption by 2.3%, suggesting that prefectures with greater labor misallocation between rural and urban areas also adopt pro-migration policies more quickly. These results imply that prefectures with higher labor misallocation adopt pro-migration policies faster.

Furthermore, a one-standard-deviation decrease in the urban unemployment rate is associated with a 6% increase in the time until adoption, suggesting that prefectures with lower urban unemployment rate adopt policies more quickly. A one-standard-deviation increase in reductions in trade policy uncertainty leads to a 1.5% decrease in the time until adoption, indicating that prefectures experiencing larger reductions in trade policy uncertainty adopt pro-migration policies faster. These findings imply that prefectures with a higher capacity for labor absorption adopt policies more quickly, while those with a lower capacity adopt them more slowly.

Lastly, prefectures with higher fertility and migration rates tend to adopt pro-migration policies more slowly, while those with higher fiscal deficits adopt them more quickly. There is no significant evidence that per capital GDP and total urban population affect the main results.

Overall, the hazard model provides substantial evidence that prefectures with smaller state sectors adopt pro-migration policies more quickly. Controlling for factors such as public service expenditures, labor misallocation, and labor absorption capacity does not significantly alter the main results, highlighting the crucial role of fiscal subsidies to the state sector in this relation-

Table 7: Impact of state sector development on the pro-migration policy using a hazard model

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
2003	0.113***	0.113***	0.113***	0.112***	0.111***	0.109***	0.108***
	(0.034)	(0.034)	(0.033)	(0.032)	(0.031)	(0.031)	(0.031)
2004	0.154***	0.154***	0.152***	0.157***	0.161***	0.159***	0.156***
	(0.033)	(0.033)	(0.033)	(0.032)	(0.030)	(0.030)	(0.031)
2005	0.065*	0.064*	0.060	0.073**	0.086**	0.086**	0.083**
	(0.038)	(0.038)	(0.037)	(0.036)	(0.036)	(0.035)	(0.036)
2006	−0.057	−0.058	−0.061	−0.041	−0.024	−0.024	−0.028
	(0.056)	(0.056)	(0.056)	(0.054)	(0.053)	(0.052)	(0.054)
2007	−0.057	−0.052	−0.055	−0.035	−0.014	−0.009	−0.012
	(0.056)	(0.056)	(0.056)	(0.054)	(0.053)	(0.053)	(0.055)
State sector ratio	−0.131***	−0.132***	−0.165***	−0.135***	−0.146***	−0.151***	−0.161***
	(0.049)	(0.049)	(0.052)	(0.049)	(0.050)	(0.051)	(0.053)
Expenditures on education		−0.080*	−0.086**	−0.072*	−0.111***	−0.206***	−0.216***
		(0.047)	(0.043)	(0.040)	(0.043)	(0.071)	(0.072)
Incidence of over-education			0.208	0.463***	0.475***	0.442***	0.420***
			(0.130)	(0.136)	(0.134)	(0.132)	(0.134)
Labor productivity gap			0.080**	0.098***	0.083**	0.093**	0.099**
			(0.037)	(0.034)	(0.035)	(0.039)	(0.039)
Urban unemployment				−1.092***	−1.150***	−1.330***	−1.321***
				(0.238)	(0.223)	(0.237)	(0.244)
Reductions in trade policy uncertainty				0.213**	0.184**	0.184**	0.171*
				(0.093)	(0.092)	(0.092)	(0.094)
Fertility rate					−0.140***	−0.134***	−0.126***
					(0.038)	(0.038)	(0.041)
Migration ratio					−0.622***	−0.553***	−0.593***
					(0.156)	(0.152)	(0.197)
Fiscal deficit						0.029**	0.032**
						(0.014)	(0.014)
Per capita GDP(log)							0.003
							(0.022)
Urban population							0.000
							(0.000)
Observations	1154	1154	1154	1154	1154	1154	1154

Note: This table reports the impact of state sector development on the pro-migration policy adoption using a complementary log-log model. Coefficients refer to average marginal effects. Standard errors in parentheses; * p<0.10, ** p<0.05, *** p<0.01.

ship. Additionally, prefectures with higher labor market misallocation and greater capacity for labor absorption adopt pro-migration policies faster, while prefectures with higher education expenditures adopt them more slowly. Again, these results are consistent with the theoretical implications shown in Section 2.

5.3 Sensitivity Analysis for Omitted Variable Bias

To address concerns that the main coefficient diminishes in magnitude when control variables are introduced (as seen in Table 6), I perform a sensitivity analysis using Altonji-Oster statistics, which are based on coefficient stability and the R-squared value (Oster (2019); Diegert *et al.* (2023)). This analysis also helps mitigate potential concerns regarding omitted variables bias by assessing the degree of selection on unobserved factors relative to observed ones.

Both the approaches of Oster (2019) and Diegert *et al.* (2023) are based on a baseline linear model. Unfortunately, comparable methods for nonlinear models are not available. Although the outcome is binary, leading to a misspecification in the linear model, this issue may not be

significant in this context, as the estimates produced by both OLS and logit models are quite similar. Let $W = (X, X_2)$, where X represents a vector of observed covariates and X_2 represents unobserved covariates. The model is expressed as follows:

$$\text{Reform} = \beta \text{ State sector} + \gamma_1{}'X + \gamma_2{}'X_2 + \varepsilon \tag{9}$$

where ε is the OLS (Ordinary Least Squares regression) residual, uncorrelated by construction with each component of $(\text{State sector}, W)$. The parameter of interest,β, represents the association between the size of the state sector and the early adoption of pro-migration policies.

Next, the OLS estimand of State sector on $(1, X, X_2)$ is considered:

$$\text{State sector} = \pi_1{}'X + \pi_2{}'X_2 + \epsilon \tag{10}$$

where ϵ is the OLS residual, uncorrelated with W. The parameters π_1 and π_2 represent selection on observables and unobservables respectively. If $\pi_2 = 0$, there is no selection on unobservables.

The approach proposed by Oster (2019) uses the R-squared value from OLS to establish a range from the controlled treatment effect to an unbiased treatment effect. Let $R_{\max}$ represent the R-squared value of a hypothetical specification that includes all observed and unobserved variables, and $\tilde{R}$ denote the R-squared value of a fully controlled specification. According to Oster (2019), a bias-adjusted treatment effect is calculated with $R_{\max} = 1.3\tilde{R}$.

Oster (2019) defines the degree of unobserved selection relative to observed selection as the coefficient of proportionality, δ. Table 8 presents the estimated values of δ needed to reduce the effect of state sector size on the probability of early adoption of pro-migration policies to insignificance.[16] The findings suggest that unobservables would need to explain approximately 4 to 6 times as much variation as observable characteristics to nullify β, an implausible level of selection, indicating that selection bias is unlikely to fully explain the results in Table 8.

Additionally, I adopt the approach of Diegert *et al.* (2023), which accounts for the correlation between omitted variables and included controls, as a robustness check to assess the impact of selection on unobservables. Diegert *et al.* (2023) introduces the concept of the "breakpoint", define as the maximum level of selection on unobservables that still produces a statistically significant estimate. As shown in Table 8, the results indicate that $\beta < 0$ as long as selection on unobservables is no more than 26% to 89% as large as selection on observables. Specifically, the preferred specification in Column 7, which explains about a quarter of the variance, suggests that $\beta < 0$ as long as selection on unobservables is no more than 26% as large as selection on

[16] A comparison between Table 6 and Table 8 confirms that the main results from both the logit and OLS models are very similar.

observables. In other words, the breakpoint is not sufficiently high enough to completely rule out omitted-variable bias.

In summary, the approach by Oster (2019) confirms that the robustness of the OLS estimates regarding the effect of state sector size, providing evidence that extends beyond mere statistical association. On the other hand, the method used by Diegert *et al.* (2023), which operates under less stringent assumptions than those of Oster (2019), suggests that the possibility of omitted-variable bias cannot be fully ruled out. I will explore this issue further in the next section.

Table 8: The role of selection on unobservables

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
State sector ratio	−0.379***	−0.361***	−0.439***	−0.323**	−0.282**	−0.281**	−0.292**
	(0.137)	(0.137)	(0.140)	(0.138)	(0.136)	(0.135)	(0.138)
Expenditures on education		−0.211*	−0.180	−0.131	−0.255**	−0.615***	−0.672***
		(0.126)	(0.126)	(0.122)	(0.122)	(0.194)	(0.201)
Incidence of over-education			1.081**	1.695***	1.584***	1.447***	1.555***
			(0.504)	(0.503)	(0.487)	(0.486)	(0.495)
Labor productivity gap			0.197	0.180	0.049	−0.001	−0.026
			(0.149)	(0.144)	(0.148)	(0.148)	(0.151)
Urban unemployment				−2.426***	−3.048***	−3.155***	−3.316***
				(0.671)	(0.662)	(0.657)	(0.673)
Reductions in trade policy uncertainty				0.826**	0.626*	0.615*	0.625*
				(0.334)	(0.324)	(0.321)	(0.323)
Fertility rate					−0.414***	−0.421***	−0.484***
					(0.114)	(0.113)	(0.126)
Migration ratio					−1.497***	−1.522***	−1.269***
					(0.329)	(0.326)	(0.407)
Fiscal deficit						0.082**	0.081**
						(0.034)	(0.034)
Per capita GDP(log)							−0.075
							(0.079)
Urban population							−0.000
							(0.000)
Constant	0.472***	0.527***	0.206	−0.037	0.858***	0.886***	1.643**
	(0.057)	(0.065)	(0.146)	(0.195)	(0.272)	(0.270)	(0.813)
Delta (δ) of Oster (2019)	–	607.9%	633.3%	631.8%	427.9%	431.7%	418.4%
Breakdown Point of DMP (2022)	–	89.7%	60.1%	40.2%	28.9%	29.1%	26.1%
R-squared	0.030	0.041	0.065	0.142	0.221	0.239	0.244
Observations	248	248	248	248	248	248	248

Note: This table presents the estimated impact of state sector development on the early adoption of pro-migration policy using an OLS model. It also reports Altonji-Oster statistics based on the methods of Oster (2019) and Diegert *et al.* (2023). The delta denotes the proportion of the variation explained by unobservables to that explained by observable characteristics, required to reduce the treatment effect to insignificance. The breakdown point indicates the maximum level of selection on unobservables that still results in a statistically significant estimate. Standard errors are reported in parentheses; * p<0.10, ** p<0.05, *** p<0.01.

5.4 Addressing Endogeneity or Measurement Issues with the State Sector Variable

To address concerns that the size of the state sector is mismeasured or correlated with unobservable factors, I conduct two additional checks using the preferred hazard model. First, I use employment in the state sector as an alternative measure. The estimation results, reported in Column 1 of Table 9, show that the main results remain robust. Second, I use the size of the state

sector lagged by one period and two periods, respectively. The results, reported in Columns 2 to 3 of Table 9, indicate that using lagged sizes of the state sector does not significantly alter the main findings.

Furthermore, I employ the control-function methodology to account for endogenous or mismeasured regressors in hazard models, as proposed by Palmer (2024). Specifically, I use various state sector instruments based on historical variations in central government investments dating back to the 1950s during the planned economy era, which are arguably independent of contemporaneous shocks to the state sector or pro-migration policy adoption.

The first source is foreign aid from the Soviet Union, specifically the adoption of 156 Soviet-aided industrialization projects. Between 1950 and 1957, China and the Soviet Union agreed to support large-scale, capital-intensive industrial development, known as the 156 Projects. Most of these projects focused on energy, raw materials, and manufacturing and were unevenly distributed across Chinese cities based on three main criteria: (1) proximity to resources, (2) potential to change economically underdeveloped areas, and (3) military considerations. These projects laid the foundation for China's industrialization. Prefectures receiving more investments from these projects in the 1950s were associated with a larger state sector that persisted over time, given the policy of "seizing the large and letting go of the small" regarding state sector restructuring in the 1990s. Thus, I construct the first instrument using the total investment amounts received from these projects in each prefecture.

The second source involves the risks of military conflicts faced by Chinese cities in the 1950s, proxied by the geographical distance between each mainland Chinese prefecture and Jinmen, which is two miles from the mainland Chinese city of Xiamen but controlled by Taiwan. Mainland Chinese cities closer to Jinmen were exposed to higher risks of armed conflict in the Taiwan Strait due to tensions between mainland China and Taiwan in the early 1950s.[17] Since the military conflict risks in the 1950s disincentivized central government investments under the planned economy, prefectures farther from Jinmen were associated with a larger state sector.

Following Palmer (2024), I use an instrumental variable (IV) hazard model to estimate the impact of the state sector size on the speed of pro-migration policy adoption. The estimation results are reported in Table 10. The first-stage results indicate that investments from the 156 Projects in the 1950s are positively associated with the long-term size of the state sector. Specifically, a 100% increase in investments from the 156 Projects is associated with a 1.2% increase in the ratio of state sector's output (Column 1), representing an approximate 5.5% increase at the sample mean. Additionally, proximity to Jinmen, which faced military conflict risks, is positively associated with the long-term size of the state sector. Specifically, a 100% increase in the distance to Jinmen

[17] Two separate crises occurred in the Taiwan Straits between 1954 and 1958.

is associated with a 1.7% increase in the ratio of state sector's output (Column 3), representing an approximate 7.7% increase at the sample mean.

Using the preferred IV hazard model with both instruments, I find that a one-standard-deviation decrease in the size of the state sector is associated with a 10% decrease in the time until policy adoption (see Column 6). This suggests that prefectures with smaller state sectors adopt pro-migration policy more quickly. Alternative instruments for the size of the state sector, based on different sources of variation, produce similar estimates, ranging from a 8.5% (Column 2) decrease to a 9.9% decrease (Column 4) in the time until policy adoption. Overall, the main results remain robust when using an IV hazard model, addressing concerns that the hazard model may suffer from endogeneity or measurement issues.

6 Conclusions and Discussions

To the best of my knowledge, this is one of the first studies to examine how the development of the state sector influences Chinese policymaker's decisions to remove migration barriers. An extended framework of Casarico *et al.* (2018) suggests that a smaller state sector encourages local governments to remove migration barriers. To empirically test this implication, I employ two different approaches. The first approach uses a logit model to study the impact of state sector development on the likelihood of early adoption of pro-migration policies by local policymakers. The second approach uses a discrete-time hazard model to analyze how state sector development affects the duration until the adoption of pro-migration policies. Both empirical findings support the theoretical implications. Additionally, the use of a control-function methodology to address potential issues with the state sector variable reinforces the main argument.

This paper demonstrates that prefectures with greater labor misallocation are more likely to adopt pro-migration policies. Furthermore, it provides evidence that higher expenditures on public services discourage local policymakers from adopting such policies, reflecting the concerns of fiscal decentralization highlighted by Prud'Homme (1995). These findings support previous research, indicating that economic benefits from improving labor market efficiency incentivize policymakers to adopt pro-migration policies, while welfare costs pose significant concerns for policymakers when considering more open migration policies (Casarico *et al.* (2018)).

Unlike Casarico *et al.* (2018), this paper examines an additional channel: the capacity for labor absorption. The results show that prefectures with higher labor absorption capacity, indicated by a lower urban unemployment rate and greater reductions in trade policy uncertainties, are more likely to adopt pro-migration policies. The positive relationship between reductions in trade policy uncertainty and the speed of adopting pro-migration policies aligns with the findings of

Table 9: Addressing Endogeneity or Measurement Issues with the State Sector Variable

	(1)	(2)	(3)
2003	0.105***	0.107***	0.103***
	(0.031)	(0.031)	(0.031)
2004	0.152***	0.161***	0.159***
	(0.031)	(0.030)	(0.030)
2005	0.082**	0.081**	0.084**
	(0.036)	(0.036)	(0.036)
2006	−0.029	−0.027	−0.031
	(0.054)	(0.053)	(0.054)
2007	−0.016	−0.013	−0.015
	(0.055)	(0.054)	(0.054)
state_empl	−0.205***		
	(0.060)		
state_outputlag1		−0.159***	
		(0.048)	
state_outputlag2			−0.143***
			(0.044)
Expenditures on education	−0.214***	−0.216***	−0.216***
	(0.073)	(0.072)	(0.074)
Incidence of over-education	0.430***	0.431***	0.455***
	(0.133)	(0.133)	(0.135)
Labor productivity gap	0.090**	0.097**	0.093**
	(0.039)	(0.039)	(0.039)
Urban unemployment	−1.257***	−1.326***	−1.324***
	(0.246)	(0.243)	(0.245)
Reductions in trade policy uncertainty	0.144	0.171*	0.172*
	(0.097)	(0.093)	(0.093)
Fertility rate	−0.142***	−0.116***	−0.112***
	(0.041)	(0.041)	(0.041)
Migration ratio	−0.593***	−0.590***	−0.591***
	(0.196)	(0.197)	(0.198)
Fiscal deficit	0.031**	0.032**	0.032**
	(0.014)	(0.014)	(0.014)
Per capita GDP(log)	−0.007	0.000	−0.002
	(0.023)	(0.022)	(0.023)
Urban population	0.000	0.000	0.000
	(0.000)	(0.000)	(0.000)
Observations	1154	1154	1154

Note: This table reports the impact of state sector development on the pro-migration policy adoption using a complementary log-log model. Column 1 uses employment in the state sector as an alternative measure. Columns 2-3 use the size of the state sector (in output) lagged by one period and two periods, respectively. Coefficients refer to average marginal effects. Standard errors in parentheses; * p<0.10, ** p<0.05, *** p<0.01.

Table 10: First and Second Stage Results of the Control-function Estimation

	(1)	(2)	(3)	(4)	(5)	(6)
2003	−0.049***	0.097***	−0.050***	0.094***	−0.049***	0.093***
	(0.018)	(0.031)	(0.018)	(0.031)	(0.018)	(0.031)
2004	−0.124***	0.117***	−0.126***	0.109***	−0.124***	0.108***
	(0.019)	(0.034)	(0.019)	(0.034)	(0.019)	(0.034)
2005	−0.130***	0.052	−0.132***	0.043	−0.130***	0.043
	(0.021)	(0.038)	(0.021)	(0.039)	(0.021)	(0.038)
2006	−0.173***	−0.060	−0.175***	−0.071	−0.173***	−0.071
	(0.022)	(0.056)	(0.022)	(0.056)	(0.022)	(0.056)
2007	−0.184***	−0.047	−0.188***	−0.059	−0.184***	−0.058
	(0.023)	(0.057)	(0.024)	(0.058)	(0.023)	(0.057)
Investments from 156 Projects (log)	0.012***				0.012***	
	(0.002)				(0.002)	
Distance to Jinmen (log)			0.017		0.015	
			(0.014)		(0.014)	
State sector ratio		−0.395***		−0.462***		−0.466***
		(0.143)		(0.158)		(0.146)
Residuals		0.286*		0.348**		0.367**
		(0.153)		(0.165)		(0.155)
Expenditures on education	−0.077*	−0.217**	−0.063	−0.213**	−0.075	−0.223**
	(0.046)	(0.089)	(0.047)	(0.089)	(0.046)	(0.089)
Incidence of over-education	0.033	0.458***	0.049	0.485***	0.049	0.482***
	(0.106)	(0.145)	(0.109)	(0.148)	(0.107)	(0.145)
Labor productivity gap	0.186***	0.156***	0.194***	0.172***	0.190***	0.170***
	(0.031)	(0.052)	(0.031)	(0.054)	(0.031)	(0.052)
Urban unemployment	−0.179	−1.254***	0.215	−1.218***	−0.220	−1.260***
	(0.164)	(0.249)	(0.158)	(0.247)	(0.169)	(0.249)
Reductions in trade policy uncertainty	−0.063	0.114	−0.087	0.087	−0.032	0.104
	(0.069)	(0.098)	(0.076)	(0.102)	(0.075)	(0.098)
Fertility rate	0.126***	−0.122***	0.125***	−0.121***	0.132***	−0.116**
	(0.027)	(0.046)	(0.028)	(0.045)	(0.028)	(0.046)
Migration ratio	0.023	−0.595***	0.037	−0.629***	0.033	−0.607***
	(0.086)	(0.193)	(0.088)	(0.199)	(0.086)	(0.195)
Fiscal deficit	0.023**	0.029*	0.018*	0.029*	0.022**	0.031*
	(0.009)	(0.016)	(0.009)	(0.016)	(0.009)	(0.016)
Per capita GDP(log)	0.032*	−0.000	0.038**	0.002	0.031*	−0.001
	(0.017)	(0.024)	(0.017)	(0.024)	(0.017)	(0.024)
Urban population	0.000***	0.000	0.000***	0.000*	0.000***	0.000*
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Distance to Beijing (log)	0.010		0.007		0.015	
	(0.011)		(0.012)		(0.012)	
Distance to Coastline (log)	0.040***		0.046***		0.038***	
	(0.005)		(0.006)		(0.006)	
Constant	−0.520***		−0.717***		−0.649***	
	(0.193)		(0.230)		(0.226)	
Observations	1096	1096	1096	1096	1096	1096

Note: This table reports the impact of state sector development on the pro-migration policy adoption using a complementary log-log model. Columns 1 and 2 report the first stage and second stage estimates when using investments from the 156 Projects as an instrumental variable for the state sector size. Columns 3-4 report the first stage and second stage estimates when using distance to Jinmen as an instrumental variable for the state sector size.. Columns 5-6 report the first stage and second stage estimates when using both instruments for estimation. Additional variables such as distance to the coastline and distance to Beijing are controlled in the first stage. Coefficients refer to average marginal effects. Standard errors in parentheses; * p<0.10, ** p<0.05, *** p<0.01.

Tian (2024).

Finally, different from previous studies that emphasize the economic drivers of pro-migration

policy support, the unique Chinese data allows me to explore what determines the speed of local policymakers' adoption of pro-migration policies. This is particularly important for transition economies like China, where market reforms, including labor market reforms, are usually gradual. The findings indicate that the speed of adopting pro-migration policies results from weighing opposite goals to maximize local revenues. Given the varying initial economic conditions across regions, the speed of adopting pro-migration policies also varies. To some extent, the findings shed light on the Chinese policymaker's preference for a gradual reform rather than a "big bang" reform approach to reduce labor market distortions since 1979.

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Appendix A

A.1 Proof of Proposition 2

Proof. The difference between Φ^R and Φ^{NR} gives the following expression, which is the net gain of policy adoption and captures the local policymaker's incentive to adopt pro-migration policies:

$$\begin{aligned}\Phi^R - \Phi^{NR} &= \tau(z)V(i,j,p',z) - b(z)(N + p'M) \\ &\quad - \tau(z)V(i,j,p^*,z) + b(z)(N + p^*M) \\ &= \tau(z)[V(i,j,p',z) - V(i,j,p^*,z)] - b(z)M(p' - p^*)\end{aligned}$$

The first term captures the gains due to the revenues from improving efficiency of labor allocation and absorbing more labor. The bigger $V(i,j,p',z) - V(i,j,p^*,z)$, the more likely it is that pro-migration policies will be adopted. Since $\frac{\partial V(i,j,p,z)}{\partial p} > 0$, $V(i,j,p',z) - V(i,j,p^*,z) > 0$ for $1 > p' > p^* > 0$. The larger is $|j - i|$, the more potential for the pro-migration policies to reduce labor misallocation and to improve match efficiency, the bigger $V(i,j,p',z) - V(i,j,p^*,z)$. In other words, a higher degree of labor misallocation will make pro-migration policies more desirable. Also, the higher capacity to absorb (redundant) labor, or $X(p,z)$, the bigger $V(i,j,p',z) - V(i,j,p^*,z)$.

The second term is negative, denoting the burden to a local government from expenditures spent on local public services. Furthermore, note that:

$$\frac{\partial[\Phi^R - \Phi^{NR}]}{\partial b(\cdot)} = -M(p' - p^*) < 0$$

In other words, a larger size of expenditures on local public services will make pro-migration policies less desirable, as it increases the cost of providing more Hukou migrants with local public services. □