Does the portability of social health insurance promote the migration of rural labor?

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Does social health insurance portability promote rural labor migration? Evidence from health care reform in China

Abstract

Rural labor migration is a key driver of China's economic development, and social health insurance portability could be a pivotal institutional feature for mitigating labor mobility barriers. However, empirical evidence on its lock-in effect remains inconclusive, particularly based on large-scale, micro level panel data that establishes causality. Employing two quasi-natural experiments in China, encompassing the phased implementation of intraprovincial, intercity, and interprovincial medical settlement policies, this study uses a two-way fixed effects difference-in-differences model on longitudinal panel data from the China Family Panel Studies spanning 2014–2018 to examine the impact of social health insurance portability on rural labor migration. We find that enhancing portability significantly promotes rural labor migration. Mechanism analyses reveal that this effect operates through reducing cross-regional coordination costs, health risk premiums, and familial ties costs. Heterogeneity tests demonstrate that the effects are more pronounced for laborers with poor health status, those from underdeveloped regions, and younger cohorts. Our findings provide robust, micro evidence on the influence of institutional portability in facilitating labor mobility in the world's largest developing economy.

Keywords: Rural labor migration, Social medical insurance portability, Health care reform in China

1 Introduction

Rural labor migration is widely recognized as a pivotal force for economic development, urbanization, and enhancing farmers' incomes in developing economies (Tipayalai, 2020; Yu & Jin, 2025; Walmsley et al., 2017; Wu et al., 2021). It provides a relatively inexpensive labor supply for urban industrial sectors while simultaneously opening avenues for higher earnings and new employment opportunities for rural workers (Akram et al., 2017; Luan et al., 2015; Wu et al., 2025). A substantial body of literature has investigated multiple factors that influence this migration process (Nchor, 2023; Yang et al., 2024), with a significant number also focusing on the unique context of China (Nie & Ji, 2024; Wan, 2024; Wang & Zhang, 2025; Xuan et al., 2025). However, a crucial gap remains as limited studies have examined this phenomenon specifically from the perspective of social insurance portability.

The potential impact of social insurance portability on labor force participation and mobility is profound. Since beneficiaries are typically active participants in the labor market, this dual status means that portable insurance provisions can significantly shape rural residents' employment decisions and mobility (Gruber, 2000; Holzmann & Koettl, 2015). Social health insurance portability refers to the ability to maintain coverage across jobs and regions, which is of particular importance. Holzmann and Koettl (2015) delineated three fundamental criteria for portable health insurance: continuity of coverage despite employment changes, preservation of financial equity across insurance institutions, and enhanced administrative efficiency. The academic debate on its impact has been vibrant yet inconclusive. Some studies posit that employer-linked health systems are a primary cause of the lock-in effect due to their restrictive portability (Aouad, 2023; Bansak & Raphael, 2008; Barkowski, 2020; Fisher et al., 2016), while other scholars have arrived at contrasting conclusions, questioning the very existence of a significant lock-in effect (Bailey & Chorniy, 2015; Berger et al., 1999; Mitchell, 1982). This ongoing debate indicates the need for further empirical investigation, particularly in specific institutional contexts.

China presents a critical and compelling case for such a study. The nation's health insurance system, with a history spanning approximately 65 years, has undergone extensive reform to achieve broad coverage and high reimbursement ratios. Despite this progress, the system has historically been characterized by poor portability, primarily across horizontal and regional dimensions. For the vast number of rural laborers engaged in allopatric employment, this means facing substantial obstacles when accessing healthcare outside their registration areas (Chen et al., 2020; Zeng et al., 2015). Consequently, this lack of portability likely functioned as a deterrent to labor migration, hindering the optimal flow of labor resources (Chan et al., 2010; Molloy et al., 2014) and potentially affecting labor supply by complicating access to timely medical care. The scale of rural labor migration in China makes the implications of this issue particularly pronounced.

In direct response to the challenge of poor health insurance portability, Chinese authorities at central and local levels have implemented a series of policies. This study focuses on two major initiatives, the intracity settlement policy within provinces and the interprovincial settlement policy across China. As the world's largest developing economy and home to the largest migratory labor force, China's experience offers unique insights and has great significance for understanding the impact and mechanisms through which social health insurance portability influences labor migration.

While some scholarly work in China has begun to explore this relationship, indicating that portability can reduce job lock and incentivize intracity movement while potentially inhibiting interprovincial migration (Hong & Ning, 2020), comprehensive analyses positioning this mechanism within contemporary financial economics discourses have been notably absent.

Recent advancements in finance literature have significantly deepened our understanding of how technological and institutional factors shape labor market outcomes. For example, Ma et al. (2024) demonstrated that the digital economy has redefined labor income structures, highlighting the influence of technological shocks on resource allocation. Concurrently, Wang et al. (2024) explored artificial intelligence (AI)-driven capital-skill complementarity implications for labor mobility, underscoring the centrality of labor market friction. Closer to our context, Liu and Wang (2025) used China Family Panel Studies (CFPS) data to examine drivers of rural laborers' occupational transformation, emphasizing the multifaceted nature of migration decisions.

While these studies adeptly analyzed technological and broad economic forces, they leave a critical institutional channel underexplored, the influence of social insurance portability as a specific, policy-driven mechanism on reducing labor mobility friction.

Our study addresses this gap by arguing that health insurance portability complements technological drivers by mitigating administrative, financial, and healthcare-related barriers that lock labor in place.

This study provides a comprehensive analysis with three marginal contributions. First, we provide a scientific classification of China's social health insurance coordination policies, focusing on horizontal portability relevant to migration. Second, we empirically identify and leverage multiple policy shocks to assess their impacts on intercity and interprovincial migration trends. Finally, we provide timely policy implications for promoting surplus labor migration, enhancing social security, and building a unified national labor market, which is particularly relevant given discussions of China's Lewis turning point (Fang & Yang, 2011; Zhang et al., 2011) and current market integration policies.

The remainder of this paper is structured as follows. Section 2 details the policy background and develops our theoretical mechanism. Section 3 describes the research design and data. Section 4 presents the empirical results. Parallel trend and robustness tests are performed in Section 5. Section 6 conducts heterogeneity analysis. Finally, Section 7 concludes with findings and reflections.

2 Policy background and theoretical mechanism

2.1 Policy background

This study first examines China's provincial intercity settlement policy for social health insurance through the portability framework proposed by Holzmann and Koettl (2015).

Table 1 shows how this framework meets the above three standards and gives the implementation mechanism.

Since 2011, provinces in China have progressively implemented intercity settlement policies for social health insurance. Zhejiang Province introduced the policy in 2011, followed by Fujian in 2012. Yunnan, Guizhou, and Anhui adopted the measure in 2013. A group of 11 provinces and regions (Hebei, Hubei, Hunan, Guangdong, Guangxi, Inner Mongolia, Liaoning, Jilin, Jiangxi, Henan, and Ningxia) implemented the policy in 2015. Shaanxi and Shandong followed in 2016, and Shanxi, Jiangsu, Sichuan, and Gansu introduced the policy in 2017. Heilongjiang was the final province to implement the policy in 2019. This study excludes the four provincial-level municipalities of Beijing, Tianjin, Shanghai, and Chongqing as well as Xinjiang, Tibet, Qinghai, and Hainan due to data availability constraints.

Table 1 Intercity Settlement Policy Standards and Implementation

Standard	Core Mechanism	Key Measures
Continuity of enrollment	Use of electronic certificates or social security cards for direct settlement without re-registration; automatic transfer of records via a unified provincial platform.	Ensures seamless cross-city coverage, reducing procedural steps by over 10.

Financial equity	Dual-track settlement (medical location's catalog vs. enrolled location's policies); gradient benefit design based on registration status.	Prefers fund siphoning and cost-shifting between regions; manages utilization with differential reimbursement rates.
Administrative efficiency	Direct settlement expansion for inpatient/outpatient care, pharmacies, and chronic conditions; digital tools like e-certificates and insurance wallets.	Simplifies processes, enables real-time fund transfers, and reduces administrative burdens.

This study next analyzes China's interprovincial settlement policy. Table 2 shows how the policy meets the above three standards and provides the implementation mechanism. By July 21, 2017, direct cross-province settlement of hospitalization expenses had been implemented in 98% of regions across China. The policy covered the entire region in all listed provinces and provincial-level municipalities (Beijing, Tianjin, Hebei, Shanxi, Inner Mongolia, Liaoning, Jilin, Heilongjiang, Shanghai, Jiangsu, Zhejiang, Anhui, Fujian, Jiangxi, Shandong, Henan, Hubei, Hunan, Guangxi, Hainan, Chongqing, Sichuan, Yunnan, Guizhou, Shaanxi, Gansu, Ningxia, Qinghai, and Xinjiang). Guangdong Province also implemented the policy across the whole province, with the exception of Zhuhai and Qingyuan.

Table 2 Interprovincial Policy Standards and Implementation

Standard	Core Mechanism	Key Measures
Continuity of enrollment	Unified Provincial Platform & Streamlined Filing	Centralized database for automatic record transfer. Multichannel (online/offline) filing system for instant processing and support for vulnerable groups.
Financial equity	Dual-Track Rules & Fund Adjustment	Reimbursement scope follows the care-receiving region; payment calculations follow the enrolled region. Long-term registration: full benefits, Temporary: 10%–20% reduction, and Unregistered: below 50%. Settlement centers reconcile interregional funds.

Administrative efficiency	Process Simplification & Innovative Tools	Integrated online services and commitment-based registration reduce paperwork. Medical insurance wallets enable real-time cross-provincial transfers of personal funds.

2.2 Theoretical mechanism

This study mainly draws on Schultz's cost–benefit theory, which views labor migration from a more micro and individual perspective, considering it as an economic activity with cost. However, labor force migration also brings corresponding benefits. Labor migration occurs when an individual perceives that the expected benefits of migration are greater than its costs. Suppose a laborer is ready to migrate from $area_i$ to $area_j$ and is expected to work in $area_j$ for T years. The model of its migration decision can be represented as follows:

$$PV = \sum_{t=1}^{T} \frac{B_{jt} - B_{it}}{(1+r)^t} - C. \quad (1)$$

The model denotes the net present value of migration over T years as PV, where B_{jt} and B_{it} represent respective income earned in $area_j$ and $area_i$ in $year_t$, r is the discount rate, and C stands for the total migration cost. In this context, we divide the total cost C into C_{Γ}, C_{Φ}, and C_{Ω}. Among them, $C_{\Gamma} = \Gamma_0 + [\alpha_1 \times \textit{Social-Network}] + [\alpha_2 \times \textit{Info-}$

$Asymmetry]$, $C_\Phi = \Phi 0 \times [1 + \beta \times Risk\text{-}Aversion] \times [1 + \gamma \times Uncertainty]$, and $C_\Omega = \Omega_0 + [\theta \times Household\text{-}Bargaining] + [\kappa \times Childcare\text{-}Pressure]$.

C_Γ denotes cross-regional coordination costs incurred due to nonportable social health insurance because it involves crossing geographical and administrative boundaries. Migrants face extra costs in coordinating life arrangements (housing, social security, and children's education), matching remote job information, and rebuilding social networks (Ye et al., 2024), which arise from managing the transition between different regional systems. Integrating social network and information asymmetry theories, their formation mechanism is captured in Equation (1), where the coefficient α_1 is expected to be negative, reflecting the cost-reducing effect of broader social networks, while α_2 is anticipated to be positive, consistent with the influence of information barriers on increasing transaction costs.

C_Φ denotes the health risk premium cost incurred due to nonportable social health insurance. Within Schultz's theoretical framework, the health risk premium cost of rural labor migration refers to the implicit burden borne by workers who accept higher health risks in urban occupations in exchange for elevated income. Its essence is associated with the market compensating for additional health hazards (e.g., occupational diseases, injuries) through wage premiums. This premium constitutes an opportunity cost wherein workers trade health depreciation for monetary gain, warranting inclusion in total migration costs. In this study, which focuses on social health insurance portability reforms, this cost is tailored to specifically denote the health risk premium imposed on rural migrants due to the nonportability of their original social health insurance after migration. Specifically, C_{Φ} reflects the implicit health depreciation traded for monetary gains, incorporating risk aversion and uncertainty effects. Its mechanism is shown in Equation (1), where a positive β value indicates that greater risk aversion leads to a higher premium, while a positive γ value suggests that increased medical uncertainty results in a higher premium cost.

C_{Ω} denotes the familial ties cost incurred due to nonportable social health insurance. Within Schultz's cost–benefit framework of human capital investment, familial ties cost constitutes a critical component of rural labor migration costs, encompassing economic burdens from sustaining left-behind dependents through remittances, psychological costs of emotional deprivation due to prolonged family separation, and opportunity costs arising from foregone income opportunities when addressing familial emergencies. Essentially, this cost represents an implicit welfare discount wherein migrants trade familial relational well-being for economic gains, fundamentally shaping migration decisions in developing contexts. Specifically, C_{Ω} captures the economic and psychological burdens that arise from family separation, embedding household decision dynamics. Its formation mechanism is formalized in Equation (1), where a negative θ value indicates that greater intrahousehold bargaining power reduces these costs, while a positive κ value indicates that increased childcare pressure leads to higher costs.

In summary, this study argues that when rural labor migration occurs prior to social health insurance portability reforms, three distinct costs emerge, cross-regional coordination, health risk premium, and familial ties costs. For example, prior to the policy reforms, Zhang Qiang, a carpenter with hypertension in Anhui, could only secure local employment due to cross-province medical reimbursement barriers, earning a monthly income of ¥2,800. Following portable health insurance implementation, he obtained work in Shanghai with access to long-term prescriptions and direct medical care settlement, which increased his income to ¥5,200 per month and extended his migration range from 50 kilometers (km) to 550km. Similarly, Wang Fang, a female worker from Kaifeng, Henan was hospitalized for acute appendicitis in Zhengzhou (2013), and prepaid ¥18,000 in medical fees; the subsequent 32-day reimbursement process caused a ¥4,800 income loss. Consequently, she developed resistance to migrant employment in 2014. However, after learning about the reformed policies in 2015, she resumed working in Zhengzhou in 2016. Prepolicy costs can generate a lock-in effect that substantially reduces migration propensity.

The cross-regional settlement of social health insurance enables laborers to use the health insurance paid in the insured location for settlement and reimbursement when seeking medical treatment in a different location. Therefore, we propose hypotheses 1–4:

H1: Social health insurance portability can reduce cross-regional coordination cost (C_Γ).

H2: Social health insurance portability can reduce health risk premium cost (C_Φ).

H3: Social health insurance portability can reduce familial ties cost (C_Ω).

Integrating the above three hypotheses, we proposed the final hypothesis:

H4: Social health insurance portability promotes rural labor migration by reducing cross-regional coordination, health risk premium, and familial ties costs, lowering total migration costs, increasing the net present value of migration, and enhancing migration propensity. Figure 1 illustrate the study's theoretical framework.

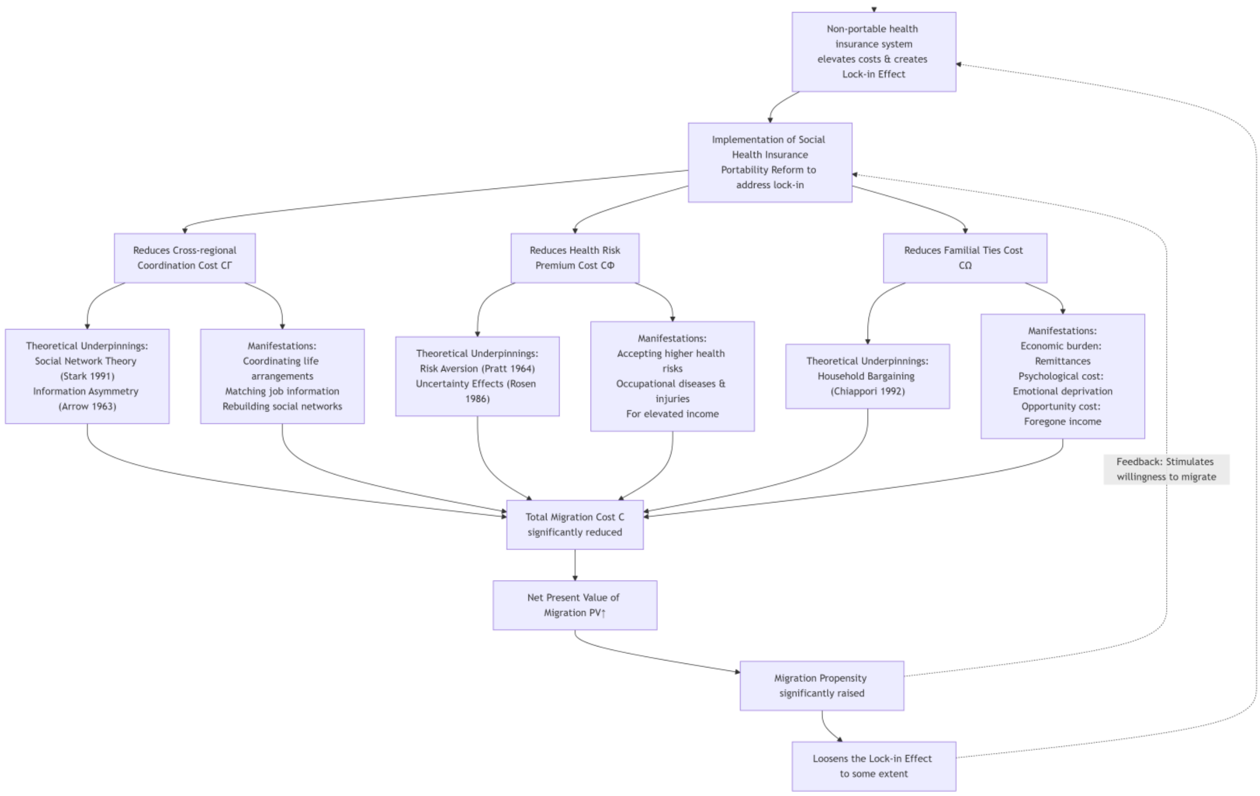


Figure 1 Theoretical Framework

3 Study design and data description

3.1 Data sources

The data used in this study are obtained from three primary sources. Policy implementation dates were collected from official documents issued by the Ministry of Human Resources and Social Security of China and its local bureaus. Individual-level labor data come from the CFPS, specifically the adult questionnaires, using the 2014 and 2016 waves for analyzing intercity portability policies and the 2016 and 2018 waves for interprovincial policy analysis. Village- and community-level characteristic variables are also obtained from the CFPS community surveys.

This study deliberately avoids the common practice of merging macroeconomic statistics in domestic research (e.g., from statistical yearbooks) with microlevel survey because the availability of field-surveyed community data within CFPS ensures internal consistency in questionnaire design and variable standards, and the more granular, semimicro nature of the surveyed community data offers a better fit for the model.

We processed, combined, and matched the above three datasets, defining rural labor as the working or unemployed population aged 16 to 65 with rural household registration as the sample total. The main policies identified in this study are intercity social health insurance settlement policy implementation in the province and the interprovincial social health insurance settlement policy in China.

3.2. Identification strategy

3.2.1 Intercity settlement policy equation

This study employs a difference-in-differences (DID) approach to estimate the effects of intercity and interprovincial health insurance portability policies on labor migration. Equation (2) examines the intercity policy, where Y_{ijt} indicates whether $individual_i$ in $city_j$ migrated across cities within the province in $year_t$ (based on working in a different place for six months in a year). $Treat_{ij}$ indicates cities that implemented the intercity portability policy, and $Time_{jt}$ indicates the postpolicy period (2016 and onward). Control variables (X_{it}) include individual, household, and village characteristics, and city and year fixed effects (FEs) are included.

$$Y_{ijt} = \alpha_0 + \alpha_1 treat_{ij} \times time_{jt} + \alpha_2 X_{it} + \alpha_j + \alpha_t + \varepsilon_{ijt}. \quad (2)$$

3.2.2 Interprovincial settlement policy equation

Equation (3) evaluates the interprovincial portability policy. Since the policy was implemented nationwide by mid-2017, traditional treatment–control spatial differentiation is infeasible. Instead, insured laborers constitute the treatment group, while uninsured laborers form the control group. Y_{ijt} indicates interprovincial migration (based on working in a different place for six months in a year), $Treat_{ij}$ indicates insurance enrollment, and $Time_{jt}$ marks the postpolicy period (2018 onward). Due to data constraints, control variables (X_{it}) are limited to individual characteristics (e.g., age, gender, and education). Although we omit household and village-level controls for consistency, city and year FEs are included to mitigate omitted variable bias.

$$Y_{ijt} = \alpha_0 + \alpha_1 treat_{ij} \times time_{jt} + \alpha_2 X_{it} + \alpha_j + \alpha_t + \varepsilon_{ijt}. \quad (3)$$

3.3 Descriptive statistics

3.3.1 Descriptive statistics of intercity settlement policy variables

Table 3 presents descriptive statistics for the intercity settlement policy key variables. The results show that approximately 4.6% of the rural laborers' sample migrated across cities within the same province. The average age was about 42 years, with nearly equal gender distribution. Respondents had an average of seven years of education, and the majority reported being in fair health. Mobile phone usage was high, at 87.4%. Among village characteristics, average per capita annual income was approximately ¥6,046, and the mean distance to the nearest county town was about 45km.

Table 3 Descriptive statistics of intercity settlement policy variables

Variables	Description	Obs	Mean	SD	Min	Max
Migration	Work in different city within same province: 1 if yes, 0 otherwise	31020	0.046	0.208	0	1
Age	Age	31020	41.969	13.94	16	65
Gender	Gender: 1 if male, 0 otherwise	31020	0.486	0.5	0	1
Everwork	Formal employment history: 1 if yes, 0 otherwise	31020	0.747	0.435	0	1
Marriage	Marital status: 1 if married, 0 otherwise	31020	0.818	0.386	0	1
Health	Health rating: 5 for excellent, 1 for poor	31020	3.116	1.251	1	5
Edu	Years of education	31020	7.04	4.259	0	19
Phone	Mobile phone usage: 1 if yes, 0 otherwise	31020	0.874	0.33	0	1
Water	Village water source quality: 5 for highest, 1 for lowest	31020	3.481	0.596	1	5
Fuel	Village fuel usage quality: 5 for highest, 1 for lowest	31020	2.802	1.569	1	5

Enterprise	Presence of high-pollution industry in village: 1 if yes, 0 otherwise	31020	0.188	0.369	0	1
Market	Distance to nearest market from village	31020	15.044	71.414	0	1000
County	Distance to nearest county town from village	31020	44.699	34.924	0	180
Wage	Daily wage of skilled construction workers in area	31020	175.559	49.161	70	400
Income	Average annual income per capita in village	31020	6045.54	4501.44	150	30000
Score	Residential environment score of village	31020	27.492	6.347	6	42
Terrain	Topographical grade of village: 3 for highest, 1 for lowest	31020	2.282	0.711	1	3
Land	Per capita arable land resources available in village	31020	1.763	1.751	0	20.61

3.3.2 Descriptive statistics of interprovincial settlement policy

Table 4 presents the descriptive statistics for key interprovincial settlement policy variables. Among the rural laborers' sample, 3.6% migrated across provinces. The average age was approximately 43 years, with 48.9% being male. About 80% were married, and the average self-rated health score was 3.09. The mean years of education was 7.49.

Table 4 Variables descriptive statistics of interprovincial settlement policy

Variables	Description	Obs	Mean	Sd	Min	Max
Migration	Work in different provinces in China: 1 if yes, 0 otherwise	37925	0.036	0.186	0	1
Age	Gender: 1 if male, 0 otherwise	37925	42.603	14.026	16	65
Gender	Formal employment history: 1 if yes, 0 otherwise	37925	0.489	0.5	0	1
Marriage	Marital status: 1 if married, 0 otherwise	37925	0.8	0.4	0	1
Health	Health rating: 5 for excellent, 1 for poor	37925	3.086	1.235	1	5
Edu	Years of education	37925	7.494	4.383	0	24

4 Empirical analysis

4.1 Baseline results

Table 5 presents the estimated impact of the intercity health insurance settlement policy on labor migration using Equation (2). Column (1) shows the baseline probit regression, Column (2) adds individual, household, and village-level controls, and Column (3) further includes city and year FEs using a panel probit model.

The coefficient of interest on the DID term is positive and statistically significant at the 5% level across all specifications, indicating that the policy increased the probability of intercity migration among rural laborers. The magnitude remains stable at approximately 1%–1.1% after controlling for covariates and FEs. Results remain robust to the inclusion of control variables and multiple FEs.

Table 6 presents the estimated impact of the interprovincial health insurance settlement policy on cross-province labor migration based on Equation (3). Column (1) is the baseline regression, Column (2) adds individual-level controls, and Column (3) introduces city and year FEs using a panel probit model.

The coefficient of the DID term is positive and statistically significant across all specifications, indicating a positive policy effect on migration probability. The magnitude decreases from 1.7% to 1.0% as FEs and controls are incorporated, remaining significant at the 10% level in the fullest specification. The results demonstrate that the interprovincial settlement policy facilitated rural labor migration across provinces.

Table 5 Impact of intercity settlement policy

Explanatory variables	Dependent variable: Labor migration		
	(1)	(2)	(3)
Did	0.01^{**}	0.011^{**}	0.010^{**}
	(0.285)	(0.579)	(0.357)
Age		-0.002^{***}	-0.002^{***}
		(1.905)	(1.906)
Gender		0.027^{***}	0.026^{***}
		(2.853)	(2.862)

Everwork	0.004	0.005
	(0.023)	(0.026)
Marriage	0.013***	0.013***
	(1.45)	(1.57)
Health	0.001	0.001
	(0.006)	(0.005)
Edu	0.003***	0.003***
	(0.455)	(0.556)
Phone	0.051***	0.051***
	(6.566)	(6.345)
Water	−0.011***	−0.011***
	(1.132)	(1.233)
Fuel	0.002***	0.002***
	(0.250)	(0.250)
Enterprise	−0.005*	−0.006*
	(0.051)	(0.063)
Market	−0.000	−0.000
	(0.001)	(0.001)
County	0.000	0.000
	(0.002)	(0.002)
Wage	0.000	−0.000
	(0.002)	(0.002)

Income		0.000*	0.000*
		(0.004)	(0.004)
Score		0.001**	0.001**
		(0.077)	(0.077)
Terrain		0.010***	0.011***
		(3.256)	(3.334)
Land		−0.003***	−0.003***
		(3.289)	(3.455)
Year FE	No	No	Yes
City FE	No	No	Yes
Obs	31020	31020	31020
Adj-R^2	0.001	0.094	0.105

Notes: Errors are clustered at the individual level. Robust standard errors are in parentheses. ***, ** and * indicate statistical significance at 1%, 5%, and 10% levels, respectively.

Table 6 Impact of interprovincial settlement policy

Explanatory variables	Dependent variable: Labor migration		
	(1)	(2)	(3)
Did	0.01**	0.011**	0.010**
	(0.208)	(0.478)	(0.099)
Age		−0.002***	−0.002***
		(5.562)	(5.744)

Gender		0.024^{***}	0.023^{***}
		(4.563)	(4.214)
Marriage		0.018^{***}	0.019^{***}
		(3.356)	(3.244)
Health		0.002^{**}	0.002^{**}
		(0.061)	(0.061)
Edu		−0.000	−0.000
		(0.000)	(0.000)
Year FE	No	No	Yes
City FE	No	No	Yes
Obs	37925	37925	37925
Adj-R^2	0.009	0.069	0.098

Notes: Errors are clustered at the individual level. Robust standard errors are in parentheses. ***, ** and * indicate statistical significance at 1%, 5%, and 10% levels, respectively.

4.2 Robustness tests

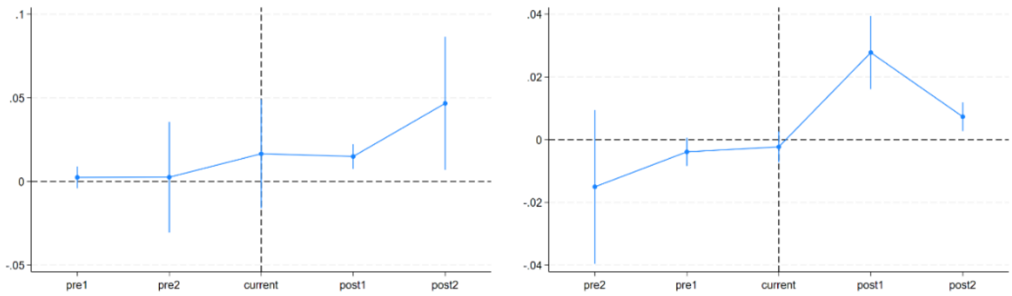
4.2.1 Event analysis

We employ an event study design to assess the validity of the parallel trend assumption. For the intercity policy, we estimate Equation (4), which extends Equation (2) by including policy implementation leads and lags. As shown in Figure 2(a), the coefficients β_k on the pretreatment indicators (pre2 and pre1) are statistically indistinguishable from zero, indicating no significant preexisting differences in migration trends between treatment and control groups prior to the policy's introduction.

$$Y_{ijt} = \sum_{k=-2}^{k=+2} \beta_k \times time_{j,t0\ +\ k} + \alpha_j + \alpha_t + \varepsilon_{ijt}. \quad (4)$$

We apply the same event study approach to examine the interprovincial policy using Equation (5), derived from Equation (3). Figure 2(b) presents the estimated dynamics of the policy effect. Again, the coefficients for the two years before the reform are statistically insignificant, confirming that parallel trends hold for interprovincial migration as well. Therefore, the event study results support the robustness of our DID identification strategy for both policies.

$$Y_{ijt} = \sum_{k=-2}^{k=+2} \beta_k \times time_{j,t0\ +\ k} + \alpha_j + \alpha_t + \varepsilon_{ijt} \quad (5)$$



(a)The event analysis method test of inter-city settlement policy

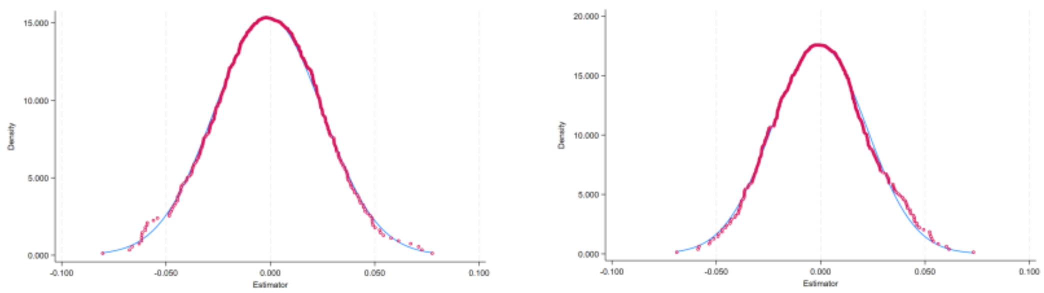
(b) The event analysis method test of inter-provincial settlement policy

Figure 2 Event Analysis Tests

4.2.2 Placebo tests

We conduct a placebo test referencing Adukia et al. (2020) to assess the potential influence of omitted variables and random factors. Specifically, we randomly assign both the treatment group and policy implementation timing, then re-estimate the model based on Column (3) of Table 5. This process is repeated 500 times to generate a distribution of estimated coefficients for the "did" term. As shown in Figure 3(a), the coefficients from these falsified experiments are centered around zero, indicating that the baseline results are unlikely to be driven by unobserved confounding factors.

The placebo test results for the interprovincial settlement policy are presented in Figure 3(b), and the distribution of the "did" placebo coefficients is also tightly clustered around zero, validating the robustness of our findings and suggesting that omitted variable bias is not a major concern.



(a)the placebo test of
inter-city settlement policy

(b) the placebo test of
inter provincial settlement policy

Figure 3 Placebo Tests

4.2.3 Sample restriction tests

We conduct sample restriction tests to further assess the robustness of our findings. For the intercity policy analysis, we exclude observations from 2015 and 2017, which are years with partial data collection that exhibited atypical dependent variable patterns. We also remove outliers (e.g., implausible values for market distance or annual income) and observations potentially confounded by concurrent policies affecting labor migration such as digital village construction or transportation initiatives. Similarly, for the interprovincial policy analysis, we exclude data from 2017 and 2019 due to irregular sampling and possible contamination from other policy shocks, and drop extreme values and observations likely affected by other migration-related policies. As summarized in Table 7, the re-estimated coefficients of “Did” remain statistically significant ($p < 0.05$) and quantitatively stable across all restricted samples, confirming that our baseline results are not driven by specific sample selections or external policy interference.

Table 7 Re-sampling tests results

Intercity settlement policy	(1)	(2)	Interprovincial settlement policy	(1)	(2)
Did	0.013***	0.013**	Did	0.012*	0.015**
	(1.857)	(0.52)		(0.156)	(0.033)

Notes: Errors are clustered at the individual level. Robust standard errors are in parentheses. ***, ** and * indicate statistical significance at 1%, 5%, and 10% levels, respectively.

4.3 Mechanism analysis

4.3.1 Theoretical mechanism analysis

Notably, as the two policies operate through similar mechanisms, this study presents only the mechanism analysis for the first policy. In line with our theoretical framework, we test hypotheses H1–H3. This study examines the mechanisms of health insurance portability policies through a triple-differential (DDD) design using the CFPS database. Within the empirical model (Equations (6)–(8)), we define three high-cost groups:

High coordination cost group: Rural laborers (hukou = 0) with cross-regional medical treatment history (med_place ≠ 1) are coded as $High\Gamma_{it}$ = 1, and others 0;

High health risk premium group: Rural laborers diagnosed with chronic diseases (ill_chronic = 1) are coded as $High\Phi_{it}$ = 1, and others 0;

High familial ties cost group: Rural laborers with school-age children (6–18 years, num_child_schoolage ≥ 1) are coded as $High\Omega_{it}$ = 1, others 0.

Policy variables, controls, and dependent variables remain consistent with the baseline regression. The mechanism tests focus on the interaction term coefficient a_3, where if the estimates are significantly positive across all three models, this indicates that the high-cost groups exhibit stronger responsiveness to portability policies than their counterparts, validating hypotheses H1–H3. The marginal effect coefficients derived from postregression analysis quantify the differential migration propensity between high- and low-cost rural laborers under provincial intercity medical settlement policies. It is important to note that this study lacks direct institutional cost measures ($C_\Gamma/C_\Phi/C_\Omega$)

due to data limitations; however, following the observable implications paradigm developed by Chetty et al. (2016), we validate the mechanisms by testing the policy's heterogeneous effects across the three cost-sensitive groups. If Table 8 demonstrates significantly stronger migration responses among high administrative-cost ($HighC_{\Gamma}$), high health-risk ($HighC_{\Phi}$), and high family-burden ($HighC_{\Omega}$) groups, this will confirm that social health insurance portability promotes rural labor migration by reducing these three institutional costs. Consistent with the methodology of Autor et al. (2020), heterogeneous response patterns provide falsifiable evidence for the cost-reduction mechanisms (H1–H3), thereby substantiating H4. Equations (6)–(8) present the econometric specifications corresponding to the three mechanism analyses.

$$Y_{ijt} = \alpha_0 + \alpha_1 treat_{ij} \times time_{jt} + \alpha_2 High\Gamma_{it} + \alpha_3 \cdot (treat_{ij} \times time_{jt} \cdot High\Gamma_{it}) + \alpha_j + \alpha_t + \alpha \cdot X_{ijt} + \varepsilon_{ijt} \quad (6)$$

$$Y_{ijt} = \alpha_0 + \alpha_1 treat_{ij} \times time_{jt} + \alpha_2 High\Phi_{it} + \alpha_3 \cdot (treat_{ij} \times time_{jt} \cdot High\Phi_{it}) + \alpha_j + \alpha_t + \alpha \cdot X_{ijt} + \varepsilon_{ijt} \quad (7)$$

$$Y_{ijt} = \alpha_0 + \alpha_1 treat_{ij} \times time_{jt} + \alpha_2 High\Omega_{it} + \alpha_3 \cdot (treat_{ij} \times time_{jt} \cdot High\Omega_{it}) + \alpha_j + \alpha_t + \alpha \cdot X_{ijt} + \varepsilon_{ijt} \quad (8)$$

4.3.2 Mechanism analysis

The coefficient in Column (1) of Table 8 captures the differential change in cross-city mobility propensity for rural workers with high medical coordination costs, relative to their low-cost counterparts, following intraprovincial intercity healthcare insurance consolidation policy implementation. Similarly, the coefficient in Column (2) of Table

8 reflects the differential change for workers with high health risk premium costs compared with low-cost workers, and the coefficient in Column (3) of Table 8 measures the differential change for those with high family dependency costs. The respective estimated coefficients are 0.003, 0.006, and 0.004, all of which are statistically significant at the 5% level. These results demonstrate that the policy shock leads to 0.3%, 0.6%, and 0.4% increases in rural workers' mobility propensity with high medical coordination, health risk premium, and family dependency costs, respectively. This provides empirical support for hypotheses H1–H3.

Table 8 Mechanism analysis

	(1)	(2)	(3)
Policy × HighCost	0.003**	0.006**	0.004**
	(0.061)	(0.171)	(0.165)

Notes: Errors are clustered at the individual level. Robust standard errors are in parentheses. ***, ** and * indicate statistical significance at 1%, 5%, and 10% levels, respectively.

4.4 Heterogeneity analysis

4.4.1 Results of heterogeneity analysis

We next divide the labor force into male and female samples, those from economically developed and less developed areas, and laborers aged 40 and below and above 40, presenting the results in Table 9. It is essential to explain that due to the space limitations and the two policies examined in this study, the responses of different types of rural labor force to these two policies are basically the same, and the mechanism of action is also basically the same. Therefore, we only present the analysis results of the intercity settlement policy of social medical insurance in the province.

Based on the results in Table 9, social health insurance portability has a more pronounced effect on the female rural labor force, rural labor from economically underdeveloped regions, and older-generation rural labor force. The policy has a significantly stronger impacts on labor mobility within these subgroups, with statistically significant differences in coefficient magnitudes across groups.

4.4.2 Causal analysis of heterogeneity results

Based on the heterogenous analysis results, this section investigates the underlying drivers for the gendered responses of rural laborers to this policy. The statistical analysis of the CFPS 2014 database in Table 10 reveals a pronounced divergence in the variable indicating whether an individual is the primary caregiver for children aged 0–15, with significantly larger group differences observed between genders. In contrast, other potential explanatory variables (e.g., education, age, and income) exhibit minimal intergroup heterogeneity. To supplement these findings, we conduct a DDD analysis focusing on this key variable. The statistically significant regression results from the DDD analysis confirm that the observed heterogeneity is systematically driven by this caregiver status variable (as presented in Column (1) of Table 13). This evidence robustly confirms that family binding costs are the primary driver of gender-based heterogeneity, further corroborating factor C_Ω identified in this study's mechanism analysis.

Based on rural laborers' heterogeneous responses across regions with varying economic development to the policy, statistical analysis of the CFPS 2014 database (Table 11) reveals that per capita medical personnel availability, self-reported health status, and average daily wages exhibit the most significant intergroup disparities, with laborers in less developed regions showing substantially lower values in all three dimensions compared with their developed-region counterparts. Although other potential explanatory variables (e.g., education, age, gender) are systematically examined, they fail to account for the observed heterogeneity. To supplement this analysis, we conduct a DDD analysis focusing on these three key variables. The statistically significant regression results from the DDD analysis confirm their systematic explanatory power for the observed heterogeneity (as presented in Column (2) of Table 13). This evidence strongly implies that healthcare coordination costs (proxied by medical personnel availability), health risk premium costs (reflected in health status), and wage differentials (daily income) collectively drive regional heterogeneity, corroborating factors C_Γ and C_Φ as established in our mechanism analysis.

Regarding the heterogeneous responses of rural laborers from different generations to the policy, statistical analysis of the CFPS 2014 database (as presented in Table 12) reveals that older-generation laborers exhibit significantly weaker responses than their younger-generation counterparts. Previous mechanism analysis indicates that groups facing higher health risk premium costs should demonstrate a stronger propensity for labor transfer under this policy. However, paradoxically, the observed heterogeneity reveals that younger-generation laborers reacted more strongly. To explore this counterintuitive finding, we introduce three additional variables, encompassing monthly internet access costs (as a proxy for information access), perceived government trust levels, and years of education (measuring formal schooling attainment). Analysis reveals substantial intergenerational differences across all three factors, indicating they collectively explain the observed heterogeneity. While initial systematic screening, including variables such as gender, failed to identify significant drivers, a subsequent DDD analysis confirms that education years, particularly alongside internet access costs and government trust, statistically significantly contribute to the generational divergence (as presented in Column (3) of Table 13). This evidence demonstrates that education-enhanced human capital, access to external information, and trust in the government jointly shape rural laborers' reactions to policy shocks, providing a multifaceted explanation for this generational heterogeneity.

Table 9 Heterogeneity analysis of intercity settlement policy

	Agricultural Labor Force					
	Female	Male	Less Developed Area	Developed Area	Younger Generation Rural Labor Force	Older Generation Rural Labor Force
Did	0.012**	0.008*	0.016**	0.007*	0.019***	0.007*
	(0.325)	(0.228)	(0.355)	*	(2.230)	(0.078)

(0.155)

Notes: Errors are clustered at the individual level. Robust standard errors are in parentheses. ***, ** and * indicate statistical significance at 1%, 5%, and 10% levels, respectively.

Table 10 Gender differences in key variables

Variables	Male	Female	Difference (M-F)	p-value
Age	41.740	41.940	−0.200	0.001
Everwork	0.565	0.758	−0.193	≤0.001
Health	2.981	3.276	−0.295	0.001
Edu	5.729	7.662	−1.933	0.001
Primary caregiver	0.548	0.155	0.393	≤0.001

Notes: Errors are clustered at the individual level. Robust standard errors are in parentheses. ***, ** and * indicate statistical significance at 1%, 5%, and 10% levels, respectively.

Table 11 Area differences in key variables

Variables	Less Developed Area	Developed Area	Difference (M-F)	p-value
Age	40.824	41.039	−0.215	0.001
Everwork	0.733	0.658	0.075	0.001

Gender	0.515	0.506	0.006	≤0.001
Health	2.985	3.345	−0.360	0.001
Edu	7.151	7.629	−0.478	≤0.001
Medical per capita	0.002	0.004	−0.002	0.001
Daily wages	156.348	220.565	−64.217	0.001

Notes: Errors are clustered at the individual level. Robust standard errors are in parentheses. ***, ** and * indicate statistical significance at 1%, 5%, and 10% levels, respectively.

Table 12 Age differences in key variables

Variables	New Generation Rural Labor Force	Old Generation Rural Labor Force	Difference (M-F)	p-value
Gender	0.506	0.523	−0.017	0.001
Everwork	0.755	0.786	−0.031	≤0.001
Health	3.455	2.349	1.106	0.001
Edu	7.956	5.055	2.901	≤0.001
Monthly internet fee	66.665	16.786	49.879	0.001
Trust in the government	3.439	2.538	0.901	≤0.001

Notes: Errors are clustered at the individual level. Robust standard errors are in parentheses. ***, ** and * indicate statistical significance at 1%, 5%, and 10% levels, respectively.

Table 13 Validation of heterogeneity drivers

(1)	(2)			(3)		
Primary caregiver	Health	Medical per capita	Daily wage	Edu	Monthly internet fee	Trust in the government
0.006**	0.007**	0.004**	0.008**	0.004**	0.005**	0.003*
0.133	0.235	0.114	0.195	0.190	0.102	0.051

Notes: Errors are clustered at the individual level. Robust standard errors are in parentheses. ***, ** and * indicate statistical significance at 1%, 5%, and 10% levels, respectively.

5 Conclusions

This study demonstrates a robust causal relationship between portable health insurance and rural labor mobility in China. By alleviating three critical market frictions—cross-regional coordination, health risk premium, and familial ties costs—portable social health insurance enhances the liquidity of labor as an economic asset, improving labor market allocation efficiency. Heterogeneity analyses further reveal distinct mechanistic pathways, wherein the effect is most pronounced among female laborers, as portability mitigates household risk concentration typically borne by primary caregivers, workers in less-developed regions exhibit heightened sensitivity due to greater health vulnerabilities and transactional barriers, and newer-generation migrants exhibit stronger responses, leveraging their higher human capital and institutional trust to capitalize on reduced frictions.

Our findings offer three central contributions to financial economics. First, we identify and quantify a novel institutional determinant of labor mobility, extending the literature on how policy-designed mechanisms can mitigate market frictions and facilitate efficient labor resource reallocation. Second, by framing health insurance portability as a public risk-management tool, we contribute to household finance literature by demonstrating how reduced health-related uncertainty influences major lifecycle decisions such as migration, which is functionally analogous to enhancing risk-bearing capacity. Third, this research provides micro foundational evidence for macroeconomic growth models, highlighting institutional portability as a critical factor of achieving a unified national market—a fundamental driver of capital efficiency and sustainable economic development.

To address implementation barriers and mitigate potential macroeconomic distortions arising from accelerated labor migration, we propose an integrated policy framework that combines digital governance, financial innovation, and human capital coordination, while incorporating responses to equilibrium effects and institutional complementarity.

The first component emphasizes digital administrative integration via AI-enabled portable insurance platforms with voice navigation tailored for the 68% of migrants with junior high education or less, supported by trained agent networks in high-mobility provinces. The second component introduces financial risk mitigation mechanisms, including instant settlements for high-incidence diseases built on existing payment reforms, and emergency medical credit of up to ¥10,000 with interest-free terms for 60 days via UnionPay targeting low-income migrants. This initiative also incorporates a dynamic assessment mechanism to monitor and counter equilibrium effects such as wage suppression and housing inflation in destination regions—where a 1% increase in migration raises housing costs by 0.38% (Saiz, 2007). The third component focuses on human capital and housing coordination by converting insurance enrollment into skill-training vouchers and expanding affordable housing supply through repurposing idle industrial land to increase the affordable housing share from 15% to 30%, supplemented by a redeemable point-based system for public housing access. The fourth component enhances institutional complementarity by improving health insurance, pension, and unemployment insurance systems' interoperability, encouraging bundled portability of social security benefits to strengthen overall system effectiveness and labor mobility.

Building on these microlevel behavioral mechanisms, future research should prioritize quantifying the macroeconomic impacts using Computable General Equilibrium models that incorporate Saiz's housing elasticity parameters and Borjas's skill substitution elasticities (Cortes & Tessada, 2011). Further investigation should also examine long-term educational investment effects on migrants' children and emerging mobility constraints stemming from elderly care burdens to provide a more comprehensive basis for policy design.

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