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Does non-employment based health insurance promote entrepreneurship? Evidence from a policy experiment in China

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ABSTRACT

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Previous researchers have shown that employment-based health insurance lowers job mobility and deters entrepreneurship. The Urban Resident Basic Medical Insurance (URBMI) program, piloted in 2007 in China and fully established in 2009, offers health insurance to about 271 million urban residents without formal employment. Before the implementation of URBMI, most urban residents obtained health insurance through their employers, and therefore a large number of unemployed and self-employed individuals were uninsured. Thus, URBMI creates a new insurance option that does not depend on formal employment and may promote entrepreneurship. We take advantage of this policy change to evaluate the effect of URBMI on self-employment. Using 2000–2011 data from the China Health and Nutrition Survey and a difference-in-differences approach with propensity score weighting, we found that URBMI increased self-employment rate by at least 8.73% for the overall population. The result was mainly driven by the URBMI's impact on unhealthy workers, individuals with 12 years of schooling or less, and workers above 30 years old. *Journal of Comparative Economics* **000** (2017) 1–14. Department of Economics, University of Pittsburgh, PA 15260, USA; Department of Health Policy & Management, University of Pittsburgh, PA 15260, USA.

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1. Introduction

Previous researchers have shown that employment-based health insurance affects job mobility and deters entrepreneurship (Gruber and Madrian, 2004; Wellington, 2001; Fairlie et al., 2011; Velamuri, 2012). In particular, the fear of losing health insurance coverage discourages workers from switching jobs or starting their own business, which creates "job lock" or "entrepreneurship lock".[1] In this paper, we exploit an exogenous policy experiment in urban China to evaluate whether the introduction of a non-employer provided insurance promotes entrepreneurship.

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[1] Although "job lock" is usually a more general term, we use "job lock" and "entrepreneurship lock" interchangeably in this paper. Entrepreneurship lock refers to the barrier of becoming entrepreneurs. We are using this term to be consistent with the literature.

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Before 2007, the majority of working-age adults in urban China obtained their health insurance through an employer-provided insurance program, and most self-employed and unemployed were uninsured. In an effort to provide universal healthcare coverage, the Chinese government launched the Urban Resident Basic Medical Insurance (URBMI) program in 2007 in pilot cities and fully established it by the end of 2009. URBMI is a voluntary non-employer provided health insurance program that primarily provides coverage for urban residents without formal employment, including the unemployed, the self-employed, young children and students. As of 2012, URBMI covered 271.2 million urban residents, accounting for 20.1% of the Chinese population.

We take advantage of this healthcare reform to evaluate the effect of URBMI, a non-employer sponsored insurance, on labor market outcomes, in particular, entrepreneurial decisions. We hypothesize that the implementation of URBMI increases the rate of self-employment. Before the implementation of URBMI, insurance options for self-employed individuals were limited, and workers may be reluctant to quit their jobs in order to keep their employer-sponsored health insurance. With URBMI, insurance no longer acts as a barrier that prevents workers from transitioning into self-employment.

In this paper, we examine the impact of URBMI on self-employment status, using a difference-in-differences strategy and the 2000–2011 China Health and Nutrition Survey (CHNS) data. We exploit the fact that only urban residents with urban Hukou, a legal record in the Chinese household registration system indicating formal urban residential status, were eligible for URBMI during our study period. We compare the change in self-employment propensity of urban Hukou residents following the implementation of URBMI with the concurrent change among urban residents without urban Hukou who were not eligible for URBMI. We found that URBMI increased self-employment rate by 13.3% for the overall population, 9.89% for less educated individuals (12 years of schooling or less), 14.2% for middle age workers (between 30 and 50 years old), and 14.3% for senior workers (above 50 years old). For more educated individuals and younger workers, this effect is minimal.

Our study has two distinctive contributions. First, we are the first to evaluate the effects of China's new Urban Resident Basic Medical Insurance (URBMI) on labor market outcomes, in particular, entrepreneurial decisions. A few studies have formally evaluated URBMI's take-up rate and the effect on healthcare utilization, but to the best of our knowledge, no study has evaluated URBMI's effect on labor market outcomes. For instance, Lin et al. (2009) conducted a national household survey of nine representative Chinese cities, and found that there is a U-shape relationship between the URBMI participation rate and income, with the poor and those with prior hospitalizations benefiting most from URBMI. Liu and Zhao (2014) found that URBMI significantly increased the utilization of formal medical services, and Wang (2014) found that URBMI increased household-level healthcare utilization. Pan et al. (2015) concluded that URBMI beneficiaries experienced better health and received better inpatient care, than the uninsured.

Second, our paper contributes to the literature on entrepreneurship lock, by taking advantage of an exogenous policy change that disconnects employment and health insurance. Previous literature on job lock mainly focuses on employer-to-employer mobility (Madrian, 1994; Holtz-Eakin et al. 1996; Kapur, 1998), and only few studies (Fairlie et al., 2011; DeCicca, 2010; Heim and Lurie, 2010) have investigated the impact on self-employment choices. Our work shows that breaking the link between health insurance and employment can increase self-employment rates and promote entrepreneurship, but this effect varies for different populations.

The rest of this paper is organized as follows: Section 2 introduces the institutional background on the Chinese healthcare system. Section 3 presents the data source and study variables. Section 4 illustrates the empirical strategies. Section 5 shows the main results, and Section 6 discusses our results and concludes.

2. Institutional background

The Chinese health insurance system consists of three main components: the Urban Employee Basic Medical Insurance (UEBMI), the Urban Residents Basic Medical Insurance (URBMI), and the New Cooperative Medical System (NCMS). In addition to these government programs, some commercial health insurance programs exist but are in their early stages and mainly target the upper class (Dong, 2009). In 2007, less than 4% of individual medical expenses were paid by commercial health insurance in China, compared to the 50% in the United States (Wang, 2009).

UEBMI, formally launched in 1998, provides health insurance to urban residents with current or previous employment from both private and public enterprises. According to Ministry of Health (2013), 264.7 million individuals were enrolled in UEBMI as of 2012, accounting for 19.6% of the total population in China. UEBMI is financed by premium contributions from employers (6–8% of the employee's wage) and employees (2–3% of their wage). Retired workers' premium contributions are fully born by their former employers (Liu, 2002). This insurance scheme has two components, an integrated social pooling fund and individual medical savings accounts. The social pooling fund is used for inpatient care. It is largely pooled at the municipal level, so the benefit level does not vary by employers. The mandated reimbursement rate varies slightly from city to city. Liang and Langenbrunner (2013) estimated the nationwide effective reimbursement rate for inpatient care was 88.5% in 2011. The individual medical savings accounts are used to cover outpatient services, deductibles, and any copayments paid by enrollees. The decision to offer UEBMI to workers is made by employers rather than employees (Xu et al., 2007). Once offered, all employees typically choose to enroll because of the generous employer subsidy.

UEBMI was designed for urban residents with official urban Hukou. Recently, some cities have expanded to make UEBMI cover migrant workers with formal employment—residents who have formal employment in the urban areas but with rural Hukou. However, the 2013 enrollment data shows that only 18.7% of the rural migrant workers had urban health insurance

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nationwide (Jiang and Yi, 2014), and during our study period between 2000 and 2011, the proportion was smaller than 7% on average.

URBMI was initially piloted in 2007 for selected cities and expanded to almost all cities by the end of 2009 (Liu and Zhao, 2014). This is a voluntary program that primarily provides health insurance for urban Hukou residents without formal employment, including the unemployed, the self-employed, young children and school students. According to Ministry of Health (2013), as of 2012, URBMI covered 271.2 million urban residents, accounting for 20.1% of total Chinese population. Prior to the implementation of URBMI, most of the unemployed and self-employed were uninsured, while young children and school students were usually covered by special insurance programs such as the Expanded Program of Immunization Insurance for Children.

URBMI mainly offers reimbursement for inpatient expenses, but it also covers some outpatient services for costly chronic or catastrophic diseases, like radiotherapy and chemotherapy for cancer (Liu and Zhao, 2014). Although State Council (2012) noted that the target reimbursement rate for inpatient care under URBMI was 70% in 2012, Liang and Langenbrunner (2013) estimated that the actual nationwide effective reimbursement rate in 2011 was only around 42%, because many services provided in the hospital are not reimbursable. URBMI is financed by subsidies from central and local governments (about 36% of the financing cost on average), and individual contributions (Lin et al., 2009). The annual premium for pilot cities in 2010 was between 20 and 170 CNY in central and western provinces and between 40 and 250 CNY in eastern provinces, so the program is affordable to the general public (Yip et al., 2012). Local governments have autonomy in designing and implementing URBMI according to their local needs, and therefore the local subsidy amount and reimbursement rates vary by city. Unlike UEBMI, URBMI does not have individual Medical Savings Account.

NCMS was established in 2003 to replace the old village-based rural health insurance program—Cooperative Medical System—which targets rural Hukou residents. NCMS is a voluntary scheme, but the central and local governments provide substantial contributions to make it attractive even to low-risk households. As of 2012, the participation rate of NCMS was 98.26%, covering 805.3 million rural residents or 59.6% of the total Chinese population (Ministry of Health, 2013). Like URBMI, NCMS also mainly offers reimbursement for inpatient services, but each county can set their own benefit schemes and some affluent counties choose to cover outpatient services. In general, the level of financing is low, the coverage is shallow, but the premiums are low as well. The minimum per beneficiary contribution in 2010 was between 20 and 30 CNY in western and central provinces, and between 30 and 50 CNY in eastern provinces. Average inpatient reimbursement rate in 2010 was 43.9%, and 78.8% of the counties covered general outpatient care (Yip et al., 2012). These rates have increased substantially in recent years but we report the numbers relevant to our study period.

Recently there have been efforts to combine URBMI and NCMS to create a unified health insurance system for both rural and urban Hukou residents without employer-provided insurance (State Council, 2016). During our study period, however, there were only a few pilot cities participating in the unified program, none of which are in our sample.

In sum, before the implementation of URBMI, rural Hukou residents were mainly insured through NCMS, a non-employment based insurance program, while urban Hukou residents were largely insured through UEBMI, an employer-provided insurance program. Self-employed city residents with rural Hukou could choose to enroll in NCMS in their local towns, but self-employed city residents with urban Hukou did not have a similar government-subsidized insurance program. The latter could choose to buy commercial insurance but there was only limited supply of commercial insurance and it was usually considered unaffordable by many. After URBMI was initiated, the self-employed and the unemployed urban Hukou residents gained access to affordable health insurance through URBMI.

3. Data

3.1. Data source and pattern

We use five waves of the China Health and Nutrition Survey (CHNS) data: 2000, 2004, 2006, 2009, and 2011. CHNS is a nationally representative dataset that covers both urban and rural areas, collected by the Carolina Population Center at the University of North Carolina at Chapel Hill and the National Institute of Nutrition and Food Safety at the Chinese Center for Disease Control and Prevention (Zhang et al., 2014). We exclude data from rural sites because our area of focus is the urban labor market, and China's rural labor markets are dramatically different from its urban labor markets. Most rural residents are self-employed farmers, who are very different from the self-employed workers in the cities. Before 2011, this survey was conducted in nine provinces including Liaoning, Heilongjiang, Jiangsu, Shandong, Henan, Hubei, Hunan, Guangxi, and Guizhou. In the 2011 wave, Beijing, Shanghai, and Chongqing were added. We exclude these late additions from our analysis. CHNS is a panel dataset and the same individuals were interviewed in each wave. The annual attrition rate is around 23% and new individuals were added to maintain the representativeness of the sample (See Appendix A for a detailed discussion on attrition and data representativeness).

Our main outcome is the self-employment status in each wave (1=currently self-employed; 0=wage-earners). Survey subjects report their primary and secondary employment status by choosing one of the following options: self-employed with employees, self-employed with no employees, workers for another person or enterprise, temporary workers, contract workers, paid and unpaid family business workers, or other. We define the first two categories—self-employed with and

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Table 1
Employment to self-employment transition rates (%) by insurance status.

	Urban Hukou		Rural Hukou	
	Pre-policy	Post-policy	Pre-policy	Post-policy
Panel A: Employer-provided Health Insurance (EPHI)				
(1) With EPHI	2.76	4.08	3.13	0.00
(2) Without EPHI	9.09	6.25	28.13	20.00
(3) Difference: (2)–(1)	6.33***	2.17	25.00***	20.00**
Panel B: Non Employer-provided Health Insurance (non-EPHI)				
(4) With Non-EPHI	3.53	7.14	20.59	19.20
(5) Without Non-EPHI	5.54	3.94	26.60	11.11
(6) Difference (5)–(4)	2.01	3.20	6.01	-8.09
Total counts	1449	518	264	145

Notes: Transition rate is defined as the proportion of new self-employed individuals among the original wage-workers. Pre-policy refers to 2000–2004, 2004–2006, and 2006–2009 panels; Post-policy is the 2009–2011 panel. We conduct *t*-test for comparison between pre- and post-policy period in rows (3) and (6). Significance level: *** $p<0.01$, ** $p<0.05$, * $p<0.1$

without employees—to be self-employed individuals.[2] Workers for another person or enterprise, temporary workers, and contract workers are categorized as wage/salary workers. The remaining categories consist only 2.7% of the entire sample, and are excluded.[3] Before the implementation of URBMI in 2000, 2004 and 2006 waves, the overall self-employment rate was 35.91%; 63.21% of wage/salary workers were covered by some type of health insurance while only 13.26% of self-employed workers were insured. After the implementation of URBMI, in our 2009 and 2011 waves, 91.72% of wage earners and 89.14% of self-employed workers were insured.

We categorize insurance types into employer-provided insurance, URBMI, commercial insurance, and other insurance.[4] Our hypothesis is that the implementation of URBMI promotes self-employment through alleviating entrepreneurship lock. In order to show the direct link between employer-provided health insurance and self-employment decisions, we focus briefly on individuals who are currently wage/salary workers in each wave, and track whether they transit to self-employment in the next wave. Table 1 reports the transition rate by health insurance types. We define the transition rate as the proportion of wage/salary earners in one wave who became self-employed in the next wave. This is done for all consecutive waves: 2000–2004, 2004–2006, 2006–2009, and 2009–2011. For urban Hukou residents, before the implementation of URBMI, those with employer-provided health insurance are 6.33% less likely to transition to self-employment. This difference disappears after the implementation of URBMI. For rural Hukou residents, the difference in transition rates for those with and without employer-provided health insurance is evident both before and after the implementation of URBMI. This suggests that urban Hukou residents are "treated" by URBMI and rural Hukou residents are not. To test that this pattern is not driven by other factors that only affect urban Hukou residents, we also compare the transition rates between individuals with and without non-employer-provided health insurance—URBMI, commercial insurance, and other insurance. There is no difference between transition rates before and after the implementation of URBMI for both urban and rural Hukou holders. This evidence in the raw data suggests that URBMI alleviated entrepreneurship lock. However, since the linkage rate for this dataset is relatively low and the linked sample is relatively small, we only consider Table 1 as suggestive evidence.

3.2. Covariates

Guided by the literature on the empirical studies of entrepreneurship (Le, 1999), we control for several individual characteristics, including gender, age (and age squared), education (measured by years of schooling),[5] marriage status (1 indicating married and 0 otherwise), individual annual income, whether the spouse works, health status, occupational status, and enterprise type. In addition, we control for two household level characteristics—household size (the number of family members within a household) and average health in the household—which can potentially affect the health risk within the family and the risk preference for quitting a salary job. To measure health status, an indicator of poor health and disability is created for respondents who indicated they suffered from one of the following conditions: heart disease, diabetes, myocardial infarction, apoplexy, asthma, cancer, goiter, angular stomatitis, blindness in one or both eye(s), loss of one or both

[2] The majority (85.6%) of the self-employed individuals in our sample do not have any employees, so our results are mainly driven by them. When we focus on self-employed individuals without any employees, we obtain similar results.

[3] We conduct robustness checks that allow self-employment to include paid and unpaid family business workers, or consider secondary employment as well as primary employment. The results are very similar. Thus in the rest of the paper, we only report results using primary employment and excluding family business workers.

[4] Employer-provided insurance include Worker's Compensation and Unified Planning Medical Service in 2000 and 2004, UEBMI Passway Mode, Block Model, or Catastrophic Disease Insurance in 2006, UEBMI in 2009 and 2001, and Free Medical Insurance and Unified Planning Medical Service in these five years. Other insurance include Insurance for Family Member, Cooperative Insurance, NCMS, Insurance for Women and Children, Expanded Program of Immunization Insurance for Children, and other.

[5] We test alternative indicators, such as the level of completed education, and the results are similar.

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arm(s) or leg(s), or other chronic diseases. Occupational status is measured by a categorical variable: senior professionals (doctors, professors, lawyers, engineers, etc.), junior professionals (nurses, teachers, editors, photographers, etc.), administrators/executives/managers, office staff (secretaries, office helpers, etc.), skilled workers (foremen, group leaders, craftsmen, etc.), non-skilled workers (ordinary laborers, loggers, etc.), service workers (housekeepers, cooks, waiters, doorkeepers, hairdressers, salespersons, etc.), army officers and police officers, drivers, and other occupations. These categories are taken directly from the CHNS questionnaire and are mutually exclusive. Enterprise type is measured by a categorical variable as well: state-related enterprises and non-state related. State enterprises include government departments, state services, and state-owned enterprises; non-state enterprises include private or individual enterprises, foreign invested enterprises, and others.

4. Empirical strategies

4.1. Difference-in-differences approach

To study the effect of URBMI on self-employment, we utilize a difference-in-differences strategy. We take advantage of the fact that only urban residents with urban Hukou are eligible for URBMI during our study period. Urban residents with rural Hukou could enroll in government sponsored health insurance program throughout the entire study period (Cooperative Medical Scheme before 2003 and New Cooperative Medical Scheme after 2003), but the majority of them were not eligible to enroll in URBMI.[6] This enables us to use urban residents with urban Hukou as the treatment group, and urban residents with rural Hukou as a comparison group.

The key to our identification strategy is the *eligibility* of obtaining affordable non-employer provided health insurance, rather than the *actual status* of having health insurance. This is because the real issue with job lock is the guarantee of insurance access due to the adverse selection in the health insurance market (Baker, 2015). If the wage difference between jobs with and without employer-provided health insurance equals the cost of buying an equivalent insurance elsewhere, health insurance would have little impact on labor mobility. However, it can be difficult for workers to purchase equivalent insurance in the individual market, especially for someone with preexisting conditions. In China, this problem is more severe since the commercial insurance market was still in the early stages. Rural Hukou residents can choose to enroll in NCMS in their local towns. For urban Hukou residents without formal employment, however, affordable insurance program was only made available to them since 2007 after the implementation of URBMI. Thus, even though both URBMI and NCMS are voluntary programs, our identification is not jeopardized.

We compare the self-employment rates before and after the implementation of URBMI among urban residents with and without urban Hukou. In order to alleviate the concerns on the validation of the parallel baseline trend assumption, we add interaction terms between year dummy and the indicator for urban Hukou status.

The model specification is as follows:[7]

$$\begin{aligned} 1[Self]_{it} = \beta_0 + \beta_1 1[Post]_{it} + \beta_2 1[Hukou]_{it} + \beta_3 (1[Post]_{it} \times 1[Hukou]_{it}) \\ + \beta_4 X_{it} + \beta_5 1[Hukou]_{it} \times YearDummy_t + \gamma_t + \tau_c + \epsilon_{it} \end{aligned} \tag{1}$$

where $1[Self]_{it}$ is a binary variable with 1 indicating individual i is currently being self-employed in wave t. $1[Hukou]_{it}$ represents individual i's Hukou status in wave t: 1 corresponds to urban and 0 to rural. $1[Post]_{it}$ equals 1 for waves 2009 and 2011, and 0 for waves 2000, 2004 and 2006. X_{it} is a vector of control variables discussed in the last section. $YearDummy_t$ is dummy variables for each year. The model also includes controls for year fixed effect γ_t and city fixed effect τ_c. We bootstrap the standard errors. If the implementation of URBMI increased self-employment rate, the coefficient of the interaction term (β_3) should be positive.

We further show that self-employment rates among urban Hukou residents and rural Hukou residents followed a parallel trend in the baseline years before the implementation of URBMI. In doing so, we run a similar regression as Eq. (1): $1[Self]_{it} = \beta_0 + \beta_1 1[Post]_{it} + \beta_2 1[Hukou]_{it} + \beta_4 X_{it} + \tau_c + \epsilon_{it}$; then plot the average values of the residuals for urban and rural Hukou residents respectively as shown in Fig. 1. It is clear that the two groups had similar trends before the implementation of URBMI. Rural Hukou residents had a higher self-employment rate than their urban counterparts. This is consistent with the fact that rural Hukou residents had non-employer provided health insurance (NCMS) while urban Hukou residents did not. After 2009, urban Hukou residents gained access to a non-employment based insurance scheme, and the self-employment rates of the two groups converged.

[6] In our sample, there are 2% of rural Hukou holders report to have URBMI. Since cities have discretion over the details of the policy, we cannot rule out that no rural Hukou holders are affected by the implementation of URBMI. However, if a limited amount of rural migrants were affected, we are underestimating the effect, and the potential bias should be very small. Our model also assume that individuals do not change their Hukou status. However, about 5% of our sample did change Hukou status during our study period. We tested the models with these individuals included or excluded, and the results are very similar. We present the results with them included and use their original status as the Hukou status.

[7] It is most natural to use a probit or logit regression when the outcome variable is binary. However, using DID estimators (or any interaction terms) in a non-linear regression will result in non-consistent coefficients (Ai and Norton, 2003). We calculated the marginal effect of the interaction terms in a probit model for our main results using the method in Norton et al. (2004): $\frac{\Delta^2 Prob(Self=1)}{\Delta Post \Delta Hukou} = \Phi(\beta_1+\beta_2+\beta_3+Cov\beta) - \Phi(\beta_1+Cov\beta) - \Phi(\beta_2+Cov\beta) + \Phi(Cov\beta)$. Similar results are obtained, which suggests that any biases related to the use of linear models are likely to be small. Thus, we only report results from linear probability model since it is much less cumbersome to report.

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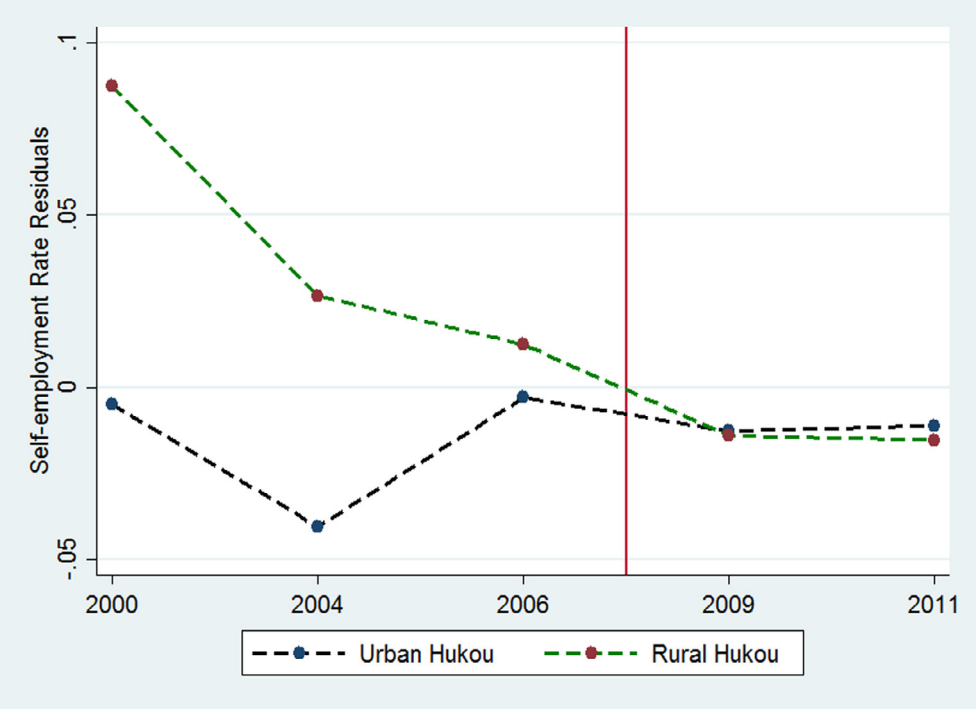

Fig. 1. Parallel trends for urban and rural Hukou residents, Note: We run a similar regression as Eq. (1) but without the DID terms, then plot the average values of the residuals for urban and rural Hukou residents, respectively.

4.2. Falsification tests and sensitivity analysis

Several potential issues arise when estimating Eq. (1). The key identification assumption is that changes in self-employment rate would be the same for residents with rural or urban Hukou in the absence of URBMI. However, there might be changes in the economy during our study period that affected self-employment propensity differently for rural and urban Hukou residents. In addition, rural Hukou holders may not be comparable to urban Hukou holders. We use several strategies to address these concerns.

First, we utilize a propensity score method with an inverse probability of treatment weighting (IPTW) to balance the characteristics of urban residents with rural and urban Hukou (Rosenbaum and Rubin, 1983; Hirano and Imbens, 2001; Hirano et al., 2003). In calculating the propensity scores, we account for individual-level characteristics mentioned above using a logistic regression to estimate the probability of being urban Hukou holders. We then assign a weight to each observation that is the inverse of the estimated propensity score of the individual's assignment to its group. We report estimation results with and without propensity score weighting in Section 5.

Second, we include individual fixed effects to control for unobserved time-invariant individual characteristics. We report estimation results with and without individual fixed effect in Section 5 as well.

Third, we add to our covariates provincial macroeconomic indicators that may affect self-employment behaviors for each corresponding year. These indicators include the gross regional product of the province, urban population size, unemployment rate, value-added of manufacture industry, and the value of import and export of the province. We only use provincial level variables rather than a finer geographic classification, since city information is censored due to privacy concerns. We combine data from China National Statistics Bureau and CHNS to conduct our analysis.[8]

Fourth, we are concerned that changes in self-employment propensity may be driven by changes in the composition of rural Hukou holders, since some of the rural Hukou holders are migrants from rural areas. To formally test for this potential bias, we follow methods in Rossin-Slater et al. (2013) and run several falsification tests. We estimate models similar to our main specification but replace the original outcome variable, self-employment status, with the following outcomes: age, education, and gender. If the interaction term does not have a significant effect on these outcome variables, it suggests that our main results are not being driven by compositional changes due to selected migration.

[8] There are some concerns about the quality of China's macroeconomics statistics, especially at the provincial level. Provinces have incentives to over-report their economic performances. Rawski (2001) found that the sum of provincial GDP data is larger than the national data calculated by China National Statistics Bureau. However, we include in our model year and city fixed effect, so this bias is greatly mitigated.

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Finally, we include an alternative empirical strategy that only looks at urban Hukou individuals, and show that job lock existed before 2009 but disappeared after 2009. We focus on the transition from a salaried position to self-employment, and use two difference-in-differences models separately for the two periods before and after the implementation of URBMI. For any reform or event that may impact self-employment propensity of urban residents during our study period, as long as the event does not affect individuals with different demands for employment-based health insurance in different ways, our identification strategy should be valid. We estimate the entrepreneurship barrier using a strategy following Holtz-Eakin et al. (1996) and Fairlie et al. (2011): comparing the effect of employment-based insurance on self-employment transition rate between those with low and high demand for the employment-based health insurance. The indicator we use to measure the demand for employment-based health insurance is whether an individual has non-employment based insurance as the indicator. If a wage-worker has non-employment based insurance plans, he/she may have lower demand for employer-provided health insurance, compared to those who do not have non-employment based insurance. The effect of employer-based insurance on transitions to self-employment can be confounded by job quality, but by taking the difference of the differences between individuals with and without non-employment based insurance, we can mitigate this endogeneity. Among individuals with employer-provided health insurance in our sample, 17.6% had supplemental non-employment based insurance. Among individuals without employer-provided health insurance, 31.6% had non-employment based insurance. In China, the most common non-employment based health insurance before the implementation of URBMI was commercial insurance. In our sample, 72.7% of individuals with non-employment based insurance in the pre-policy period had commercial insurance.

Empirically, we estimate the following model for pre-policy ($t < 2009$) and post-policy ($t \geq 2009$) respectively:

$$\begin{aligned} 1[NewSelf]_{it} &= \beta_0^{pre} + \beta_1^{pre} 1[EI]_{it} + \beta_2^{pre} 1[HD]_{it} + \beta_3^{pre} (1[EI]_{it} \times 1[HD]_{it}) + \\ &\quad \beta_4^{pre} X_{it} + \gamma_t^{pre} + \tau_c^{pre} + \epsilon_{it}^{pre}, \quad t < 2009 \\ 1[NewSelf]_{it} &= \beta_0^{post} + \beta_1^{post} 1[EI]_{it} + \beta_2^{post} 1[HD]_{it} + \beta_3^{post} (1[EI]_{it} \times 1[HD]_{it}) + \\ &\quad \beta_4^{post} X_{it} + \gamma_t^{post} + \tau_c^{post} + \epsilon_{it}^{post}, \quad t \geq 2009 \end{aligned} \tag{2}$$

where $1[NewSelf]_{it} = 1$ indicates a transition from a wage-earner in wave t to an entrepreneur in wave $t+1$, and $1[EI]_{it} = 1$ indicates individual i have employment-based health insurance in wave t. $1[HD]_{it} = 1$ indicates having a *high* demand for employer-provided health insurance in wave t, defined as *not* having supplementary non-employment-based insurance in wave t. The interaction term $(1[EI]_{it} \times 1[HD]_{it})$ provides the difference-in-differences estimator. The other aspects of the model are similar to Eq. (1). Negative coefficients of the interaction term (β_3^{pre} and β_3^{post}) are consistent with the notion of entrepreneurship lock.

Because the sample size is significantly smaller when we only focus on individuals who transitioned from salaried positions to self-employment, we only consider this a supplementary results and illustrate more details of this strategy in Appendix B.

4.3. Heterogeneous effects

To show the heterogeneous effects of this policy change, we conduct analysis for several subgroups—males vs. female, healthy vs. not healthy, more educated individuals ($>$ 12 years of education) vs. less educated ($\leq$ 12), and young workers (aged $<$ 30) vs. middle age workers (aged 30–50) vs. senior workers (aged $>$ 50). We hypothesize that individuals should be affected by the implementation of URBMI less if their health care costs are relatively small compared to their wage income. Thus, the estimated marginal effect (β_3) for healthy individuals, younger workers, and more educated individuals should be smaller, since healthy individuals and younger workers have smaller health care cost and more educated individuals usually have higher wage income.

5. Results

5.1. Comparing characteristics between study groups

Summary statistics of covariates for urban and rural Hukou residents are shown in Panel A of Table 2.[9] Panel A shows that, on average, rural Hukou individuals are less educated, have lower income, and are much more likely to be non-skilled workers and service workers. We use a propensity score method with an inverse probability of treatment weighting, among other strategies, to address this issue. We compare the weighted characteristics for each group and report them in Panel B of Table 2. After weighting, all key characteristics are balanced at 5% significance level.

5.2. The effect of URBMI on self-employment

Table 3 shows the main results from the difference-in-differences model that compares self-employment rate among urban residents with and without urban Hukou, in the post-policy period relative to the pre-policy period. The marginal effect

[9] We report the population share of certain occupation for the seven major categories that contain at least 5% of the population, since it is cumbersome to report all categories.

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Table 2
Comparative statistics for city residents with rural and urban Hukou.

	(1) Rural Hukou	(2) Urban Hukou	(3) Difference	(4) Observations
Panel A: Without weighting				
Age (year)	41.60	40.83	0.78**	8268
Female share (%)	46.20	43.43	2.77*	8280
Education (year)	7.24	11.18	−3.93***	7904
Marriage rate (%)	85.20	82.05	3.15***	8197
Poor health (%)	15.36	16.01	−0.65	8280
Log (income)	7.23	8.75	−1.52***	8280
Spouse works (%)	67.61	57.13	10.48***	8280
Senior professional (%)	0.60	11.61	−11.00***	8265
Junior professional (%)	1.61	8.98	−7.37***	8265
Administrator (%)	2.48	11.34	−8.86***	8265
Office staff (%)	2.28	13.14	−10.86***	8265
Skilled worker (%)	6.00	13.63	−7.64***	8265
Non-skilled worker (%)	11.16	11.27	−0.11	8265
Police or army (%)	0.23	0.97	−0.73***	8265
Driver (%)	3.72	4.07	−0.35	8265
Service worker (%)	11.90	17.25	−5.35***	8265
Panel B: With inverse probability of treatment weighting				
Age (year)	40.38	41.28	0.90*	8268
Female share (%)	43.57	43.79	0.22	8280
Education (year)	9.64	9.60	−0.04	7904
Marriage rate (%)	80.10	82.88	1.78*	8197
Poor health (%)	15.52	15.80	0.28	8280
Log (income)	8.16	8.17	0.01	8280
Spouse works (%)	56.27	59.98	3.71*	8280
Senior professional (%)	5.35	7.41	2.06	8265
Junior professional (%)	6.38	6.10	−0.72	8265
Administrator (%)	8.16	8.11	−0.05	8265
Office staff (%)	9.61	9.05	−0.56	8265
Skilled worker (%)	10.60	10.50	−0.10	8265
Non-skilled worker (%)	11.63	11.30	−0.27	8265
Police or army (%)	0.56	0.63	−0.07	8265
Driver (%)	3.99	3.93	−0.06	8265
Service worker (%)	16.27	15.73	−0.54	8265

Notes: All samples are for adult residents living in urban areas. Panel A reports results without the weighting, and Panel B reports results with inverse probability of treatment weighting. Significance level in *t*-test: *** $p<0.01$, ** $p<0.05$, * $p<0.1$

of the implementation of URBMI on self-employment status ranges from 8.73% to 14.1% under different specifications for the overall population. This suggests that the implementation of this non-employment based insurance increases more self-employment activities for urban Hukou residents by at least 8.73 percentage points, compared to rural Hukou residents. The baseline self-employment rate was 35.9 percentage points, resulting in a 24.3% (8.73/35.9) URBMI related self-employment rate increase.

Without the inclusion of propensity score weighting or individual fixed effect, the magnitude of the marginal effect is 11.5%, which is larger than the magnitude with the inclusion of propensity score weighting (8.73%) but smaller than the inclusion of individual fixed effect (13.3%). Comparing columns (1) and (2), we can see that the magnitude is smaller with the inclusion of provincial level macroeconomic indicators. Overall, the results are robust and statistically significant.

We present the results of falsification tests in Table 4. We conduct these tests in order to rule out the possible endogeneity issue due to selected migration from rural areas to the city. None of the coefficients of the interaction term $1[Post]_{it} \times 1[Hukou]_{it}$ are significant, which indicates that the main results in Table 3 are not driven by compositional changes due to selected migration.

5.3. Heterogeneous effects

We examine the heterogeneous effects of this policy change and conduct sensitivity analysis for different sub-groups. The URBMI impact is larger for male: 10.2% with propensity score weighting and 18.1% with individual fixed effect, as shown in Table 3. Results for other subgroups are shown in Table 5. Consistent with our hypothesis, the policy did not affect healthy individuals, but had significant impact on not healthy individuals (15.0%). Only the self-employment propensities of less educated individuals (high school and below) were affected by the implementation of URBMI (9.89%), but more educated individuals were not affected at all. Among different age groups, middle age workers (between 30 and 50 years old) and senior workers were significantly affected by this policy change (14.2% and 14.3%). For young workers, the effect is not statistically significant.

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Table 3
Effect of URBMI on self-employment rate.

	(1)	(2)	(3)	(4)
UrbanHukou*Post with individual FE	0.133***	0.141***	0.181***	0.0585
	(0.0266)	(0.0287)	(0.0401)	(0.0420)
UrbanHukou*Post with IPTW	0.0873**	0.1000**	0.102**	0.0806
	(0.0414)	(0.0438)	(0.0475)	(0.0599)
UrbanHukou*Post	0.115***	0.132***	0.124***	0.103***
	(0.0238)	(0.0217)	(0.0343)	(0.0362)
Observations	7801	7801	4359	3442
Baseline dependent mean	0.3591	0.3591	0.3354	0.3873
Macro variables	Yes	No	Yes	Yes
Sample	All	All	Male	Female

Notes: This table reports treatment effects of the interaction term on self-employment status, with inverse probability of treatment weights using propensity scores (IPTW), with individual fixed effect (individual FE), and in the absence of weighting and individual fixed effect. Dependent variable is an indicator for self-employment. All specifications include year and city fixed effects. "Macro Variables" include the gross regional product of the province, urban population size, unemployment rate, value-added of manufacture industry, and the value of import and export of the province. Standard errors are bootstrapped. Significance level: *** $p<0.01$, ** $p<0.05$, * $p<0.1$

Table 4
Falsification tests.

	(1) Age	(2) Education	(4) Female
UrbanHukou*Post	0.0204	−0.179	−0.0586
	(0.147)	(0.194)	(0.0357)
Observations	7800	7800	7800

Notes: This table presents the treatment effect of the interaction term (having urban Hukou and in post policy period) on various outcome variables as falsification tests. The estimated models are similar to our main specification in Eq. (1), but with different outcome variables. Standard errors are bootstrapped. Significance level: *** $p<0.01$, ** $p<0.05$, * $p<0.1$

Table 5
Heterogeneous effect of URBMI.

Sample	(1) Healthy	(2) Not healthy	(3) Less edu	(4) More edu	(5) Young	(6) Middle age	(7) Senior
UrbanHukou*Post with individual FE	0.101	0.150***	0.0989**	0.261	0.145	0.142***	0.143**
	(0.156)	(0.0306)	(0.0390)	(0.178)	(0.136)	(0.0462)	(0.0652)
UrbanHukou*Post with IPTW	0.101	0.0729	0.105**	−0.0531	0.0467	0.0950*	0.133**
	(0.0808)	(0.0454)	(0.0449)	(0.0583)	(0.0898)	(0.0533)	(0.0652)
UrbanHukou*Post	0.115*	0.111***	0.0867***	0.0459	0.106*	0.153***	0.105***
	(0.0598)	(0.0271)	(0.0302)	(0.131)	(0.0615)	(0.0308)	(0.0398)
Observations	1269	6531	6530	1270	1341	4536	1923

Notes: This table reports treatment effects of the interaction term on self-employment status for different sub-groups. All specifications include provincial level macro covariates, and year and city fixed effects. "More educated" refers to individuals with more than 12 years of schooling. "Young" refers to individuals below 30 years old, and "Senior" refers to above 50 years old. Standard errors are bootstrapped. Significance level: *** $p<0.01$, ** $p<0.05$, * $p<0.1$

5.4. Results from the alternative strategy

We report estimation results for the alternative strategy with and without PS weights in Table 6, with pre-policy regressions in column (1) and post-policy regressions in column (2). Before URBMI was implemented, having a high demand for employer-provided health insurance decreases the difference in the rates of transition to self-employment between individuals with and without employer-provided health insurance by 3.24 percentage points, or 64% compared to the baseline transition rate. In the post-policy period, not only do some coefficients become positive, but the standard errors are also much larger. This finding suggests that there is evidence of entrepreneurship lock before the implementation of URBMI, but there is no evidence of it afterwards. The existence of entrepreneurship lock in the pre-policy period and its disappearance in the post-policy period also imply that the non-employment based health insurance alleviated the job lock, and succeeded

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Table 6
Alternative strategy: entrepreneurship lock pre- and post-policy.

	(1) Pre-policy	(2) Post-policy
HaveEmployerIns*HighDemand with PS weights	−0.0324*	0.0451
	(0.0194)	(0.0421)
HaveEmployerIns*HighDemand	−0.0412**	0.0638*
	(0.0179)	(0.0351)
Observations	1342	497
Dependent mean	0.0507	0.0456

Notes: This table reports the treatment effects of the interaction term $1[EI]_{it} \times 1[HD]_{it}$, i.e. having employer-provided health insurance and having high demand for this insurance), with and without inverse probability of treatment weights (PS Weights). The binary dependent variable $1[NewSE]_{it} = 1$ indicates transition from a wage-earner in current wave to an entrepreneur in the next wave. All specifications include year and city fixed effects. Significance level: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

in establishing individual coverage as a legitimate alternative to employer-sponsored coverage. This finding is consistent with what we found using our main difference-in-differences strategy.

6. Discussion and conclusion

We find strong evidence that the implementation of a non-employment based health insurance, URBMI, promotes entrepreneurship in the urban labor market in China. Comparing urban residents with and without urban Hukou, we find that the implementation of URBMI increased the self-employment rate by at least 8.73 percentage points, or a relative 24.3% for the overall population. The effect of URBMI varies for different sub-groups. For more educated individuals, younger workers, and healthy individuals, the changes in self-employment activities are not statistically significant. For less educated individuals, middle age workers, senior workers, and unhealthy individuals, URBMI significantly increased their self-employment propensities. The heterogeneous effects are consistent with our hypotheses and with previous literature.

Hamersma and Kim (2009) shows that the magnitude of job lock potentially decreases with income, thus the effect of a non-employer provided health insurance program would increase self-employment propensity more for lower wage income earners. This is because employment benefits, such as employer-provided health insurance, can have larger effects on job mobility for workers with lower wage payment. Since we only have individuals' current income, but not their potential wage income, we use education level as an indicator. The result is consistent: more educated individuals, potentially with higher wage income, are not affected by the implementation of URBMI, while less educated ones are.

We also observe that middle age and senior workers (above 30 years old) are significantly affected by this policy change. It is not surprising that employer-provided health insurance has little impact on younger workers because their health costs are low. This is similar to Fairlie et al.'s (2011) finding.

The U.S. government also has taken a number of measures to mitigate job lock, like Consolidated Omnibus Reconciliation Act of 1985 (COBRA) and Health Insurance Portability and Accounting Act in 1996 (HIPPA). Papers examining the effect of these policies reached different conclusions. Bailey (2014) found that the expansion of dependent coverage under the Affordable Care Act did not increase job mobility for young adults. On the other hand, Fairlie et al. (2011) found a nearly 3.1% increase in business ownership that can be explained by the new Medicare eligibility when individuals turn 65. DeCicca (2010) also suggested that the implementation of New Jersey's 1993 Individual Health Coverage Plan that partially disconnected health insurance and employment increased self-employment rate. The results seem contradicting, but they can be explained by the heterogeneous effects of job lock, consistent with what we showed in our paper. Job lock can be a minor issue for younger workers who are the study population in Bailey (2014), but it can be a major concern for less privileged population and workers who bear higher health cost as in Fairlie et al. (2011).

Our study is one of the few papers (Lin et al., 2009; Liu and Zhao, 2014; Wang, 2014; Pan et al., 2015) to evaluate the effects of the China's new Urban Resident Basic Health Insurance plan, and the first to look at its impact on entrepreneurship, or labor market outcome in general. By studying this exogenous quasi-natural policy experiment, we also contribute to the literature on job lock caused by employment-based health insurance. We conclude that breaking the link between employment and health insurance can promote entrepreneurship, an outcome that could inform policy making in many other countries.

Appendix A. Data discussion

We use five waves of the China Health and Nutrition Survey (CHNS) data: 2000, 2004, 2006, 2009, and 2011. It is a panel dataset and individuals were interviewed in each wave. Due to attrition, new individuals were added to maintain the representativeness of the sample. 91.37% of the observations appeared in more than one wave, and 38.57% appeared in all

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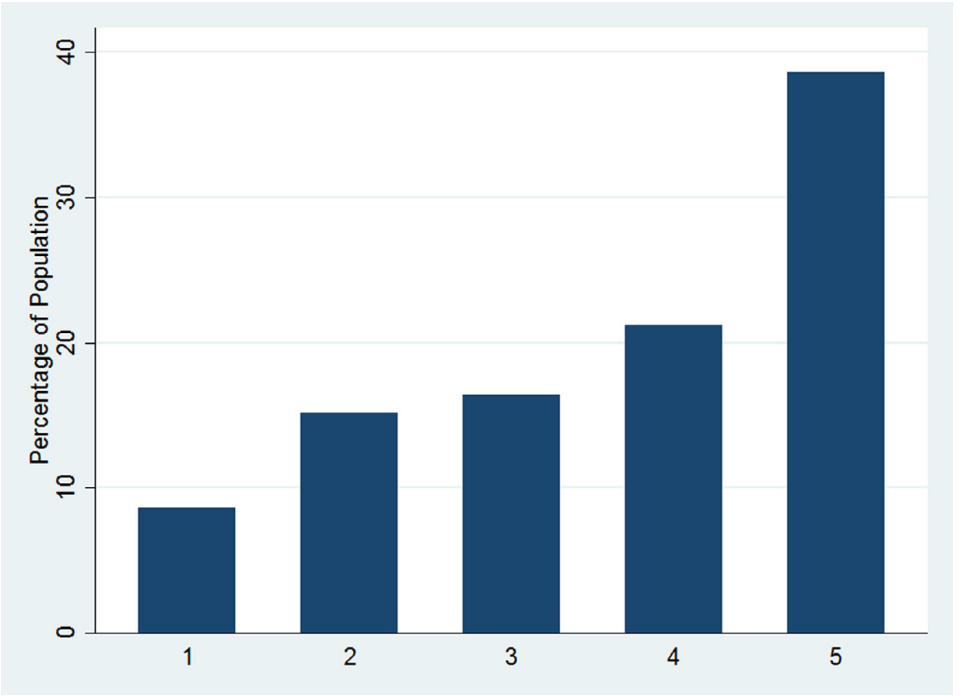

Fig. A.1. Frequency of appearance in five CHNS waves.

Table A.1
Comparative statistics for different CHNS waves.

	(1) 2000 vs. 2004	(2) 2004 vs. 2006	(3) 2006 vs. 2009	(4) 2009 vs. 2011
Age (year)	39.45**	40.62*	41.62	41.97
Female share (%)	46.93	45.10	44.14	42.63
Education (year)	8.72***	9.79	9.98	10.14
Marriage rate (%)	79.78**	83.74	85.48	84.16
Poor health (%)	11.14***	21.26***	16.40	16.88
Log (income)	7.65	7.58***	8.07***	8.88
Spouse works (%)	66.06***	59.32	60.14*	56.13
Urban Hukou	0.60***	0.68*	0.64	0.65
Senior professional (%)	6.47	7.78	8.17	8.28
Junior professional (%)	6.69	6.40	6.00	6.52
Administrator (%)	7.23*	9.56	8.50	7.56
Office staff (%)	8.42	8.51	9.95	10.76
Skilled worker (%)	11.92	11.74	9.82	10.56
Non-skilled worker (%)	9.62	11.08	12.46	11.41
Police or army (%)	1.11	0.79	0.33	0.46
Driver (%)	2.97*	4.35	4.61	3.91
Service worker (%)	11.30	12.40*	15.29	17.47**

Notes: The value reported is the mean value for the baseline year. The significance level is for the *t*-test comparison between the baseline year and the next consecutive wave. For example, column (1) reports the mean values for observations in the 2000 wave, and the comparison is between the 2000 wave and the 2004 wave. Significance level: *** $p<0.01$, ** $p<0.05$, * $p<0.1$

five waves, as shown in Fig. A.1. The annual attrition rate is around 23.1%,[10] which is high relative to U.S. datasets. I show in Table A.1 the comparative statistics for individual characteristics between consecutive waves. The value reported is the mean value for the baseline year, and the significance level is for the *t*-test comparison between the baseline year and the next consecutive wave. For example, column (1) reports the mean values for observations in the 2000 wave, and the comparison is between 2000 wave and 2004 wave. Besides 2000 wave, the other waves all look very similar, thus the representativeness of the sample is generally maintained.

[10] To calculate the attrition rate, we linked each wave to the next consecutive wave and calculated the percentage of unlinked individuals for each wave; and we then reported the average percentage of unlinked individuals across waves.

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Appendix B. Alternative empirical strategy

In this appendix section, we discuss our alternative strategy in more details.

In order to rule out the possibility that the relative increase in self-employment rate for urban Hukou is driven by other events, instead of the implementation of URBMI, we present here an alternative empirical strategy. We focus on the transition from a salaried position to self-employment among urban Hukou residents, separately during the periods before and after the implementation of URBMI. We use a difference-in-differences model to identify that job lock existed before 2009, and then another one after 2009 to show that job lock disappeared after the implementation of URBMI.

We observe in Table 1 that before the implementation of URBMI, the transition rate for urban Hukou residents is much higher for individuals with employer-provided health insurance compared to those without. In this section, we estimate the entrepreneurship barrier using a difference-in-differences strategy following Holtz-Eakin et al. (1996) and Fairlie et al. (2011): comparing the effect of employment-based insurance on self-employment transition rate between those with low and high demand for the employment-based health insurance.

The most commonly used indicator in the literature to measure the demand for employment-based health insurance is whether employees' spouses have insurance coverage that can cover workers.[11] However, China's employer-provided insurance program, UEBMI, does not cover employees' spouse and children, thus spouse's insurance coverage cannot be used to measure the demand for employment-based health insurance in China. Instead, we use whether an individual has non-employment based insurance as the indicator. If a wage-worker has non-employment based insurance plans, he/she may have lower demand for employer-provided health insurance, compared to those who do not have non-employment based insurance. The effect of employer-based insurance on transitions to self-employment can be confounded by job quality, but by taking the difference of the differences between individuals with and without non-employment based insurance, we can mitigate this endogeneity. Among individuals with employer-provided health insurance in our sample, 17.6% had supplemental non-employment based insurance. Among individuals without employer-provided health insurance, 31.6% had non-employment based insurance. In China, the most common non-employment based health insurance before the implementation of URBMI was commercial insurance. In our sample, 72.7% of individuals with non-employment based insurance in the pre-policy period had commercial insurance.

Empirically, we estimate the following model for pre-policy ($t < 2009$) and post-policy ($t \geq 2009$) respectively:

$$\begin{aligned} 1[NewSelf]_{it} &= \beta_0^{pre} + \beta_1^{pre} 1[EI]_{it} + \beta_2^{pre} 1[HD]_{it} + \beta_3^{pre} (1[EI]_{it} \times 1[HD]_{it}) + \\ &\quad \beta_4^{pre} X_{it} + \gamma_t^{pre} + \tau_c^{pre} + \epsilon_{it}^{pre}, \quad t < 2009 \\ 1[NewSelf]_{it} &= \beta_0^{post} + \beta_1^{post} 1[EI]_{it} + \beta_2^{post} 1[HD]_{it} + \beta_3^{post} (1[EI]_{it} \times 1[HD]_{it}) + \\ &\quad \beta_4^{post} X_{it} + \gamma_t^{post} + \tau_c^{post} + \epsilon_{it}^{post}, \quad t \geq 2009 \end{aligned} \tag{3}$$

where $1[NewSelf]_{it} = 1$ indicates a transition from a wage-earner in wave t to an entrepreneur in wave $t+1$, and $1[EI]_{it} = 1$ indicates individual i have employment-based health insurance in wave t. $1[HD]_{it} = 1$ indicates having a *high* demand for employer-provided health insurance in wave t, defined as *not* having supplementary non-employment-based insurance in wave t. The interaction term $(1[EI]_{it} \times 1[HD]_{it})$ provides the difference-in-differences estimator. The other aspects of the model are similar to Eq. (1). Negative coefficients of the interaction term (β_3^{pre} and β_3^{post}) are consistent with the notion of entrepreneurship lock.

In an ideal world where non-employment based health insurance is randomly assigned, this difference-in-differences strategy can give us an accurate estimation of entrepreneurship lock. However, in our case, the assignment of individuals with and without non-employment based insurance plan is not a random mechanism. Individuals with and without non-employment based insurance can differ in health status, risk preference, and wealth, all of which can affect their labor market decisions. We conducted t-test and presented the comparative statistics of these variables in the pre-policy period in Table B.2 Panel A. In general, there are no significant differences in key characteristics between individuals with and without non-employment based health insurance, except for the indicator for whether a spouse has a job, the dummy for being a senior professional, and the dummy for being a service worker. Nevertheless, we discuss below three potential concerns of violating the random assignment assumption and how it may affect our estimation strategy.

First, individuals can differ in health condition, and it is possible that those who purchased non-employment based health insurance have worse health than those who did not purchase additional insurance. We compared the health indicators discussed above between those with and without non-employment based insurance and did not find statistically significant differences. We acknowledge that there may be unobserved differences in health conditions. However, if workers with non-employment based health insurance had worse health status than those without, we would underestimate the effect of employment-based insurance on job lock. In particular, individuals with poor health are less mobile, thus less likely to transition into self-employment. But those with supplementary non-employment based insurance have low demand for employment-based insurance and are therefore not as subject to job lock as those without supplementary health insurance.

[11] Other indicators used in the literature, like having a pregnant wife, having family member in poor health, and having a large family, usually failed to generate significant results. We used these indicators as well. The point estimations are as predicted, but not significant. Thus we will not report these results here.

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Table B.2
Comparative statistics for individuals with and without non-employment insurance.

	(1) With non-employment based insurance	(2) Without non-employment based insurance	(3) Difference	(4) Observations
Panel A: Without PS weights				
Age (year)	40.48	39.72	0.76	1488
Female share (%)	43.15	40.85	2.30	1491
Education (year)	11.07	11.30	−0.24	1378
Marriage rate (%)	85.76	84.91	0.84	1477
Poor health (%)	14.29	14.98	−0.70	1491
Spouse has job (%)	66.47	60.98	5.50*	1491
Log (annual income)	8.94	8.81	0.13	1491
Share as senior professional (%)	18.13	14.04	4.09*	1489
Share as service worker (%)	5.85	10.99	−5.14**	1489
Panel B: With PS weights				
Age (year)	40.39	40.21	0.18	1488
Female share (%)	41.09	40.83	0.26	1491
Education (year)	11.38	11.42	−0.04	1378
Marriage rate (%)	85.37	85.39	−0.02	1477
Poor health (%)	15.43	15.89	−0.46	1491
Spouse has job (%)	65.69	60.65	5.04*	1491
Log (annual income)	9.02	9.05	−0.03	1491
Share as senior professional (%)	15.12	15.33	−0.20	1489
Share as service worker (%)	11.36	11.12	0.24	1489

Notes: Column (1) are for individuals with non-employment based insurance, which represents low demand for employer-provided insurance. Column (2) represents high demand. We only report the *t*-test results for two of the seven major occupational dummies in this table, since the results for the others are all insignificant even without PS weights. Panel A reports results without the inverse probability of treatment weighting. Panel B reports results with it. Significance level: *** $p<0.01$, ** $p<0.05$, * $p<0.1$.

That is, the potential selection, if any, works opposite direction as the main effect, and therefore it could underestimate the effect.

Second, individuals with more insurance might be more risk-averse than those with less insurance. We use the usage of cigarette and alcohol as an indicator of risk preference. Heavy drinkers and heavy smokers are usually more reckless, thus less risk averse. We categorize risk aversion by identifying whether an individual smokes more than 20 cigarettes per day, or drink more than 10 bottles of beer or 1 L of liquor each week. We conducted a *t*-test to compare this risk aversion indicator and did not find statistically significant difference between those with and without non-employment based insurance (30.90% vs. 26.66%; *p*-value of 0.12). Even if risk preference matters, workers with alternative non-employment based insurance are more risk averse and should value their employer-provided insurance more. This is again the opposite direction as our theory proposed, so our estimation can be considered as a conservative estimation.

Third, individuals with non-employment insurance may be richer than those without this insurance. It is unclear how wealth affects transition rates to self-employment. On one hand, it is easier for richer people to break the barrier to become entrepreneurs because they have more money. On the other hand, a high wage also means a high opportunity cost to leave the current jobs. Nevertheless, there is no statistically significant difference in the logarithm of annual wage and household income between those with non-employment based insurance and those without such insurance.

In sum, we do not observe significant differences in main characteristics between individuals with and without non-employment based health insurance, except for three indicators, one for having working spouses and the other two for being senior professionals or service workers. To further balance the two groups, we also utilize the propensity score method with an inverse probability of treatment weighting (PS Weights). The weighted characteristics for each group are reported in Panel B of Table B.2. After using PS weights, all key characteristics are balanced at 5% significance level.

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