



RESEARCH ARTICLE

Accommodating China's Floating Population: Local Variations and Determinants of Housing Policies for Rural Migrant Workers

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Abstract

What are the various ways in which local governments in China accommodate migrants through housing policies, and what are the forces that drive these variations? Through systematic coding of policy documents from 97 prefecture-level cities, this study captures the patterns of migrant housing policies using cluster analysis. We found that 18.6 per cent of the cities adopted a residual approach. Most cities adopted a rental-based approach (public and private rental, and collective rental) that could only meet migrants' short-term housing needs. Only a few cities (12.4 per cent) adopted a citizenship-oriented approach, which best fits the central government's overarching goal of facilitating migrant workers' long-term settlement in the host cities. Regression analyses examining the determinants of local migrant housing policies showed that the policy variations were not only shaped by economic and political concerns but also the salience of urban issues (problem-solving functions) and previous welfare generosity (path-dependency tendencies).

摘要

中国的地方政府采取了怎样不同的农民工住房政策？什么因素影响了这些政策的差异性？本文先对 97 个地级市的住房政策文件进行系统地编码，然后采用聚类分析的方法对各城市的农民工住房政策进行分类，最后采用回归分析的方法探究政策差异的影响因素。聚类分析发现，18.6% 的城市采取了“残补式”政策。大部分城市采取只能满足农民工短期住房需求的租赁为主的政策（如“公共或私人租赁房”和“集中式租赁房”）。只有少数城市（12.4%）采取了有利于促进农民工在城市定居的“市民化导向”的政策。回归分析发现，政策的差异性不仅受政治和经济因素影响，还受到当地城市问题的突出性和先前福利的慷慨性影响。

Keywords: housing policy; migrant workers; policy typologies; local variations; policy determinants

关键词: 住房政策; 农民工; 政策类型; 地方差异; 政策影响因素

Although rural-to-urban migrants (*nongmingong* 农民工), also termed “migrant workers,” have contributed significantly to China's recent sustained economic growth, their housing needs received little attention from the government until October 2014, when the State Council issued its “Opinions on bringing further success to the work of providing services to migrant workers” (2014 Opinions, hereafter). This initiative proposed the establishment of a government-led, multi-agency migrant housing system, comprising government, employers and the informal and formal housing markets, to improve migrant workers' housing conditions. In response to the central government's 2014 initiative, local governments promulgated corresponding, city-level proposals. Social policy provision is decentralized in China: the central government sets the policy framework for the

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whole country, but local governments have discretion to adjust the policy design to fit local conditions.¹ To what extent do local governments' migrant housing policies vary, and what are the forces that drive such variations? This study empirically addresses these questions by examining the local patterns of migrant housing policies across 97 cities and investigating their associations with economic, political, housing and social factors.

In 2019, there were an estimated 290.8 million rural migrants in China. Almost half of them were rural-to-urban migrants (135 million).² Despite their vital contribution to China's economic advancement, migrant workers are subjected to discriminatory "secondary citizen" status in cities owing to the *hukou* 户口 (household registration) system, which affords rural and urban residents different basic rights.³ Without an urban *hukou*, migrant workers are not entitled to social welfare benefits in cities and are excluded from almost all sources of housing welfare programmes. Many rent informal private housing in "urban villages" (*chengzhongcun* 城中村) or live in employer-provided dormitories. It is well documented that migrant workers' housing conditions are inferior to those of local residents.⁴ For example, in coastal cities the per capita living space of migrant workers was 15.4 m² in 2014, compared with 26.5 m² for local residents in 2010.⁵ The proportions of households having a private kitchen (38 per cent of migrant households versus 84 per cent of urban resident households), bathroom (65 per cent versus 84 per cent) and natural gas (24 per cent versus 97 per cent) reveal the suboptimal living conditions of migrant workers compared to local residents.

Migrant workers' housing needs were largely ignored by central government until 2006, when the centre declared its goal to build a "harmonious society" (*hexieshehui* 和谐社会). This new idea has "drawn much attention to policy and institutional reforms, and assisted [in] facilitating and protecting 'basic housing rights' of all residents, including migrants."⁶ In January 2006, the central government issued its "Several opinions on the settling issues of rural migrant workers" (2006 Opinions hereafter), which, for the first time, recognized the need to improve migrants' housing conditions. However, the turning point for migrant policies came with the announcement of the New Urbanization Plan in March 2014, which called for a reorientation of the development strategy of the Chinese economy, from an export and (infrastructure) investment-driven economy to one driven by domestic consumption. Migrants, whose consumption propensity was previously severely constrained by the *hukou* system, were regarded as the vital engine for domestic consumption. "Allowing migrants to settle in the cities and increasing their demand for public services is a key to the success of the national economic rebalance."⁷ Later, the "Opinion on the further deepening of the *hukou* system reform" (*hukou* reform hereafter) and the 2014 Opinions were issued to buttress the New Urbanization Plan. *Hukou* reform aimed to remove institutional barriers by relaxing *hukou* registration in small- and medium-sized cities, whereas the 2014 Opinions aimed to promote the citizenization of migrant workers and facilitate their long-term settlement by improving various services, including housing.

In response to the central government's drive to improve migrant workers' conditions, local governments issued corresponding policy guidance. With regards to housing, the local-level 2014 Opinions specify the policy instruments adopted in each housing area, demonstrating various levels of policy efforts. Since the 1980s, local governments have been granted increased autonomy in policymaking so they may adapt the central government's policy framework to meet local needs. The degree of autonomy varies by region, each possessing a differing degree of leverage over the central

1 Jin, Qian and Weingast 2005.

2 NBS 2020.

3 Chan and Buckingham 2008.

4 Niu and Zhao 2018; Zhang, Li, and Wang 2010.

5 Niu and Zhao 2018.

6 Zhou, Jing 2018, 5.

7 Shi, Chen and Wang 2016, 232.

government.⁸ Studies have documented subnational local variations in various policy areas such as the environment,⁹ health¹⁰ and social welfare.¹¹ Previous discussions of local variations in housing policy design have centred around variations relating to public rental housing, and most studies have taken a case study approach, covering just a few major cities such as Beijing, Chongqing and Shanghai.¹² Studies that have adopted quantitative approaches mainly examine the diffusion of housing policy (for example, house-purchase restriction policies,¹³ and housing adaptation policy for older adults¹⁴). As the provision of housing is closely associated with land use, another stream of quantitative studies explores local variations in leasing residential land¹⁵ and land supply for affordable housing.¹⁶

Building upon the extant literature on subnational variations in housing or land policies in China, this study investigates local variations in housing policies for migrant workers and the forces driving these variations. It contributes to the existing literature in four ways. First, we focus on migrant workers. Previous studies have exclusively focused on housing programmes that target low-income groups as a whole, overlooking the marginal status of migrant workers constrained by their *hukou* status.¹⁷ Second, the 2014 Opinions offer a unique opportunity to comprehensively examine migrant housing policies, including not only housing programmes provided by the government but also the role government plays in supporting other providers such as employers and the market, an aspect that has been largely overlooked in previous research.¹⁸ Third, we identify the patterns of local housing policies for migrant workers based on an original systematic coding of policy documents. Previous research mainly relied on case studies covering a few cities or used secondary proxy variables collected from statistical compilations.¹⁹ Fourth, we have developed a theoretical framework to explain local variations in migrant housing policies. We find that the variations are not only driven by economic and political concerns but also by the need for a problem-solving function and previous welfare generosity. This comprehensive scope extends previous studies' examinations of the determinants of housing/land policies that largely focus on economic and/or political factors only.²⁰

Housing Provision for Migrant Workers: Government, Employer and the Market

In 2016, the “Monitoring and investigative report for migrant workers,” issued by the Chinese National Bureau of Statistics (NBS), showed that 77.5 per cent of rural-to-urban migrants were living in rental housing (61 per cent) or self-owned property (16.5 per cent) provided by the market; 13.4 per cent were living in rental housing provided by their employers; and only 3 per cent were living in rental housing or self-owned property provided by the government.²¹ The government, employers and markets are the three main housing providers for migrant workers. The government, besides being a provider itself, also applies policy tools to affect housing provision on behalf of the other two providers.

The government has long played a residual role in migrant housing. Without an urban *hukou*, migrant workers have been excluded from all housing welfare programmes in cities, including subsidized

8 Lieberthal and Oksenberg 1988.

9 Eaton and Kostka 2014.

10 Huang, Xian 2015.

11 Ratigan 2017.

12 Chiu-Shee and Zheng 2019; She 2021; Wang and Li 2019; Zhou, Jing, and Ronald 2017.

13 Zou et al. 2021.

14 Chu 2022.

15 Gao et al. 2019.

16 Hu and Qian 2017.

17 Chiu-Shee and Zheng 2019; Zhou, Jing, and Ronald 2017.

18 Ibid.

19 Wang and Li 2019; Zhou, Jing, and Ronald 2017.

20 Fang et al. 2018; Gao et al. 2019; Hu and Qian 2017.

21 NBS 2017.

ownership housing,²² low-rent housing (*lianzufang* 廉租房) (LRH hereafter) and public rental housing (*gongzufang* 公租房) (PRH hereafter). Subsidized ownership housing promotes home ownership among low-to-middle income households, LRH and PRH provide discounted rental housing for low-income and low-to-middle income households, respectively. A few cities took the initiative by providing a special type of LRH – “migrant worker apartments” (*nongmingong gongyu* 农民工公寓) – to accommodate migrant workers.²³ Others offer a special type of PRH for migrant workers who work in industrial parks or economic development zones.²⁴ The government only started to play a more active role in migrant housing provision after the central government issued its “Guiding opinions on the construction and administration of low-income housing projects” in 2011 (2011 Opinions hereafter), which allowed migrant workers to apply for PRH. Although migrant workers have been eligible for PRH since 2011, in 2018 only 1.3 per cent of non-local migrant workers lived in PRH. The strict eligibility rules set by local governments preclude most migrant workers from benefiting from PRH.²⁵

Employers also provide housing for migrant workers, particularly those in the manufacturing and construction sectors. Previous research indicates that the work-based dormitory system is designed to maximize employers’ profits through exerting labour control, facilitating long working hours, enhancing productivity and driving down workers’ salaries.²⁶ The dormitories are often cramped, of poor quality, lack privacy and discourage family formation. However, they are popular among migrant workers looking for low-cost housing and an easy commute.²⁷ The government’s role in the employer-provided housing sector was primarily regulatory – for example, implementing building, sanitation and environmental standards.²⁸

Migrant workers living in market-provided housing for the most part live in informal rental housing in urban villages and shantytowns.²⁹ The houses in urban villages are largely self-built by villagers on collectively owned rural land. They are characterized by a lack of public services, unstable tenure and violations of construction regulations.³⁰ Despite the poor conditions, such housing provides affordable accommodation for migrant workers who cannot afford accommodation in the formal housing market.³¹ In the past decade, local governments have demolished and replaced many urban villages with commodity housing in an attempt to eliminate informality and create more “governable spaces.” Migrant workers living in urban villages have been forced to leave the city or relocate to other urban villages in the peri-urban area. Researchers have critiqued the high cost of large-scale demolition and its negative effect on rural migrants’ options for affordable housing.³² More recently, local governments have begun to adopt a micro-level redevelopment approach that aims to improve the public facilities and living conditions in the urban villages.³³

Determinants of Housing Policies: Theoretical Framework and Hypotheses

Our theoretical framework draws on factors of the economic development stage, political concerns, problem-solving function and path dependence to explain variations in migrant housing policy (see Figure 1).

22 Examples of subsidized-ownership housing include economically affordable housing (*jingji shiyong fang*) and shared ownership housing (*gongyou chanquan fang*).

23 Lü, Zhen and Ding 2012.

24 Ibid.

25 Zhou, Jing, and Musterd 2018.

26 Huang, Youqin, and Tao 2015.

27 Li, Bingqin, and Duda 2010.

28 Lin, Liyue, and Zhu 2010.

29 Although official national statistics are not available, a territory-wide study conducted in Shenzhen (Li, Tao, Wong and Hui 2014) showed that among migrant workers who rented private housing, 60% lived in rental housing in urban villages.

30 Wu, Zhang and Webster 2013.

31 Li, Bingqin, and Zhang 2011.

32 Wu, Zhang and Webster 2013.

33 Lin, Yanliu, et al. 2014.

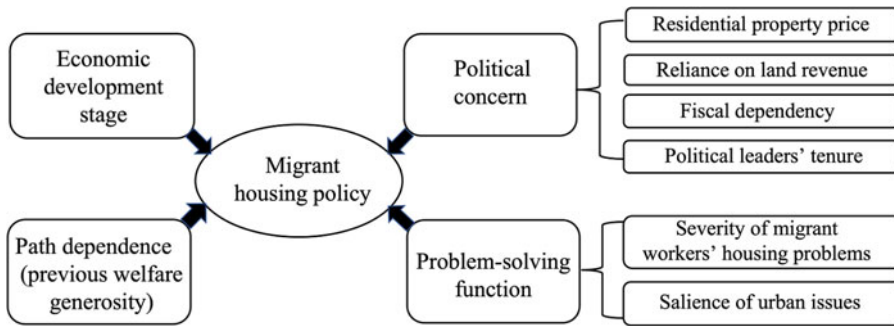


Figure 1: Theoretical Framework on Housing Policymaking

As regards economic factors, the provision of housing is guided by the human capital requirements to sustain economic growth.³⁴ “Migrants who have gained assistance in accessing housing have normally been the ones that best fit the market’s needs.”³⁵ Prior research has examined the provision of PRH during the 12th Five-Year Plan (2011–2015) in Chongqing and Shenzhen, two cities at different phases of development.³⁶ Chongqing underwent rapid industrial growth, which required a significant low- and semi-skilled workforce for its labour-intensive manufacturing sector. Its extensive PRH programme was extended to non-*hukou* residents to attract cheap rural labour. In contrast, Shenzhen, in the post-industrial stage, upgraded its economy towards service-oriented and value-added industries that demanded skilled and educated workers who were, therefore, offered PRH and monetary subsidies. Similarly, research comparing Chongqing with other cities such as Beijing and Nanjing also supports the close association between the provision of public housing and the economic stage and associated demand for labour of cities.³⁷ We therefore expect that local governments at an earlier economic development stage, when there is greater demand for more low-skilled workers to achieve sustained economic growth, are more likely to attend to the housing needs of migrant workers, whereas those at a later economic stage are less likely to attend to migrant workers’ housing needs (H1).

Regarding political concern, our hypotheses are grounded in two contextual factors in China: the central–local fiscal relationship and the local leaders’ performance appraisal system. First, since the 1994 fiscal reform that recentralized tax revenue collection and decentralized expenditure, local governments have retained an increasingly smaller share of tax revenues while shouldering the cost of the majority of public services. The current fiscal arrangement leads to a vertical fiscal imbalance that puts intense fiscal pressure on local governments.³⁸ Second, under the target responsibility system, the appraisal of local political leaders is largely related to “hard indicators” such as gross domestic product (GDP) growth and revenue. Social targets are internally regarded as less important – “soft targets.”³⁹ As they engage with the “promotion tournament competition,” local political leaders are incentivized to prioritize short-term GDP growth over social development.

Against this backdrop, we include four factors connected to political concerns: residential property prices, land-based revenue, fiscal dependency and leadership tenure. Since the market-oriented housing reform in the late 1980s, the real estate sector has become the key pillar upholding economic growth in China. There is a two-way linkage between residential property prices and

34 She 2021.

35 Zhou, Jing 2018, 6.

36 Chiu-Shee and Zheng 2019.

37 Wang and Li 2019; Zhou, Jing, and Ronald 2017.

38 Shen, Jin and Zou 2012.

39 Zhou, Li’an 2007.

GDP growth.⁴⁰ The target responsibility system encourages local political leaders to maintain the booming real estate market. The opportunity costs of addressing migrant workers' housing needs, such as the construction of affordable housing, are greater for localities with higher residential property prices. Therefore, such locations are less likely to attend to migrant workers' housing needs (H2.1). Intense fiscal pressures also encourage local governments to look for ways in which they can increase their extrabudgetary revenue without having to share it with the central government.⁴¹ Land revenue, such as land conveyancing fees collected from leasing land usage rights and real estate-related tax, constitutes a substantial proportion of local governments' extrabudgetary revenue. Previous research finds that cities more highly dependent on land revenue are less likely to build affordable housing because it not only increases direct spending on housing construction but also reduces the land revenue that otherwise would be collected from real estate developers.⁴² Given the vital role land revenue plays in revenue generation, we expect that local governments that are more reliant on land revenue are less likely to attend to migrant workers' housing needs (H2.2).

Fiscal dependency also affects local governments' housing policies. After the 1994 fiscal reform, the central government gradually introduced a fiscal transfer system that aimed to alleviate local governments' vertical fiscal imbalance. Fiscal transfers from the centre can be divided into two broad components: general purpose and specific purpose.⁴³ General-purpose transfers are designed to reduce regional fiscal disparity and are distributed based on a formula that assesses local fiscal capacity and expenditure needs. Specific-purpose transfers cover ad-hoc but earmarked grants that incentivize local governments to undertake specific policies and programmes. The distribution of specific-purpose transfers is usually not rule-based or subject to rent-seeking.⁴⁴ In general, local governments that receive more fiscal transfers have greater fiscal dependency because they have fewer economic resources at their disposal and are more fiscally constrained by the central government.⁴⁵ Previous research indicates that local governments with lower fiscal dependency are less likely to adopt pro-poor policies such as building affordable housing and increasing *dibao* 低保 (minimum living standard guarantee) expenditure.⁴⁶ Investment in housing for migrant workers is regarded as a revenue-depleting, social welfare investment, as it "enables a high influx of poor migrants, who need support in not only accommodation but also many other aspects of [their] livelihood."⁴⁷ Therefore, under the current target responsibility system, which rewards GDP growth, local governments with lower fiscal dependency are more likely to spend on productive investments (for example, high-speed rail) rather than social welfare. Productive investment not only boosts GDP growth but can also more effectively demonstrate local officials' achievements to their superiors.⁴⁸ Therefore, we expect that local governments with higher levels of fiscal dependency are more likely to attend to migrant workers' housing needs (H2.3).

Local political leaders' tenure also shapes migrant housing policy. Local leaders at the beginning of their tenure are much more incentivized to boost GDP growth and revenue in order to boost their prospects for promotion. Previous research reveals that in jurisdictions where local leaders are at an earlier stage of their tenure, GDP accelerators such as property prices and over-investment in state-owned enterprises are higher,⁴⁹ and social welfare spending tends to be lower, than in

40 Peng, Wensheng, Tam and Yiu 2008.

41 Shen, Jin and Zou 2012.

42 Hu and Qian 2017.

43 Shen, Jin and Zou 2012.

44 Huang, Bihong, and Chen 2012.

45 Zheng, Yu 2006.

46 Hu and Qian 2017; Peng, Zhaiwen 2017.

47 Chiu-Shee and Zheng 2019, 22.

48 Duan and Zhan 2011.

49 Guo, Feng, and Hu 2014; Cao, Ma and Shen 2014.

jurisdictions where the leaders are at a later stage of their tenure.⁵⁰ As investment in migrant workers' housing is regarded as a revenue-depleting social welfare expenditure, we expect that local leaders are less likely to attend to migrant workers' housing needs during the early stages of their tenure (**H2.4**).

Migrant housing policy may also serve a problem-solving function, either by responding directly to migrant workers' housing problems or as a more general tool to address overall urban issues. In China, localities with more severe housing problems are not more likely to respond to them.⁵¹ For example, Fox Hu and Jiwei Qian show that localities with higher housing unaffordability do not devote more land to affordable housing.⁵² Therefore, we expect local governments' housing policies for migrant workers to be unaffected by the severity of migrant workers' housing problems (**H3.1**). Although prior studies reveal that housing policy in China is not particularly designed to address this specific housing problem, it may be regarded as a policy tool to address overall urban issues. Rapid urbanization brings problems such as housing shortages, traffic congestion and environmental pollution. Localities with more salient urban issues have a greater urgency to address these issues.⁵³ Therefore, we hypothesize that the more salient the urban issues, the more likely it is that local governments will attend to migrant workers' housing needs (**H3.2**).

The formulation of new policy does not occur in a vacuum but is heavily influenced by institutionalized legacies and trajectories of past reform. According to path dependence theory,⁵⁴ "the present policy choice is also shaped or constrained by institutional paths that result from choices made in the past."⁵⁵ Governments may be inclined to follow their previous policy paths because they may induce lower costs associated with changes and greater public acceptance. Hence, we expect that path dependence also exists in the social welfare domain. Therefore, localities with higher levels of prior welfare generosity should be more likely to attend to migrant workers' housing needs (**H4**).

To summarize, we hypothesize that local governments' housing policies for migrant workers are affected by economic development stage (**H1**), political concerns (**H2.1**, **H2.2**, **H2.3** and **H2.4**), the salience of urban issues (**H3.2**) and previous welfare generosity (**H4**), but not the severity of migrant workers' housing problems (**H3.1**).

Data: Construction of Dataset on Housing Policies for Migrant Workers

The policy dataset was constructed from a comprehensive collection of prefectural-level government documents responding to the State Council's 2014 Opinions. Among the 337 prefecture-level cities, 97 had policy documents retrievable online (for example, on government websites and the Law and Regulations Chinese Database).⁵⁶ We extracted migrant housing content where each city listed its housing policy areas and the policy instruments that it had adopted for each policy area (detailed below). The average word count of migrant housing content ranges from 128 in Yichang 宜昌 to 640 in Wuzhou 梧州. We compared the characteristics of these cities and the 240 cities that did not have retrievable policy documents.⁵⁷ As Table A1 in the Appendix shows, they are not statistically different in demographic and economic characteristics, suggesting that the coverage of cities in our investigation was not biased based on these observed characteristics.

50 Guo, Ping, and Lin 2018.

51 Hu and Qian 2017; Zou et al. 2021.

52 Hu and Qian 2017.

53 Huang, Yanfen, and Ding 2013.

54 David 1994.

55 Torfing 2009, 71.

56 The term prefecture-level city here includes all the administration divisions at prefecture-level, including cities (*shi*), prefectures (*zhou*), leagues (*meng*) and regions (*diqu*).

57 Notable cities, such as Shenzhen, Guangzhou and Chengdu, were not included in the analysis owing to the unavailability of their policies.

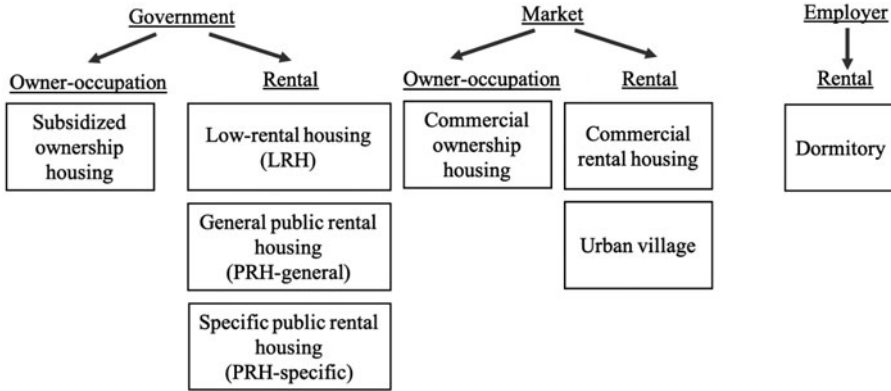


Figure 2: Typology of Policy Area

Policy coding scheme

The purpose of coding was to transfer housing policy content into a quantifiable format for analysis. We first identified the policy area in the policy content and then assigned a policy score for each area. The policy score captures the resources or efforts devoted to a particular policy area and is based on the density and intensity of the policy instrument adopted in each policy area. The definition and operationalization of the policy area, policy instrument, policy intensity and policy density are explained below.

Inspired by the multiagency housing provision system proposed by previous research,⁵⁸ we developed policy areas in our coding scheme based on three housing providers (government, market and employer) and two types of housing tenure (owner-occupied and rental) (see Figure 2). Owner-occupied housing provided by the government is subsidized-ownership housing. Government-provided rental housing is subsidized rental housing, including LRH and PRH. Two types of PRH were differentiated, general public rental housing (PRH-general) and specific public rental housing (PRH-specific). The former refers to PRH targeting general low- and lower-middle income populations, whereas the latter refers to PRH located in economic development zones or industrial parks and primarily targeting employees including migrant workers. Owner-occupied housing provided by the market is commercial ownership housing. Formal rental housing provided by the market is commercial rental housing, whereas informal rental housing is urban village or shanty town accommodation. Employer-provided rental housing is dormitory accommodation. In sum, the eight policy areas included in the coding scheme are: subsidized-ownership housing, LRH, PRH-general, PRH-specific, commercial ownership housing, commercial rental housing, urban village and dormitory.

Policy instruments refer to the specific policy tools used to achieve policy objectives and are classified into two broad types: market-based instruments (MBIs) and administrative instruments (see Figure 3). MBIs are defined as instruments encouraging behaviour through market signals.⁵⁹ MBI instruments include both price-based and quantity-based instruments. Price-based instruments lever behavioural change by changing the prices of goods and services in existing markets and include subsidies, tax incentives and financing instruments. Quantity-based instruments lever behavioural change by specifying the “amount” of new rights/obligations. We further classified these into land-quantity and housing-quantity instruments that reserve land or housing quotas for migrant workers. Administrative instruments include policy tools related to procedures (for

58 Huang, Youqin, and Tao 2015.

59 Stavins 2003.

| | Market-based Instruments | | | | | Administrative Instruments |
|-------------|--|--|--|----------------------------------|------------------------------------|---|
| | Price-based instruments | | | Quantity-based instrument | | |
| | Subsidies | Tax incentives | Financing | Land-quantity | Housing-quantity | |
| Supply side | e.g. subsidy to organizations that build PRH | e.g. tax deductions for organizations that build PRH | e.g. subsidized loan to organizations that build PRH | e.g. land quota for building PRH | e.g. PRH quota for migrant workers | e.g. waiver of administrative fee |
| Demand side | e.g. rental allowance to migrant workers | e.g. deduction on stamp duty and deed tax to migrant workers | | | | e.g. streamline the PRH application procedure |

Figure 3: Typology and Examples of Policy Instruments

example, streamlining the application process). In summary, the policy instruments were classified into six sub-types: subsidies, tax incentives, financing, land-quantity, housing-quantity and administrative instruments. Each of these can be further classified into supply-side (targeting producers) and demand-side (targeting consumers) instruments. Figure 2 illustrates the typologies of the policy instruments and examples. Policy density refers to the extensiveness or breadth of the policy instruments and is measured by counting the number of policy instruments adopted in a given policy area. Policy intensity is defined as the “organization and mobilization of resources, i.e., the amount of resources, effort, or activity that is invested or allocated to a specific policy instrument.”⁶⁰ The six sub-types of policy instruments represent different levels of intensity: subsidies, land-quantity and housing-quantity=3, tax incentives and financing instruments=2, and administrative instruments=1. Figure 4 explains the assignment of intensity scores to policy instrument.

Policy coding process

We coded each city’s migrant housing policy content on a point-by-point basis. First, we coded whether the eight policy areas were covered or not. Second, we coded the policy instruments adopted in each policy area. Third, we calculated the policy intensity and weighted policy density based on the policy instruments adopted in each area. Last, we constructed a policy score for each area as a continuous variable ranging from 0 to 5 (0 if the policy area was not covered; 1 if the policy area was covered without any policy instrument; 2 if policy instruments were proposed and the policy density weighted by policy intensity was 1; 3 if the weighted policy density was 2; 4 if the weighted policy density was 3; 5 if the weighted policy density was 4 or above). The overall policy score is the sum of the policy scores of the eight policy areas. The detailed policy coding process is shown in Figure A1 in the Appendix.

Measures and Empirical Strategies

First, we used descriptive statistics to describe the policy area, policy instrument and policy score. Next, we performed agglomerative hierarchical cluster analysis to depict the patterns of migrant housing policies across the 97 cities. We conducted cluster analysis based on the nine indicators: the standardized overall policy score and the respective standardized scores in each of the eight areas. Last, we examined the determinants of migrant housing policies. The overall policy score and the cluster membership identified from cluster analysis were used as the outcome variables. To test the eight proposed hypotheses, our analytic models include the following prefecture-level

60 Schaffrin, Sewerin and Seubert 2015, 261.

| Type of policy instrument | Intensity score | Explanation |
|---|-----------------|---|
| Subsidies, land-quantity and housing-quantity | 3 | We assigned greater intensity to MBIs than to administrative instruments. MBIs require more resources, effort and activities as they are intended to change the price or quantity of housing for migrant workers, whereas administrative instruments are mainly supportive actions that streamline procedures. Among the MBIs, we assigned greater intensity to subsidies, land quantity and housing quantity measures than to tax incentives and financing instruments because the former involve direct or more overt expenditure of government resources. The cost of tax incentives and financing instruments is more covert (Woodside 1979). |
| Tax incentives and financing instruments | 2 | |
| Administrative instruments | 1 | |

Figure 4: Assignment of Intensity Score to Policy Instruments

indicators as explanatory variables: economic development stage, residential property price, reliance on land revenue, fiscal dependency, political leaders’ tenure, severity of migrant workers’ housing problem, salience of urban issues and previous welfare generosity. We employed Ordinary Least Square (OLS) regression when the outcome was overall policy score, and multinomial logistic regression when the outcome was cluster membership. Cluster-robust standard errors were controlled to account for model error in cities from the same province.

Indicators of economic development stage include the increase rate of number of workers in secondary industry and GDP per capita. Cities with a higher increase rate of workers in secondary industry are at an earlier stage of development which demands more low-skilled workers, whereas cities with higher GDP per capita are at a later stage. As most (99 per cent) policy documents were released on or after 2015, we collected cities’ characteristics as reported in 2014, and for the nearest year when 2014 data were unavailable. GDP per capita is the ratio of GDP value in 2014 to the population in 2010. The rate of increase in the numbers of workers in secondary industry is the averaged rate in increase from 2010 to 2014. GDP values and percentages of workers employed in secondary industry were drawn from *China City Statistical Yearbooks* from 2011 to 2015. Population data were drawn from the 2010 Chinese Census.

Political concerns include reliance on the residential property price, land revenue, fiscal dependency and political leaders’ tenure. Residential property prices in 2014 were collected from the China Premium database. The indicator of reliance on land revenue is defined as the ratio between land conveyance fees and budgetary revenue. The 2014 land conveyance fee data and 2014 budgetary revenue data were collected from the *2015 China Land and Resources Statistical Yearbook* and *2015 China City Statistical Yearbook*, respectively. Our fiscal dependency indicator was the ratio between general-purpose transfer and budgetary expenditure. We used general-purpose transfer to capture local governments’ fiscal dependency levels because its allocation is mainly based on local fiscal capacity and is less subject to political influence than specific-purpose transfer. We extracted 2009 general-purpose transfer and budgetary expenditure data from the *2009 Financial Statistics of Cities and Counties*. Regarding political leaders’ tenure, we accounted for the time lag between policy decision making and release of policy documents by identifying the mayors and Chinese Communist Party (CCP) secretaries who were in office three months before each city-level policy was released. Then, we constructed continuous variables measuring the number of years that mayors or CCP secretaries had been in office. These data were extracted from the Chinese Political Elite Database.

Problem-solving function includes the severity of migrant workers’ housing problems and the salience of urban issues. The indicators used for migrant workers’ housing problem severity were

the proportion of migrant workers living in informal housing and rent unaffordability. We calculated the proportion of migrant workers⁶¹ living in informal housing (for example, borrowed places, onsite shelters and self-built houses),⁶² and rent-to-income ratio by pooling data from the China Migrant Dynamic Survey (CMDS) in 2013 and 2014, and calculated the indicators by city of residence. Indicators of salience of urban issues include urbanization level (the proportion of the population in the urban area) and size of migrant population (ratio of migrant population to permanent residents). Both indicators were collected from the 2010 Chinese Census.

We used the *dibao* replacement rate to measure previous welfare generosity. *Dibao* is the flagship social assistance programme in China. We measured the *dibao* replacement rate as the ratio of urban *dibao* eligibility standard to urban residents' per capita disposable income. We collected *dibao* standards for 2014 from the website of the Ministry of Civil Affairs, and 2014 disposable income statistics were obtained from the *2015 Statistical Yearbooks* from 31 provinces. We also included control variables covering the proportion of GDP contributed by tertiary industry (*China City Statistical Yearbook 2015*), population (2010 Census) and mayors and CCP secretaries' age (Chinese Political Elite Database). The descriptive statistics on explanatory and control variables are presented in Table A2 in the Appendix.

Results

Patterns of housing policies for migrant workers

Policy area, policy instrument and policy score

Table 1 presents the summary statistics related to the policy area, policy instruments and policy scores. Local governments took various approaches to accommodate migrant workers, with the average number of policy areas covered by each city being 4.1. Panel A displays the proportion of cities that covered a particular policy area. PRH-specific, commercial ownership housing and dormitories were the three most frequently mentioned policy areas (75.3 per cent, 72.2 per cent and 69.1 per cent, respectively), followed by commercial rental housing (65.0 per cent), PRH-general (59.8 per cent) and urban villages (42.3 per cent). Subsidized-ownership housing (17.5 per cent) and LRH (9.3 per cent) were the two least covered areas and were less favoured by local governments to accommodate migrant workers.

Panel B displays the distribution of policy instruments by policy area. Among the 259 policy instruments, tax incentive was the most frequently adopted instrument (35.5 per cent), followed by administrative instruments (22.0 per cent), financing (12.7 per cent) and subsidies (12.4 per cent). The least adopted policy instruments were land quantity (9.7 per cent) and housing quantity (7.7 per cent). The distribution of policy instruments also varied by policy area. Both subsidized and commercial ownership housing predominately used (demand-side) tax incentives (90.9 per cent and 95.2 per cent, respectively). For LRH, administrative instruments (41.2 per cent) and land-quantity (35.3 per cent) were the most frequently adopted, followed by financing (17.7 per cent) and tax incentives (5.9 per cent). PRH-general and PRH-specific adopted all six sub-types of policy instrument. For PRH-general, housing-quantity (35.9 per cent) and administrative instruments (28.3 per cent) were the most frequently used instruments, whereas in PRH-specific, price-based MBIs such as financing (34.6 per cent), tax incentives (25.0 per cent) and subsidies (23.1 per cent) were more likely to be used. In commercial rental housing, 64.3 per cent of the instruments were subsidies and 28.6 per cent were tax incentives. The policy tools adopted in urban village were mostly administrative instruments (71.4 per cent), followed by land-quantity instruments (28.6 per cent). Dormitory used all policy instruments except housing-quantity; administrative instruments

61 Highly skilled rural–urban migrants, including civil servants, technicians and businesspeople, were excluded from the calculations of the percentage living in informal housing and rent unaffordability.

62 Our informal housing indicator captured the percentage of migrant workers not covered by any of the eight policy areas. Those living in urban villages were not classified as living in informal housing.

Table 1: Summary Statistics of Policy Area, Policy Instrument and Policy Score (N=97)

| | All Areas | Subsidized-ownership Housing | Low-rental Housing | Public Rental Housing (General) | Public Rental Housing (Specific) | Commercial Ownership Housing | Commercial Rental Housing | Urban Village | Dormitory |
|--|-------------|------------------------------|--------------------|---------------------------------|----------------------------------|------------------------------|---------------------------|---------------|-------------|
| <i>Panel A. Number and proportion of cities mentioned a policy area</i> | | | | | | | | | |
| | | 17 (17.5%) | 9 (9.3%) | 58 (59.8%) | 73 (75.3%) | 70 (72.2%) | 63 (65.0%) | 42 (43.3%) | 67 (69.1%) |
| <i>Panel B. Distribution of policy instruments adopted in each policy area</i> | | | | | | | | | |
| Subsidies | 32 (12.4%) | 0 | 0 | 9 (17.0%) | 12 (23.1%) | 1 (1.6%) | 9 (64.3%) | 0 | 1 (2.4%) |
| Tax incentives | 92 (35.5%) | 10 (90.9%) | 1 (5.9%) | 1 (1.9%) | 13 (25.0%) | 61 (96.8%) | 4 (28.6%) | 0 | 2 (4.8%) |
| Financing | 33 (12.7%) | 0 | 3 (17.7%) | 4 (7.6%) | 18 (34.6%) | 0 | 0 | 0 | 8 (19.1%) |
| Land-quantity | 25 (9.7%) | 0 | 6 (35.3%) | 5 (9.4%) | 4 (7.7%) | 0 | 0 | 2 (28.6%) | 8 (19.1%) |
| Housing-quantity | 20 (7.7%) | 0 | 0 | 19 (35.9%) | 1 (1.9%) | 0 | 0 | 0 | 0 |
| Administrative | 57 (22.0%) | 1 (9.1%) | 7 (41.2%) | 15 (28.3%) | 4 (7.7%) | 1 (1.6%) | 1 (7.1%) | 5 (71.4%) | 23 (54.8%) |
| Total instrument | 259 (100%) | 11 (100%) | 17 (100%) | 53 (100%) | 52 (100%) | 63 (100%) | 14 (100%) | 7 (100%) | 42 (100%) |
| <i>Panel C. Policy scores by policy area</i> | | | | | | | | | |
| | 8.45 (4.25) | 0.39 (1.07) | 0.32 (1.11) | 1.47 (1.76) | 1.54 (1.68) | 2.02 (1.37) | 1.02 (1.17) | 0.55 (0.78) | 1.14 (1.39) |

constituted around half of the instruments used, followed by 19.1 per cent in financing and 19.1 per cent in land-quantity.

Panel C shows the summary statistics of policy scores by policy area. The average overall policy score was 8.44. The three policy areas with the highest policy scores were commercial ownership housing (2.02), PRH-general (1.54) and PRH-specific (1.47). The policy scores of commercial rental housing and dormitory were 1.02 and 1.14, respectively. Urban village, subsidized ownership housing and LRH had the lowest policy scores. As the construction of policy scores was based on intensity-weighted density, the summary statistics of policy density weighted by policy intensity are presented in Table A4 in the Appendix.

Results from cluster analysis

A four-cluster solution was selected based on the diagnostic statistics.⁶³ Table 2 presents the standardized policy scores of the four clusters – residual approach, public and private rental approach, collective rental approach, and citizenship-oriented approach. The cities in each cluster are shown in Table A6 in the Appendix. As shown in Table 2, 18.6 per cent of the cities fell into the residual group, in which the overall score was low and the scores in each policy area were all at low levels. Most cities (62.9 per cent) belonged to the public and private rental group, characterized by relatively high scores in PRH-specific and commercial rental housing areas. A small number (6.2 per cent) of the cities belonged to the collective rental group, characterized by high scores in collective rental housing types such as LRH, in the form of “migrant worker apartments” and employer-provided dormitories, and 12.4 per cent of cities fell into the citizenship-oriented group. These cities had higher scores in ownership housing, including subsidized and commercial ownership housing, and PRH-general.⁶⁴ We labelled this group as “citizenship-oriented” because it provides both ownership housing and PRH that is able to meet the diverse housing needs of migrant workers and promote their citizenization. Moreover, housing ownership substantially shapes migrant workers’ long-term settlement decisions in host cities.⁶⁵

Determinants of housing policies on migrant workers

Table 3 reports our regression results.⁶⁶ Economic development stages were significantly associated with migrant housing policies. Cities with higher GDP per capita tended to have lower overall policy scores. A 1,000-yuan increase in GDP per capita reduced the overall policy score by 0.099 (Model 1). Compared to cities adopting public and private rental approaches, cities with higher per capita GDPs were more likely to adopt the residual approach (coefficient = 0.036, see Model 2). Cities with a higher rate of increase in number of workers in secondary industry were more likely to adopt citizenship-oriented approaches (coefficient = 0.311, Model 3). Thus, **H1** was supported. Among political concerns, residential property prices and fiscal dependency were significantly associated with migrant housing policies. Cities with higher residential property prices were more likely to fall into the residual group than into the public and private rental group (coefficient = 0.664, Model 2). Cities with greater fiscal dependency tended to adopt citizenship-oriented approaches

63 The choice of the number of clusters was determined by the stopping rules of Calinski and Harabasz (CH) pseudo-F, Duda and Hart (DH) $Je(2)/Je(1)$ and DH pseudo-T2 indices. Large values of the CH pseudo-F, large values of DH $Je(2)/Je(1)$ and small values of pseudo-T2 indicate more distinct clustering. As shown in Table A5, a four-cluster solution satisfied the stopping rules.

64 The urban village score was also high among the citizenship-oriented group, primarily driven by high scores in five cities in Guangdong province where urban villages accommodated large numbers of migrant workers.

65 Yang and Guo 2018.

66 The collective rental approach group was not included in the multinomial logistic regression owing to the small sample size ($n = 6$). Descriptive statistics of explanatory and control variables by cluster membership are presented in Table A2 in the Appendix.

Table 2: Standardized Policy Scores by Policy Clusters (N=97)

| | Residual | Public and Private Rental | Collective Rental | Citizenship-oriented |
|------------------------------|--------------|---------------------------|-------------------|----------------------|
| N (%) | 18 (18.6%) | 61 (62.9%) | 6 (6.2%) | 12 (12.4%) |
| Overall score | -1.39 (0.27) | 0.09 (0.66) | 1.34 (1.11) | 0.95 (0.70) |
| Subsidized-ownership housing | 0.37 (0.00) | -0.28 (0.33) | -0.21 (0.38) | 2.06 (1.67) |
| LRH | -0.24 (0.21) | -0.24 (0.26) | 3.75 (0.49) | -0.29 (0.00) |
| PRH-general | -0.62 (0.40) | 0.03 (1.00) | 0.30 (0.88) | 0.63 (1.27) |
| PRH-specific | -0.58 (0.30) | 0.26 (1.10) | -0.32 (0.92) | -0.27 (0.78) |
| Commercial ownership housing | -1.31 (0.31) | 0.25 (0.88) | -0.02 (1.13) | 0.72 (0.00) |
| Commercial rental housing | -0.59 (0.51) | 0.23 (1.12) | -0.30 (0.44) | -0.16 (0.71) |
| Urban village | -0.13 (0.66) | -0.26 (0.70) | 0.37 (0.53) | 1.33 (1.69) |
| Dormitory | -0.42 (0.37) | 0.04 (1.05) | 1.33 (1.57) | -0.22 (0.28) |

(coefficient=0.317, see Model 3). Neither reliance on land revenue nor mayoral/CCP secretarial tenure significantly predicted migrant housing policies. Therefore, we endorse **H2.1** and **H2.3**, but **H2.2** and **H2.4** were not supported. In terms of problem-solving function, migrant workers' housing problems did not significantly predict migrant housing policies. Thus, we endorse **H3.1**. Urban issue salience indicators were significantly associated with migrant housing policies. Cities with higher urbanization levels and larger migrant populations tended to fall into the citizenship-oriented group (coefficients = 0.057 and 0.317, respectively, see Model 3). **H3.2** was thus supported. Cities with greater welfare generosity, as measured by *dibao* replacement rate, were more likely to adopt citizenship-oriented approaches (coefficient=0.400, see Model 3). Therefore, **H4** was supported.

Robustness Check

We conducted sensitivity analyses to corroborate our cluster analysis results. First, we calculated the policy scores based on policy density unweighted by policy intensity. Second, we constructed a new measure of policy intensity ranging from 1 to 4. Cities were divided into quartile groups according to the ratio of housing expenditure to total fiscal expenditure in 2013.⁶⁷ Higher ratios indicated higher levels of policy intensity. The results of the two sensitivity analyses showed a four-cluster solution similar to our main results: residual, public and public rental, collective rental, and citizenship-oriented approaches (see Table A7 in Appendix).

We also conducted sensitivity analyses to corroborate our regression results. First, we used an alternative indicator – fiscal autonomy (ratio of budgetary revenues to expenditure in 2014) – to measure cities' fiscal dependency levels. Greater fiscal autonomy indicated lower fiscal dependency. Similar to our main findings, cities with higher fiscal autonomy were significantly less likely to adopt citizenship-oriented approaches. Second, we created an alternative rental unaffordability measure by calculating the proportion of migrants who bore a rent-to-income ratio greater than 30 per cent. Similar to our main results, rental unaffordability was not significantly associated with migrant housing policies. Third, we adopted alternative measures of welfare generosity: first,

67 The latest available housing expenditure data at the city level are in the 2013 *China Statistical Yearbook for Regional Economy*.

Table 3: OLS and Multinomial Logistic Regressions on the Determinants of Housing Policies

| Dependent Variable | OLS Regression | Multinomial Logistic Regression (Ref. Public and Private Rental Approach) | |
|---|-----------------------------|---|--------------------------------------|
| | <i>Overall policy score</i> | <i>Residual approach</i> | <i>Citizenship-oriented approach</i> |
| | Model 1 | Model 2 | Model 3 |
| Economic development stage | | | |
| Increase rate of no. of workers in secondary industry | 0.148 (0.143) | -0.041 (0.182) | 0.311 (0.151) * |
| GDP per capita | -0.099 (0.026) ** | 0.036 (0.017) * | -0.013 (0.024) |
| Political concern | | | |
| Residential property price | 0.029 (0.217) | 0.664 (0.197) ** | 0.062 (0.294) |
| Reliance on land revenue | -0.001 (0.009) | -0.024 (0.016) | 0.007 (0.014) |
| Fiscal dependency | 0.007 (0.041) | 0.072 (0.041) | 0.317 (0.156) * |
| Mayor's tenure | -0.181 (0.168) | 0.210 (0.287) | 0.096 (0.184) |
| CCP's tenure | -0.060 (0.245) | 0.242 (0.202) | -0.198 (0.150) |
| Problem-solving function (severity of migrant workers' housing problems) | | | |
| % Living in informal housing | -0.040 (0.079) | -0.006 (0.047) | -0.144 (0.172) |
| Rent unaffordability | -0.085 (0.058) | -0.023 (0.044) | -0.368 (0.201) |
| Problem-solving function (salience of urban issues) | | | |
| Urbanization level | 0.026 (0.030) | 0.046 (0.025) | 0.057 (0.018) ** |
| Size of migrant population | 0.121 (0.059) | -0.078 (0.044) | 0.317 (0.107) ** |
| Previous welfare generosity | | | |
| <i>Dibao</i> replacement rate | -0.298 (0.200) | 0.063 (0.136) | 0.400 (0.147) ** |
| Control variables | | | |
| Population | -0.149 (0.123) | 0.186 (0.145) | -0.066 (0.207) |
| % GDP in tertiary industry | 0.002 (0.086) | -0.091 (0.098) | -0.081 (0.062) |
| Mayor's age | 0.123 (0.109) | -0.173 (0.107) | 0.116 (0.106) |
| CCP's age | -0.215 (0.094) | 0.065 (0.087) | -0.122 (0.099) |
| Constants | 24.174 (6.499) ** | -2.061 (5.930) | -15.56 (6.89) ** |
| N | 92 | 86 | |

Notes: * $p < 0.05$; ** $p < 0.01$.

the proportion of government social expenditure (employment and social security) over total expenditures; then, the percentage of migrant workers covered by social insurance and the housing provident fund (*wuxianyijin* 五險一金). Neither of these measures was significantly associated with migrant housing policies.

Discussion

By systematically coding prefecture-level policy documents in response to the 2014 Opinions, we examined local variations in housing policies for migrant workers in China and the forces driving

these variations. We found that 18.6 per cent of the cities adopted a residual approach that devoted only limited resources and efforts to address migrant workers' housing needs. Most cities that devoted more resources adopted a rental-based approach (public and private rental and collective rental) that could only meet migrants' short-term housing needs. Only a few cities (12.4 per cent) adopted a citizenship-oriented approach, providing both ownership housing and PRH that could meet migrant workers' short-term and long-term housing needs. Such an approach best fits the Chinese central government's overarching goals of enhancing migrant workers' citizenization and facilitating their long-term settlement in the host cities.

We found that local-level migrant housing policies were driven by economic and political concerns. Because migrant workers are the vital engine for sustained economic growth in labour-intensive sectors, cities at an economic development stage requiring more low-skilled workers devoted more resources and effort towards migrant housing. In contrast, cities at the economic development stage that demands less low-skilled workers, such as Beijing, Shanghai and Nanjing, were more likely to adopt a residual approach. Under the current fiscal and performance appraisal systems, local leaders endeavour to boost immediate GDP growth and fiscal revenue. As providing migrant housing is regarded as a revenue-draining measure that competes with the real estate sector for land resources and productive investment for financial resources, cities with higher residential property prices or with less fiscal dependence were less committed to migrant housing. In addition, our study showed that local leaders' tenure had no significant association with migrant housing policies. Because housing construction occurs over a long period of time which may exceed the typical tenure of local leaders, policy preferences towards migrant housing did not differ based on local political leaders' length of tenure. To summarize, our findings echo previous studies' assertion that welfare provision in China, such as urban workers' basic pension system⁶⁸ and low-income housing,⁶⁹ serve economic and political functions.

Our study explored beyond economic and political factors to enrich understanding on the problem-solving function and path dependence tendency of migrant housing policy in China. We found that although migrant housing policies did not respond directly to migrant workers' housing problems, they responded to the salience of urban issues. Housing for migrant workers is only one of the many urban issues that cities face, and migrant workers have little influence over local policymaking. Urban issues brought on by urbanization and influxes of migration (such as overcrowding and environmental degradation) affect not only migrants but also local residents, who have more influence over policymaking. As for path dependence, we found evidence that local governments' migrant housing policy choices were contingent on their welfare legacy. This finding echoes previous studies that found local governments in China tend to reinforce their policy paths in areas such as environmental policy, township reform and financing urban infrastructure.⁷⁰

Since housing provision for migrant workers is regarded as an instrumental tool for sustaining economic growth and political goals, it is not surprising to find that even among cities that devote relatively more resources to migrant housing, temporary rental approaches are preferred to the citizenship-oriented approach. To incentivize local governments to provide housing and other services for migrant workers, reform is required to restructure central–local fiscal relations as well as local leaders' performance evaluation system.

First, to ease their fiscal pressures, local governments should be granted more discretion over revenue collection. For example, local governments' share of revenue, relative to that of the central government, could be increased. Local governments could be granted the power to set local tax rates within a defined range. Such reform could provide local governments with additional resources to invest in welfare measures, such as housing for migrant workers. Second, the performance

68 Meng 2020.

69 Chen, Yang and Wang 2014; Zhou, Jing, and Ronald 2017.

70 Li, Linda Chelan 2009; Zhan, de Jong and de Bruijn, 2017; Zhang, Pan, and Wu 2020.

evaluation system should consider including assessments on local governments' social welfare and public service provision to migrant workers. Previous research reveals that local leaders tend to pursue performance targets that are explicitly included in the performance evaluation system yet ignore other policy objectives related to performance targets that cannot be conveniently achieved.⁷¹ This behavioural tendency suggests that tailoring policy objectives to precise personnel performance criteria can be a viable means to realize a specific policy vision. The new performance evaluation system,⁷² promulgated to replace the earlier one,⁷³ stipulates that a comprehensive assessment should take into account local people's subjective evaluation of social and economic development. Performance appraisals should consider not only the GDP growth rate but also its quality; not only the achievement but also the cost; not only the subjective effort but also the objective circumstances. This marks an important step towards reforming the current incentive structure guiding policy considerations among local leaders. The impact of this reform on policy adoption or citizens' well-being requires further investigation.

This study has limitations. First, coverage was limited to those prefecture-level cities that promulgated the 2014 Opinions and thus the sample size was relatively small. Second, we depicted the policy variations based on policy documents. The gap between policy documentation and implementation cannot be captured. Despite these limitations, however, our study is the first to systematically examine local patterns of migrant housing policies in China covering a large number of cities. We also developed a theoretical framework that can be applied to examine housing policy-making in other countries and to investigate the underlying economic, political, housing-related and social factors that shape housing policy. In sum, we identified four types of approaches, residual, public and private rental, collective rental and citizenship-oriented, developed by local governments to accommodate migrant workers in China and revealed that the variations were driven not only by economic and political considerations but also by the problem-solving function and welfare legacy.

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Conflict of interest. None.

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Appendix

Table A1: Logistic Regression on Policy Document Availability

| | Whether policy document is available Odds ratio (95% confident interval) |
|-------------------------|---|
| GDP (100 billion) | 1.14 [0.93-1.39] |
| Population (10 million) | 1.32 [0.38- 4.55] |
| % Tertiary degree | 1.88 [0.01- 496.76] |
| Region (ref. East) | |
| Central | 0.64 [0.27-1.50] |
| West | 0.91 [0.31-2.67] |
| Constant | 0.29 [0.11 -0.78] |
| N | 337 |

Notes: * p < 0.05; ** p < 0.01.

- Step 1. Code whether the eight policy areas (subsidized-ownership housing, low-rental housing, public rental housing (general), public rental housing (specific), commercial ownership housing, commercial rental housing, urban village and dormitory) are covered by each policy document or not. If a particular policy area was mentioned, it was coded 1, otherwise 0.
- Step 2. Code the policy instruments adopted in each policy area. For instance, if a city adopted three policy instruments in the area of PRH-specific, namely, rental subsidies to migrant workers, tax reduction to companies that build public rental housing and streamlining the application procedure, the policy instruments of subsidies, tax incentives and administrative instruments were all coded as 1.
- Step 3. Calculate the policy density weighted by policy intensity. For instance, the policy density (number of policy instruments adopted) in the area of PRH-specific of the city in Step 2 above is 3. The policy density weighted by policy intensity is: 1 (subsidy instrument) x 3 (policy density of subsidies=3) + 1 (tax incentive instrument) x 2 (policy density of tax incentive=2) + 1 (administrative instrument) x 1 (policy density of administrative instrument=1) = 6
- Step 4. Calculate the policy score of each policy area, constructed as a continuous variable ranging from 0 to 5. For instance, the policy score in the area of PRH-specific of the city in Step 2 above is 4.

| Score | Definition |
|-------|---|
| 0 | The policy area is not mentioned in the policy document. |
| 1 | The policy area is mentioned but without proposing any specific policy instrument. |
| 2 | The policy area is mentioned, policy instruments are proposed and the policy density weighted by policy intensity is 1. |
| 3 | The policy area is mentioned, policy instruments are proposed and the policy density weighted by policy intensity is 2. |
| 4 | The policy area is mentioned, policy instruments are proposed and the policy density weighted by policy intensity is 3. |
| 5 | The policy area is mentioned, policy instruments are proposed and the policy density weighted by policy intensity is 4 and above. |

Figure A1: Policy Coding Process

Table A2: Descriptive Statistics on Explanatory and Control Variables

| | <i>All Mean (SD)</i> | <i>Residual Approach</i> | <i>Public and Private Rental Approach</i> | <i>Collective Rental Approach</i> | <i>Citizenship-oriented Approach</i> | F test |
|---|--------------------------|------------------------------|---|---|--|---------|
| <i>Economic development stage</i> | | | | | | |
| Increase rate of no. workers in secondary industry | 52.43 (27.32) | 69.13 (29.90) | 49.12 (25.78) | 47.35 (23.52) | 46.76 (26.62) | 2.95 * |
| GDP per capita | 1.40 (2.16) | 0.91 (1.95) | 1.42 (2.24) | 0.98 (1.69) | 2.23 (2.25) | 0.90 |
| <i>Political concern</i> | | | | | | |
| Residential property price | 5.31 (2.94) | 7.21 (4.80) | 4.78 (2.10) | 6.54 (2.97) | 6.54 (2.97) | 4.18 ** |
| Reliance on land revenue | 48.34 (27.58) | 42.83 (18.30) | 49.71 (29.53) | 49.98 (21.94) | 49.98 (21.94) | 0.29 |
| Fiscal dependency | 18.20 (14.90) | 15.68 (14.47) | 17.73 (13.16) | 15.25 (24.22) | 25.82 (17.99) | 1.33 |
| Mayor's tenure | 2.73 (1.66) | 3.17 (1.95) | 2.72 (1.60) | 2.00 (1.10) | 2.25 (1.73) | 0.87 |
| CCP's tenure | 2.51 (1.54) | 2.83 (1.65) | 2.52 (1.51) | 1.83 (0.75) | 2.25 (1.76) | 0.77 |
| <i>Problem-solving function (severity of migrant workers' housing problems)</i> | | | | | | |
| % Living in informal housing | 6.60 (6.06) | 6.45 (3.13) | 7.35 (6.93) | 1.92 (0.44) | 5.36 (5.29) | 1.71 |
| Rent unaffordability | 10.40 (6.64) | 10.46 (3.14) | 10.84 (8.05) | 8.58 (3.24) | 8.97 (2.95) | 0.42 |
| <i>Problem-solving function (salience of urban issues)</i> | | | | | | |
| Urbanization level | 36.28 (15.02) | 43.08 (17.15) | 34.14 (13.93) | 32.60 (9.25) | 38.81 (17.35) | 1.93 |
| Size of migrant population | 12.00 (12.09) | 16.28 (12.71) | 10.57 (10.73) | 10.91 (8.64) | 13.37 (17.93) | 1.10 |
| <i>Previous welfare generosity</i> | | | | | | |
| Dibao replacement rate | 19.45 (3.11) | 19.51 (3.21) | 19.38 (1.81) | 16.79 (2.26) | 21.05 (4.05) | 2.67 |
| <i>Control variables</i> | | | | | | |
| Population | 4.72 (4.04) | 7.31 (6.63) | 4.20 (3.14) | 4.60 (2.06) | 3.44 (1.83) | 3.69 * |
| % GDP in tertiary industry | 39.00 (9.57) | 41.86 (14.60) | 38.34 (8.22) | 42.55 (5.23) | 36.32 (7.59) | 1.23 |
| Mayor's age | 52.35 (3.85) | 53.89 (4.84) | 52.33 (3.53) | 50.33 (3.39) | 51.17 (3.54) | 1.94 |
| CCP's age | 54.23 (3.90) | 56.17 (4.89) | 54.10 (3.81) | 52.00 (1.90) | 53.08 (2.19) | 2.63 |

Notes: Mean is reported. The number in parentheses is standard deviation. The last column reports the F-statistics of analysis of variance (ANOVA). * $p < 0.05$; ** $p < 0.01$.

Table A3: Distribution of Policy Instruments (Supply-Demand) by Policy Area

| | All Areas | Subsidized-ownership Housing | Low-rental Housing | Public Rental Housing (General) | Public Rental Housing (Specific) | Commercial Ownership Housing | Commercial Rental Housing | Urban Village | Dormitory |
|---------------------------|------------|------------------------------|--------------------|---------------------------------|----------------------------------|------------------------------|---------------------------|---------------|------------|
| Subsidies (supply) | 15 (5.8%) | | | 2 (3.8%) | 12 (23.1%) | | | | 1 (2.4%) |
| Subsidies (demand) | 17 (6.6%) | | | 7 (13.2%) | | 1 (1.6%) | 9 (64.3%) | | |
| Tax incentive (supply) | 22 (8.5%) | | 1 (5.9%) | 1 (1.9%) | 13 (25.0%) | 1 (1.6%) | 4 (28.6%) | | 2 (4.8%) |
| Tax incentive (demand) | 70 (27.0%) | 10 (90.9%) | | | | 60 (95.2%) | | | |
| Financing (supply) | 33 (12.7%) | | 3 (17.6%) | 4 (7.5%) | 18 (34.6%) | | | | 8 (19.0%) |
| Land-quantity (supply) | 25 (9.7%) | | 6 (35.3%) | 5 (9.4%) | 4 (7.7%) | | | 2 (28.6%) | 8 (19.0%) |
| Housing-quantity (supply) | 20 (7.7%) | | | 19 (35.8%) | 1 (1.9%) | | | | |
| Administrative (supply) | 47 (18.1%) | | 7 (41.2%) | 7 (15.1%) | 4 (7.7%) | | 1 (7.1%) | 5 (71.4%) | 23 (54.8%) |
| Administrative (demand) | 10 (3.9%) | 1 (9.1%) | | 8 (15.1%) | | 1 (1.6%) | | | |
| Total instruments | 259 (100%) | 11 (100%) | 17 (100%) | 53 (100%) | 52 (100%) | 63 (100%) | 14 (100%) | 7 (100%) | 42 (100%) |

Table A4: Descriptive Statistics of Policy Density Weighted by Policy Intensity

| | Subsidized-ownership Housing | Low-rental Housing | Public Rental Housing (General) | Public Rental Housing (Specific) | Commercial Ownership Housing | Commercial Rental Housing | Urban Village | Dormitory |
|--------------|---------------------------------|-----------------------|---------------------------------------|--|------------------------------------|------------------------------|------------------|-------------|
| Mean (SD) | 1.24 (1.57) | 3.67 (3.27) | 2.14 (3.03) | 1.60 (2.76) | 1.80 (0.63) | 0.57 (1.12) | 0.27 (0.71) | 1.04 (2.40) |
| Distribution | | | | | | | | |
| 0 | 52.9% | 22.2% | 48.3% | 69.9% | 10.0% | 77.8% | 82.9% | 79.1% |
| 1 | 5.9% | 11.1% | 12.1% | 0.0% | 1.4% | 1.6% | 12.2% | 3.0% |
| 2 | 23.5% | 33.3% | 3.5% | 5.5% | 87.1% | 6.4% | 4.9% | 4.5% |
| 3 | 0.0% | 0.0% | 17.2% | 5.5% | 1.4% | 14.3% | 0.0% | 0.0% |
| 4 & above | 17.7% | 33.3% | 17.9% | 19.1% | 0.0% | 0.0% | 0.0% | 10.4% |
| <i>N</i> | 17 | 9 | 58 | 73 | 70 | 63 | 41 | 67 |

Table A5: CH and DH Indices of Cluster Analysis

| | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---------------------|-------|-------|-------|-------|-------|-------|-------|
| CH pseudo-F | 16.25 | 16.93 | 18.34 | 19.47 | 20.40 | 22.15 | 23.66 |
| DH Je(2)/Je(1) | 0.57 | 0.82 | 0.81 | 0.38 | 0.77 | 0.59 | 0.53 |
| DH pseudo T-squared | 12.11 | 17.46 | 14.25 | 16.02 | 13.95 | 13.98 | 22.30 |

Table A6: List of Cities in Each Cluster

| Residual | Public and private rental | Collective rental | Citizenship-oriented |
|--|---|---|--|
| Shanghai 上海; Chuxiongzhou 楚雄州; Beijing 北京; Baishan 白山; Tianjin 天津; Nanjing 南京; Ganzhou 赣州; Hangzhou 杭州; Yichang 宜昌; Wuhan 武汉; Xiangyang 襄阳; Baiyin 白银; Ningde 宁 德; Quanzhou 泉州; Longyan 龙岩; Yan'an 延安; Yulin 榆林; Mudanjiang 牡丹江 | Lincang 临沧; Baoshan 保 山; Kunming 昆明; Yuxi 玉溪; Honghezhou 红 河州; Songyuan 松原; Tonghua 通化; Deyang 德阳; Panzhihua 攀枝 花; Ziyang 资阳; Ya'an 雅安; Guyuan 固原; Yinchuan 银川; Anqing 安庆; Xuancheng 宣城; Huaibei 淮北; Huainan 淮南; Chuzhou 滁州; Linfen 临汾; Xinzhou 忻 州; Shuozhou 朔州; Yangquan 阳泉; Chaozhou 潮州; Wuzhou 梧州; Hetian 和田; Nantong 南通; Changzhou 常州; Xuzhou 徐州; Suzhou 苏州; Jian 吉安; Xinyu 新余; Baoding 保定; Tangshan 唐山; Langfang 廊坊; Shijiazhuang 石家庄; Xingtai 邢台; Anyang 安 阳; Xinxiang 新乡; Xuchang 许昌; Ningbo 宁波; Lanzhou 兰州; Dingxi 定西; Qingyang 庆阳; Zhangye 张掖; Jinchang 金昌; Sanming 三明; Nanping 南平; Xiamen 厦门; Zhangzhou 漳州; Fuzhou 福州; Putian 莆 田; Dalian 大连; Chaoyang 朝阳; Benxi 本溪; Panjin 盘锦; Yingkou 营口; Tieling 铁岭; Jinzhou 锦州; Chongqing 重庆; Xian 西安; Qitaihe 七台河 | Nanning 南宁; Yulin 玉林; Hezhou 贺州; Lishui 丽水; Taizhou 台州; Shaoxing 绍 兴; | Hulunbei'er 呼伦贝尔; Tongliao 通辽; Zhongshan 中山; Foshan 佛山; Shantou 汕头; Shanwei 汕尾; Heyuan 河源; Gannan 甘南州; Xian'an 咸阳; Baoji 宝鸡; Hanzhong 汉中; Tongchuan 铜川 |

Table A7: Sensitivity Analysis on Policy Cluster

| | <i>Residual</i> | <i>Public and private rental</i> | <i>Collective rental</i> | <i>Citizenship-oriented</i> |
|---|-----------------|----------------------------------|--------------------------|-----------------------------|
| Panel A. Policy score based on policy density unweighted by policy intensity | | | | |
| N(%) | 16 (16.5%) | 65 (67.0%) | 3 (3.1%) | 13 (13.4%) |
| Overall score | -1.22 (0.44) | 0.02 (0.69) | 2.57 (0.93) | 0.82 (0.85) |
| Subsidized-ownership housing | -0.41 (0.00) | -0.34 (0.30) | 0.06 (0.82) | 2.20 (1.13) |
| LRH | -0.21 (0.26) | -0.13 (0.52) | 4.99 (0.00) | -0.27 (0.00) |
| PRH-general | -0.10 (1.35) | -0.10 (0.81) | 0.43 (0.46) | 0.51 (1.33) |
| PRH-specific | -0.65 (0.39) | 0.18 (1.09) | 0.03 (0.88) | -0.10 (0.75) |
| Commercial ownership housing | -1.46 (0.28) | 0.27 (0.83) | -0.79 (1.29) | 0.62 (0.31) |
| Commercial rental housing | -1.17 (0.00) | 0.33 (0.89) | -0.68 (0.85) | -0.04 (1.07) |
| Urban village | -0.01 (1.00) | -0.19 (0.87) | 0.26 (0.91) | 0.91 (1.20) |
| Dormitory | -0.27 (0.59) | -0.03 (0.99) | 2.94 (0.00) | -0.20 (0.28) |
| Panel B. Alternative weighting based on housing expenditure | | | | |
| N(%) | 41 (42.3%) | 45 (46.4%) | 3 (3.1%) | 8 (8.3%) |
| Overall score | -0.82 (0.30) | 0.34 (0.60) | 2.97 (0.50) | 1.22 (0.84) |
| Subsidized-ownership housing | -0.31 (0.14) | -0.29 (0.25) | 0.19 (0.95) | 3.15 (0.70) |
| LRH | -0.12 (0.32) | -0.20 (0.18) | 5.25 (1.58) | -0.23 (0.00) |
| PRH-general | -0.25 (0.93) | 0.11 (1.01) | 1.08 (0.43) | 0.26 (1.11) |
| PRH-specific | -0.53 (0.36) | 0.40 (1.11) | 0.23 (0.95) | 0.40 (1.44) |
| Commercial ownership housing | -0.72 (0.52) | 0.49 (0.91) | -0.52 (1.21) | 1.14 (0.52) |
| Commercial rental housing | -0.53 (0.42) | 0.43 (1.00) | -0.44 (0.86) | 0.43 (1.74) |
| Urban village | -0.44 (0.53) | 0.22 (1.15) | 0.46 (1.06) | 0.84 (1.03) |
| Dormitory | -0.44 (0.22) | 0.20 (1.07) | 3.19 (1.11) | -0.06 (0.37) |
| N(%) | 41 (42.3%) | 45 (46.4%) | 3 (3.1%) | 8 (8.3%) |
| Overall score | -0.82 (0.30) | 0.34 (0.60) | 2.97 (0.50) | 1.22 (0.84) |

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