

THE UNIVERSITY OF CHICAGO

Why supply land for public housing?:  
Disaggregating economic influence on land for  
public housing in China

By

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November 2022

A paper submitted in partial fulfillment of the requirements for the  
Master of Arts degree in the  
Master of Arts Program in the Social Sciences

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**Abstract:** Why do some local governments in China supply high proportions of land for public housing, while others refrain from doing so? In this paper, I disaggregate and evaluate the local elite influences on land allocation behaviors. Using a comprehensive dataset on prefectural level land allocation, I found that the relative industry size of manufacturing and service industry are positively associated with higher proportion of land allocated for public housing. This suggests that manufacturing and service industry elites have a positive impact on the land supply for public housing. Additionally, no sufficient evidence is found on the policy preferences or influence from real estate elites on land supply behaviors.

Keywords: public housing, elite influence, redistribution, China

## **Introduction**

Local governments in China, under the “revenue imperative” and promotion incentives, have leveraged land as a central tool in economic growth and fiscal management (Tao, 2011; Yang, 2017a). Existing research suggests local governments refrain from allocating land for public housing and engage in performative practices to meet top-down quotas on public housing (e.g. J. Zhou & Ronald, 2017). Yet empirical observations have found some localities deviated from this expected baseline behavior by having consistently allocated a comparatively higher proportion land for public housing. Why would some local governments allocate more land for public housing, while others refrain from doing so?

In this paper, I study the spatial and temporal variation in the land supply for public housing in Chinese cities. More specifically, I focus on the elite influences on local land allocation behaviors on public housing. Existing models of local land behaviors center around local governments and consider elites as a monolithic group, yet different elites with conflicting policy preferences and power in influencing policy outcomes compete for influence on local land allocation behaviors. Based on a comprehensive dataset on prefecture-level land allocation from 2000 to 2019, this paper shows that the relative industry size of manufacturing and service industry are positively associated with higher proportion of land allocated for public housing. This suggests the policy influence of manufacturing elites and service industry elites are positively associated with the local land supply for public housing. Additionally, no sufficient evidence has been found on the policy preference and influence from real estate elites on public housing land supply.

This paper first contributes to our understanding of land and housing in China. As full property rights have not been granted to private entities in China, land-related behaviors of local

governments in China have been identified as a central component in contemporary growth. Public housing was privatized, and residential land has been commercialized as the key source of local fiscal revenue. By 2010, the revenue generated by land leasing is almost equivalent to tax-based revenues (Rithmire, 2017, p. 128); by 2020, 46% of total fiscal revenue still come from land conveyance fees (Whiting, 2022, p. 4). Yet in recent years, local compliance to central mandates on bringing back public housing complicates this baseline understanding of land behaviors in China. In the study of political science and China, the political origins and implications of housing has also not attracted much attention (Ansell, 2019). Using a complete set of prefectural level land allocation data in China from 2000 to 2019, this paper offers a data-driven picture of public housing supply in China. Additionally, though elite influences on local land allocation has been noted in existing literature (see Chen & Kung, 2019; Jiang & Zeng, 2020), the local elites have largely been conceptualized as a monolithic group. By disaggregating the local elite influences, this paper provides a preliminary examination of the local elites' influence on public housing land supply.

This study of public housing in China also informs our understanding of inequality and redistribution in transitional economies. Public housing has been central in China's inequalities: prior to China's transition to include markets, access to quality public housing differed by employment units and urban residence; during the transition, privatization of previous public housing disproportionately allowed elite households to accumulate wealth (Walder & He, 2014). In the current market-dominated housing system, recipients of public housing are granted with exclusive rights to acquire housing with sub-market costs. The distribution regulations and the size of public housing supply affects the direction of such redistribution and how inequalities will be reshaped heterogeneously across China. As housing prices soared in the past 20 years,

housing policies and individual housing choices plays an increasingly dominant role in shaping inequalities and political preferences. Existing models of authoritarian redistribution argue that redistribution is contingent upon existing or potential threats towards the incumbent elites, yet the findings of this paper effectively suggest that intra-elite competition for policy influence on public housing land allocation has an impact on the size of redistribution. This finding speaks to other studies that argues for the unintended consequences for the public in intra-elite competition: for example, in Britain's' early democratization, emerging elites extended suffrage to break parliamentary control from the incumbent elites (Lizzeri & Persico, 2004).

The following sections of this paper are organized as follows: section 2 to 4 first reviews our understanding on land and housing systems in contemporary China and lays out the theoretical hypotheses. Section 5 offers some contextual information on public housing in China. Section 6 discusses the empirical design and the data used in analysis. Section 7 presents the empirical findings, followed by concluding remarks on future research.

## **Revenue imperatives and land supply behaviors in China**

The land reforms in China, starting from the late 1980s, enabled local governments to monopolize control over urban land and leverage that control for political purposes. In 1988, following the revision on the Land Law that allowed land use rights transfer, Shanghai and Shenzhen piloted in allowing local governments to lease land to private entities. Urban land falls under the control of the state, and its local representatives, the local governments.

Local municipal governments control the land market from the upstream supply to downstream sales. In addition to the existing urban land stock, local municipal governments can acquire and repurpose rural land into urban land (Cao et al., 2008, p. 20). Prior to 2019, the authority of transforming rural land into urban land is monopolized by the municipal governments until the rural collective construction land was authorized to be leased by village collectives for urban development. In the requisition process, local governments provide land-productivity-based compensation for the dispossessed rural residents with a maximum cap of 30 times the value of annual land output (Cao et al., 2008, p. 21). Alternative compensation schemes include additional retirement pension (in Chengdu, Sichuan) or ownership of public housing (in Chongqing) (J. Zhou & Ronald, 2017). Yet the compensation for the displaced is usually much lower than the market value of the land, causing the land acquisition to become one of the most contentious topics.

As local governments are the sole supplier of urban land, local governments monopolize the primary market of urban land, though with annual restrictive quotas on the amount of land use rights that could be allocated or sold. Municipal or county governments, stipulated by land use right conveyance regulations<sup>1</sup>, are responsible for the conveyance of urban land use rights. In

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<sup>1</sup> [http://www.gov.cn/zhengce/2020-12/25/content\\_5574204.htm](http://www.gov.cn/zhengce/2020-12/25/content_5574204.htm)

the conveyance process, local governments first evaluate the baseline price (*jizhun dijia*) for land strips according to the intended use (e.g. commercial, residential), auxiliary infrastructure and pricing of adjacent and comparable land strips.

Local governments could choose to convey land use rights through one of the following three processes: negotiation, sealed bids (*zhaobiao*, or tender), or auction. Provincial governments hold the discretion over the specific design of land conveyance processes. In land negotiation and sealed bids, the two dominant forms of land leasing in the first decade of 21st century, the decision-making process in who and why wins the land bid remains nontransparent for outside observers. The central government has been pushing to increase transparency and control over land conveyance negotiations and sealed bids. Mandated by a 2003 central regulation<sup>2</sup>, the minimal price in land negotiations is set at 70% of the evaluated baseline price, or the sum of land type change fee due for State Council or provincial governments in transforming rural land into urban land (*youchang shiyong fei*), land requisition costs, as well as corresponding tax and fees.

When land use rights are conveyed to private entities, the term length, location, intended land use, and regulations on construction limits of the land are specified. The key revenue acquired from land conveyance for local governments is the one-time land use right conveyance fee (*tudi shiyongquan churangjin*). Transactions between private entities are confined to transfers of remaining land use rights under the original conveyance terms. If the new buyer intends to change the use type of the land, it has to renegotiate with local governments on conveyance terms.

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<sup>2</sup> [http://www.gov.cn/gongbao/content/2003/content\\_62406.htm](http://www.gov.cn/gongbao/content/2003/content_62406.htm)

With a monopoly of control over urban land, how do local governments in China allocate and convey land? In the immediate years following the 1988 reform, local governments distributed land to state-related entities with little financial compensation. SOEs were involved in speculation as real estate investment soared nationwide. When the central government stepped in to contract credit flow in 1993, public sector employees were left unpaid after their work units' real estate speculation failed (Rithmire, 2017, p. 131).

Yet following the land reforms, in 1994, the fiscal recentralization reform strapped in local government behaviors. The 1994 reform consolidated previously locally retained extrabudgetary revenues into the fiscal budget and extracted more than 50% of within-budget revenue to the central government. Yet the funding responsibilities for most expenditure remained at the local level. Given the fiscal gap between revenue and expenditure, local governments faced the “revenue imperative” (Tao & Yang, 2008) and sought to leverage land to increase fiscal revenues and tax bases. Additionally, localities were given autonomy to operate local state banks and seek funds from local government financing vehicles (LGFVs). Land has been used by LGFVs as collateral to elicit loans from banks or sold directly for revenue (Liu et al., 2021).

Since the 1994 reform, the central government has been pushing to increase transparency and control over local land strategies (Liu et al., 2021, p. 26). Prior to 2007, revenue generated from land leasing was managed and audited in a dedicated fiscal account and only the net surplus was incorporated into fiscal revenue. Starting from 2007, mandated by a 2006 State Council statement<sup>3</sup>, the revenue (including the transactional taxes) and spending related to land leasing are subject to local budgetary control: land leasing revenues and costs are managed under the

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<sup>3</sup> [http://www.gov.cn/zwggk/2006-12/25/content\\_478251.htm](http://www.gov.cn/zwggk/2006-12/25/content_478251.htm)



governmental fund category. Additionally, restrictions were placed on the spending of land conveyance revenue: acceptable uses of spending include compensation for land taking, urban development, and severance fee for the laid-off SOE workers<sup>4</sup>. In addition, “to avoid reliance on bank loans in land acquisition”, a portion of land conveyance revenue is deposited in a revenue fund for future land acquisition<sup>5</sup>. In 2021, the central government took a step further to mandate the fiscal apparatus to collect the land conveyance fees<sup>6</sup>.

Despite the many restrictions on local land behaviors, local governments manipulated the land conveyance process. The performance-based “tournament” model of political selection in China, controversial yet dominant in existing research, states that the winning politician in the competition of economic performance with fellow local leaders is rewarded with promotion (e.g. Li & Zhou, 2005). Local leaders, incentivized by promotion prospects, exercise calculated discretion over different types of land. Given the centrality of economic growth in performance reviews and promotion prospects, local leaders leverage land to attract capital investment; at the same time, under the “revenue imperative”, local governments have to muster funding from land conveyances. Accordingly, China witnessed a mix of “race to the bottom” pricing in industrial land (especially in the form of development zones) to attract industrial investment and under-supply of residential land that drives up housing prices (Tao, 2011).

On local government behaviors regarding industrial land, empirical evidence shows that, local governments, in terms of conveyance processes, have favored private negotiations which generates less land conveyance revenue compared to public auctions (or negative revenue considering the additional subsidies involved) to attract manufacturing firms (Tao et al., 2010).

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<sup>4</sup> [http://www.gov.cn/zwgk/2006-12/25/content\\_478251.htm](http://www.gov.cn/zwgk/2006-12/25/content_478251.htm)

<sup>5</sup> [http://www.gov.cn/zwhd/2007-02/05/content\\_516191.htm](http://www.gov.cn/zwhd/2007-02/05/content_516191.htm)

<sup>6</sup> [http://www.gov.cn/zhengce/zhengceku/2021-06/04/content\\_5615524.htm](http://www.gov.cn/zhengce/zhengceku/2021-06/04/content_5615524.htm)

Despite the opportunity costs in revenue from the one-time land use rights conveyance, by favoring manufacturing firms local governments can increase tax bases; investing in one jurisdiction also means that this firm is unlikely to invest in neighboring regions, giving local leaders a competitive edge in the “promotion tournament”.

On residential land, this “low-pricing” propensity is rarely found. Overall, existing research has found local governments under-supplying residential land and imposing regulations on construction limits. One key regulation that impacts the supply of housing units and the profitability of developers is the floor-to-area ratio (FAR). FAR determines the size of space developers can build on purchased land. Existing studies have found FAR regulations in localities are more restrictive than free-market outcomes (Brueckner et al., 2017; Cai et al., 2017) and has a positive effect on driving up land prices (Han et al., 2020).

The effect of these revenue-generating strategies has been significant; qualitatively, dependence on the land-generated revenues are higher in the eastern and more developed areas whereas in central and western areas, since land is not of much value, dependence on land public finance is lower (Fan et al., 2020). Yet the success in generating revenue means the surplus benefits from asset appreciation have been largely captured by local governments, not by the displaced peasants or the urban consumers. Manipulating housing prices upward first and foremost caused widespread grievances in housing.

### **Why allocate land for public housing?: Existing theories**

If local governments are incentivized against allocating land for non-revenue-generating purposes, why would some local governments allocate a higher proportion of land for public housing? Students of political science have spared little attention to account for the spatial and

temporal variation in the proportion of land designated for public housing in China. Most existing research provides qualitative case studies on major cities (such as Chongqing and Shanghai), while the few studies that incorporate large-sample-size evidence focus on the determinants of the size of local public housing recipients (Ma & Liu, 2021; Zuo, 2019).

Undeniably, the key actor in local public housing provisioning is the local municipal government. In the following sections, I discuss existing inquiries of two approaches: one that focuses on the proactive efforts of local governments and one that interprets provisioning as a reactive response to external pressure.

Why, if they indeed do so, would local governments proactively allocate land for public housing? One dominant view evaluates whether allocating land for public housing is in line with the career incentives of local leaders. Local leaders care to leverage land allocation to boost economic growth as their promotion prospects is correlated with the economic performance (e.g. L. A. Zhou, 2007). One could argue, developing public housing, in the short-term, promotes construction-related investment and employment. In the long term, by creating compatible distribution policies of public housing, local governments could attract talents, whatever what kind that may be, into cities and boost the city's economic growth (Chiu-Shee & Zheng, 2021); additionally, as many public housing units have been built in somewhat remote regions, they would create a population concentration within designated areas, which would further translate into more consumption demand and more employment within the region. Existing case studies have evaluated the short-term and long-term “productive” effects of public housing: in industrializing cities such as Chongqing in Bo Xilai's tenure as provincial secretary, public housing units accommodated the displaced rural residents and attracted workers into factories (J. Zhou & Ronald, 2017); on the other hand, in “deindustrializing cities” such as Shanghai and

Shenzhen, policies may include priority distribution clauses for employees in certain industries and companies.

Yet given the average term length for a local leader is around 3 years (computed from CPED database (Jiang, 2018)), the incumbent local leader would not stay long enough in the same office to witness the long-term “productive” effects. In other words, for local leaders eyeing for promotion, the relevant effects on local economic performance by allocating land for public housing is confined to the short-term increase in construction-related industries. Given the lead time needed in upstream investment relaying to downstream construction, we would expect local leaders, if caring about the “productive” effects of allocating land for public housing, would allocate land in the beginning of her term so that the effects from real estate investment could fully propagate within the local economy. Alternatively, allocating land for public housing could be interpreted as investing in “political achievement” projects that signals competence to political masters (T. Chen & Kung, 2016). If political selection in China does have a “tournament” element within, investing in “political achievement” projects could signal that even divesting precious resources such as land on public housing, this leader could still achieve comparable economic performance of other localities. Intuitively, such leader would consider allocate land for public housing with critical timing that is close to the end of their term. Regardless of if either of the two mechanisms are at play, these mechanisms suggest that we would observe a time trend in the proportion of land allocated for public housing: local leaders, with potential positive effects of public housing on promotion in mind, would strategically allocate land for public housing at either the start or the end of their office.

The first challenge to this interpretation comes from the efficiency of public housing land allocation in terms of increasing promotion prospects. Land is a precious resource local

government calculate on, and the “productive” effect of public housing is mostly likely not as efficient as industrial uses. If public housing land serve similar “productive” effects as industrial land, why hasn’t the “race-to-the-bottom” pattern of oversupply been observed in public housing land? Alternatively, selling land to the politically connected corporations could also accrue political favors crucial for promotion (T. Chen & Kung, 2019). Additionally, as there are implicit age limits on promotions, not all local leaders would be incentivized by promotion prospects. Scholars estimated that at the prefectural level, only 10% of local leaders ever get promoted, in most cases, in their first term as a local leader (T. Chen & Kung, 2016, p. 89). For the majority who would not get promoted, they would rotate through similar positions at different locations throughout their careers. Given these two challenges, naturally, the follow-up question would be, under what circumstances would local leaders be incentivized and turn to allocate public housing land to increase promotion prospects?

Alternatively, existing scholarship focus on whether local provisioning of public housing may be a response to both bottom-up and top-down pressure. Given the centrality of “stability maintenance” in China, the two kinds of external pressure could be interacting. Before diving into the question of how much external pressure motivates local governments, there is first the question of capacity. Local responses are subject to fiscal restraints: if the city is highly dependent on driving up residential land prices to acquire fiscal revenue, then the local government may not be capable to respond to external pressure by allocating land and developing public housing.

Direct top-down pressure on public housing provisioning has been incorporated in local bureaucrats' performance reviews since 2010 (Huang, 2012, p. 954). Public housing programs in 2000s are first and foremost not regional innovation but top-down mandates. The MOHURD

assign targets with provincial governments and the annual quotas of public housing units to be built is communicated to the local government (Chiu-Shee & Zheng, 2021; Ma & Liu, 2021). The central government wields an array of instruments to ensure local compliance: fiscal auditing, blunt force enforcement (van der Kamp, 2021), campaigns (F. Wang et al., 2021), and a last resort, personnel control. Yet the effect of these instruments may be temporary as monitoring and sanctioning for noncompliance has little effect on public housing, as evidenced by the existing local resistance.

In addition, top-down pressure may not translate perfectly into local government allocating land for public housing. Existing research identified perfunctory practices across local governments to meet the quotas for a particular public housing program (J. Zhou & Ronald, 2017). Local governments may deliberately categorize other types of public housing programs (such as ECH, capped price housing, and CRH in Guangdong, Henan, and Fujian, or employer-provided, or displacement compensation housing) as PRH (J. Zhou & Ronald, 2017, p. 436). In other words, existing research suggests the substantial amount of land allocated for all public housing programs may not increase despite top-down pressure, and if top-down pressure indeed has any effect, we would observe a periodic trend in local behaviors.

Turning to the potential effect of bottom-up pressure on local land allocation for public housing, existing research have focused on the relationship of government response and grievances from the local population. Land-related grievances spur up petitioning, legal struggles (Kim et al., 2022), and mass incidents. In a market-dominated housing system, allowing certain people to acquire housing with below-market-average costs is granting a population segment with certain housing rights. The distribution of such rights could be used to co-opt dissidents and quell bottom-up pressure, secure the support of the “winning coalition” (Svolik, 2012), or to

create leverage on potentially transgressive individuals and preemptively control them (Albertus et al., 2018; Pan, 2020).

Given the centrality of “stability maintenance” in China (as epitomized in Deng’s statement “Stability overrides everything else”) (Yang, 2017b, p. 48), local governments have been found to distribute enrollment in social welfare programs (including public housing) in exchange of silence (Pan, 2020). In land-related issues, local government responsiveness, though restricted, does exist (Jiang & Zeng, 2020). Yet findings from large sample studies on the size of public housing recipients have not provided much evidence to support this authoritarian co-optation theory. Ma & Liu (2021) shows that in eastern regions, where shortage of affordable housing is more salient, the provisioned public housing units per capita is lower than central or western regions; Zuo’s (2019) examination of eligibility criteria for public housing also finds no evidence to support that bottom-up pressure has an effect on public housing distribution policies. In other words, empirical evidence does not show the impact of bottom-up pressure in decisions regarding public housing supply and distribution.

The “coercive distribution” for preemptive control mechanism (e.g. Albertus et al., 2018) also does not have much explanatory power. Given the priority distribution policies in public housing mainly involve public sector employment or industries with state intervention, the state already wields considerable leverage over the recipients’ lives; hence there is not much necessity to allocate precious land resources for additional preemptive control.

## **Elite capture in local land allocation: Political power and policy preferences**

The implication from existing studies for the present inquiry is straightforward: the explanations based on promotion-related behaviors or top-down pressure could account for the temporal variation, yet they have provided few clues on how to account for the spatial distribution of behaviors on land supply for public housing. Why do some cities, consistently, allocate a comparatively higher portion of land for public housing?

This paper argues, following existing research on authoritarian distribution, that local elite influences have an effect on local land allocation behaviors. Pressure from local elites could change local governments' calculus, and thus the local elite mix would shape how local leaders are pressured. Existing research on local regulation violations in China shows the impact of elite capture on local government behaviors (e.g. Lorentzen et al., 2013). For elites not directly related in the real estate industry chain, policy preferences may be consistent, but the political power elites hold may differ: the incumbent economic elites who invested in political connections may have a higher influence than newcomers. Local leaders with more upper-level political connections may better deter elite influence and respond to local grievances by introducing more market-based approach in land requisition (Jiang & Zeng, 2020). Together, this means leaders with few upward political connections may be more susceptible to the demands of existing elites.

For elites in the real estate industry, local commercial housing sale prospects and existing inventory conditions may produce heterogeneous policy preferences. Intuitively, providing more public housing units would reduce local demand for commercial housing and drive down residential prices, reducing the profit margin in residential housing sales; yet on the other hand, real estate developers could gain more revenue from constructing public housing units. The downward effect on developers' profits would be more salient if existing demand for commercial



housing is weak and there remains housing unit inventory unsold. Constructed yet unsold housing units would only incur asset depreciation and future costs for property developers. Additionally, as real estate developers hoard local land in advance, the downward effect on current housing prices would reduce the valuation for land reserves; as property developers acquiring financing with land as collaterals, lower valuation of land reserves would cause challenges in future financing.

Naturally, we could hypothesize that if real estate developers are powerful in the local elite mix, they would influence local land allocation on public housing. Additionally, the influence from real estate elites could be heterogenous: when sales pressure on existing housing inventory is high, the pressure against land allocation for public housing would be higher; alternatively, if local demand for commercial housing remains high, property developers could alternatively welcome public housing allocation to increase revenue.

**Hypothesis 1a:** Policy influence of real estate developers is negatively associated with proportion of land allocated for public housing, *ceteris paribus*.

**Hypothesis 1b:** Real estate elite influence on public housing land supply is heterogenous: holding real estate elite power constant, past sales pressure is associated negatively with the proportion of land allocated for public housing, *ceteris paribus*.

Alternatively, manufacturing firm owners or elites with industries in need of cheap labor may push for more supply for affordable public housing and loose eligibility criteria. As public housing reduces living expenses for eligible migrating workers, manufacturing firms would have more supply of cheap labor; additionally, the manufacturing firms that once provided its own housing programs (e.g. Gree in Guangdong) could cut down investments in self-owned employee

housing, further reducing costs. Elites in the tertiary sector would also benefit from the increased market size from the additional population attracted by public housing.

**Hypothesis 2:** Policy influence of manufacturing elites or service industry elites is positively associated with proportion of land allocated for public housing, *ceteris paribus*.

Economic elites aside, local political (more specifically, public sector elites and the bureaucracy) elites may demand for more public housing. Given the priority distribution policies in public housing discussed in previous sections, the *de facto* recipients of public housing would mainly be employed in the public sector; government leaders can also enjoy allocated housing rightfully. Increasing land allocated for public housing would increase the total supply of public housing, creating more benefits for public sector employees. We could hypothesize, the local political elites would support land allocation for public housing.

Historically, in the “speculation craze” starting from 1992, when land use transfers in the secondary market was legal but also before the 1994 recentralization reform that produced the fiscal necessities of land revenue for local governments, scholars found the local government administratively allocated land use rights to state-related institutions (Rithmire, 2017, p. 130). This suggests that when local governments did not face the “revenue imperative”, powerful state-related elites could pressure the authorities to allocate land for their interests with low costs. Given the non-transparency in how SOEs leveraged the allocated land in property speculation, land allocation created additional rent-seeking opportunities for public sector elites. In more contemporary contexts, one case that somewhat lends support to the “public sector elite impact” hypothesis is relatively high proportion of land allocated for public housing in Beijing, the country capital with high housing prices.

**Hypothesis 3:** Policy influence of public sector elites is positively associated with proportion of land allocated for public housing, *ceteris paribus*.

## **Public Housing Programs in China**

Intuitively, in local governments' industrial-residential land strategy, allocating land for public housing would be counterproductive: it would sabotage efforts to drive up housing prices and, by extension, land conveyance revenues on residential land. To put public housing programs in context, this section first examines the housing scheme in China, then provides a brief description and typology of contemporary public housing programs.

Prior to 1998, urban housing in China was primarily state-provisioned and was related with public sector employment. Though starting from 1994, Economical and Comfortable Housing (ECH) and Housing Provident Fund (a compulsory saving program implemented at the employer level) programs were introduced to promote home ownership, private homes were not the main channel through which people acquired housing. In 1998, the central government mandated public sector employers stop constructing housing units for employees. Housing was no longer a good attained rightfully by public sector employment, but a commodity to be purchased in markets. Home ownership rose in urban populations, though the distribution of home ownership and equity increase was skewed toward elite occupations (Walder & He, 2014). Despite the many subsidies from public sector employers in home privatization, the remainder of pay was still years of income for workers.

At the beginning of the housing privatization, government supported affordable housing (primarily ECH) was expected to handle for 70% of urban households, who may have low to middle income (Y. P. Wang & Murie, 2011, p. 241). For developers constructing ECH, the profit margin was limited under 3%. Hence, given the local government's industrial-resident land strategy, and disincentives for developers, ECH construction was not pushed forward: around 2000 (the peak of affordable housing investment), only 25% rather than the expected 70% were

ECH (Y. P. Wang & Murie, 2011, p. 241). Cheap rental housing (abbreviated as CRH), though also introduced in 1998 as a social safety net, was also met with local resistance despite powerening efforts in 2004. Slow progress in CRH could be expected: local governments received little fiscal support yet faced funding responsibilities in constructing and maintaining CRH (Chiu-Shee & Zheng, 2021). In 2003, the State Council formally gave up the idea of ECH as the main form of post-reform housing in No. 18 document in 2003<sup>7</sup>, mandating the commercial housing market as the main provisioning channel for housing. Housing price boom created a mismatch of housing demand and supply for migrant and low-income families and grievances for housing affordability.

The turn for public housing came in 2008 after the global financial crisis. As part of the stimulation package, 7.5 million units of public housing was pledged with investment (J. Chen et al., 2014); in 2010, the target for affordable housing increased with an annual target of 3 million units<sup>8</sup>. Aside from alleviating affordable housing shortage and economic bailout, the minister of Housing and Urban-Rural Development (hereafter abbreviated as MOHURD), when reporting to the National People's Congress in 2011<sup>9</sup>, admitted that public housing programs have an intended second-order effect to drive down the property-based economy (Shi et al., 2016, p. 9). In 2010, public rental housing (abbreviated as PRH), after being piloted since 2008 in southern regions, was established by the MOHURD as the dominant mode of public housing. Accordingly, in the 12<sup>th</sup> Five-Year plan, the “safety net” principle was again highlighted with PRH construction targets drastically increased and ECH reduced (Chiu-Shee & Zheng, 2021, p. 14).

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<sup>7</sup> [http://www.gov.cn/zhengce/content/2008-03/28/content\\_4797.htm](http://www.gov.cn/zhengce/content/2008-03/28/content_4797.htm)

<sup>8</sup> [http://www.gov.cn/gongbao/content/2010/content\\_1593324.htm](http://www.gov.cn/gongbao/content/2010/content_1593324.htm)

<sup>9</sup> <http://news.cntv.cn/china/20111027/108331.shtml>

How have these public housing programs been financed? A 2010 audit report on CRH construction from 2007 to 2009<sup>10</sup> shows that 14.99% of the expenditure was funded by central subsidies, 66.15% was funded by land conveyance revenues as mandated, and another 11.7% came from fiscal expenditure. This finding corroborates with existing research on little central support and local resistance in constructing public housing.

On the distribution side, benefits and eligibility differ by program. ECH and "capped-price housing" (*xianjia shangpin fang*, abbreviated as CPH) confers conditioned property rights to the buyers. Owners of ECH are not permitted to sell the property on the market within the first five years of ownership; afterwards owners can redeem full property rights (including the alienation right of property resale) if they pay a fee (determined by the local government) to the local government<sup>11</sup>. On the other hand, rental programs including CRH and PRH allow winners of the lottery rent with sub-market prices and a locally-varying maximum time limit<sup>12</sup>.

Though formal eligibility criteria for public housing mostly include restrictions on household registration (*hukou*), income, current housing conditions (measured by housing area per capita) (Zuo, 2019) and takes no account of employment or educational backgrounds, given the large pool of applicants, the *de facto* recipients of public housing in major cities would be determined by the priority distribution policies. Take Shanghai as an example, if the applicant is employed in the public sector (e.g. healthcare, public transportation, education) or in priority industries<sup>13</sup>, she would be granted priority status in the long queue of public housing.

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<sup>10</sup> [http://www.gov.cn/gzdt/2010-11/17/content\\_1747270.htm](http://www.gov.cn/gzdt/2010-11/17/content_1747270.htm)

<sup>11</sup> State Council. 2007. No. 24. Guowuyuan guanyu jiejie chengshi di shouru jiating zhufang kunnan de ruogan yijian (Suggestions from the State Council on solving housing difficulties of urban low- income households). Accessed at: [http://www.gov.cn/gongbao/content/2007/content\\_744109.htm](http://www.gov.cn/gongbao/content/2007/content_744109.htm)

<sup>12</sup> For a more detailed description of public housing programs in China, see Zhou & Ronald (2017), p.433

<sup>13</sup> <http://sh.bendibao.com/zffw/20211011/244645.shtm>

Overall, the post-1998 trend in urban housing has been property privatization along with a market-dominated approach in housing provisioning. In rural regions, people with rural household registration (*hukou*), though not formally granted well-specified property rights, enjoy housing rightfully with land allocated by the rural collectives.

## **Research Design**

This paper sets out to examine if local elite composition has an effect on the local government land allocation behavior on public housing. To acquire information on local land allocation behavior, I leverage the land allocation data on Land China (landchina.com), a transaction monitoring website maintained by the Department of Natural Resources Development and Utilization, under the Ministry of Natural Resources. Local governments are legally mandated to report all land transactions within their jurisdictions (Jiang & Zeng, 2020, p. 21). The website publishes land allocation entries specifying the location, size, price, and intended purpose (along with other information) of land allocated from 2000 to 2022. One challenge in using this data is that the website adopted a new system of land use categories starting from early 2019, yet not all data since then conforms to this new system. This means land allocation data starting from 2019 may not be exhaustive of all land allocation occurred. For this reason, I use only the allocation data prior than 2019.

With this data, I focus on land allocations made at the prefectural level. The county-level data, though some of which available on Land China, have two problems: (1) given some entries categorize county-level land allocation under prefectural entries, the authority that made the land allocation was unclear; (2) in county-level data, the proportion of entries with mislabeled land types is higher. Hence, I aggregate the land allocation at the prefectural level, and if the land allocation authority is specified at the county-level, then these entries would not be aggregated into the sample. The China City Statistical Yearbook provides prefecture-level city statistics that are used to merge with the land allocation data.

## **Identification & Estimation**



To identify the effect of local elite influence on local land allocation behavior on public housing, a “selection-on-observables” identification strategy is used. In other words, I seek to control confounding factors until we can safely assume, when the observable factors are controlled, the independent variable of interest, local elite power, is conditionally independent with the dependent variable throughout the sample. In the following sections, I discuss the variables of interest under this identification strategy.

### **Dependent variable: Proportion of land allocated for public housing**

To measure how much priority local governments on placing on public housing, I use the proportion of local land allocated for all public housing programs annually. Despite the notable differences in each public housing program and policy priorities across time periods, given the perfunctory practices local governments employ to meet policy goals, such as counting all public housing construction as public rental housing (J. Zhou & Ronald, 2017), evaluating the land allocated for each program separately would be subject to local fraud practices which are hard to identify.

Alternative measures have been chosen by existing studies for local government’s priority on public housing. The number of public housing units per capita, either constructed or pledged to construct, was used in measuring the local compliance of public housing quotas (e.g. Ma & Liu, 2021). Yet for our current task of understanding local government behaviors, this measure is somewhat indirect: if the financing scheme of public housing construction and the corresponding responsibilities for local governments are varying, this measure would not reflect the calculus of local governments, whereas land allocated for public housing represent straightforward opportunity costs.

## **Independent variables**

### **Political power of local industry elites**

How can we measure the power economic elites have over local governments? Why would local leaders take the local elites' opinion seriously? Aside from the idiosyncratic personal connections industry elites may have with local leaders, elites' policy influence largely stems from the pursuits for fiscal tax base and economic growth by local leaders. In other words, larger industry contribution to the local GDP means, qualitatively, larger policy influence on local leaders. In this paper, I use the industry size (measured in the proportion of local GDP contribution) to measure the political power elites of a particular industry hold.

Intuitively, industry elites with a substantial contribution to the local economy also face coordination problems. Policy preferences may differ across all market players given the disproportionate policy impact on different actors: if public housing programs would disproportionately benefit leading firms in the market, new entrants could oppose such programs for competitive edge. In existing research, market concentration in an industry has also been used to measure the difficulty for coordination among the elites (Jiang & Zeng, 2020; Salamon & Siegfried, 1977); yet as historical data on market concentration are not readily available, the present study fails to measure the difficulty for coordination.

### **Sales pressure for real estate elites**

Incorporating sales pressure could help us examine heterogenous policy influences from real estate elites. To measure sales pressure for real estate elites, I construct an inventory-to-sales ratio for local commercial residential housing by dividing the number of remaining inventory

units with the annual units sold. Inspired by the “reserve-to-production” ratio in crude oil evaluation, this ratio estimates the number of years needed to clear out inventory assuming uniform sales performance in the future. The larger inventory-to-sales ratio is, the more pressure real estate developers would have. To compute this ratio, from 2017, the China City Statistical Yearbook provides prefectural level data on the annual sold units of commercial residential housing as well as remaining inventory units. For data prior than 2017, the China Real Estate Statistical Yearbook provides provincial level data; I use provincial-level ratios to proxy for prefectural cities.

### **Political power of public sector elites**

To account for the policy influence from the local bureaucracy and other state-related entities, I use the proportion of urban employees who were employed in the public sector or state-owned enterprises as a proxy to measure the power of public sector elites. As Jiang & Zeng (2020) argued, employing a large portion of the local population would grant bargaining power and policy influence for elites in the public sector on the local government.

### **Controls**

#### **Top-down pressure: local fiscal dependence on transfers**

Aside from the temporary instruments the central government wields to ensure local compliance, fiscal transfer and personnel control are two constant institutions the center relies upon.

Intuitively, fiscal independence would grant local leaders more bargaining power against top-down quotas and pressure. To measure local fiscal independence, I compute the proportion of fiscal gap between local expenditures and revenue to the local fiscal revenue. Though local fiscal

gaps are not exclusively filled by central transfers, the fiscal gap provides an approximation on the absolute size of central transfers. As for the temporal variation in top-down pressure, adding year fixed effects would capture the effects of top-down pressure in the form of campaign-style governance, idiosyncratic promotion cycles.

### **Bottom-up pressure: existing housing conditions & housing affordability**

Measuring public grievance in an authoritarian regime with censorship and control on public resistance is a challenge. Existing research has used local collective actions recorded by nonprofits (Zuo, 2019), or online petitions related to housing or land disputes (Jiang & Zeng, 2020) to measure bottom-up pressure, yet censorship remains as the key concern to the validity of these measurements. Alternatively, we can measure bottom-up pressure specific for housing by measuring current housing conditions and housing affordability. These two measures, though

For current housing conditions, I intend to measure the existing housing spaces per capita. Given the total size of local housing spaces and the size of local population are not readily available, I leverage the size of land designated for housing and the local population with household registration to compute the size of housing land per capita and proxy for the housing area per capita. If we can assume a similar distribution of the size of housing area per land size, this proxy would provide a good estimate on the existing housing conditions. For housing affordability, I use the price-to-income ratio to measure the costs of acquiring new housing. For income data, I use the annual average income within the city; for housing prices, I use the provincial level average commercial housing prices per square meters, provided by the China Real Estate Statistical Yearbook, to proxy for the housing prices in the prefecture.

### **Additional controls on city-level characteristics**

I include controls on the local economy (measured by taking the log of GDP per capita), local population size (measured by taking the log of the number of people holding local household registration). Controlling for population size may be somewhat controversial given the identification strategy employed in this paper: local population size could be a post-treatment variable in that if more people choose to acquire a city's household registration due to the public housing programs the city provides, it would confound our identification. Additionally, to capture the unobserved confounding factors, I control for year and provincial fixed effects.

**[Table 1: summary statistics; see appendix]**

### **Estimation strategy**

The main estimation strategy leverages a two-way fixed effects model with year and provincial fixed effects. The model specification is as follows:

$$\begin{aligned} \text{Prop.land for public housing} = & \beta_1 \text{Real estate power} + \beta_2 \text{Sales pressure} \\ & + \beta_3 \text{Real estate power} \times \text{Sales pressure} \\ & + \beta_4 \text{Manufacturing elite power} + \beta_5 \text{service industry elite power} \\ & + \mathbf{X}\beta_i + \beta_6\eta + \beta_7\delta + \epsilon \end{aligned}$$

where  $\mathbf{X}$  represents the set of control covariates,  $\eta$  the provincial fixed effects, and  $\delta$  the year fixed effects.

## **Empirical findings**

Table 2 (see appendix) reports the regression results. Model 1 contains only the control variables without fixed effect to test the previous understanding of public housing land allocation behaviors. Model 2 adds year fixed effects to model 1 and model 3 additionally adds provincial fixed effects to model 2. As expected, the coefficients on the local GDP per capita and the size of local population with household registration are both negative and significant at a 5% significance level across the three models. This fits the general observation that larger and more economically developed cities are associated with lower levels of land allocated for public housing.

The coefficients on the fiscal dependence on upper-level government transfers are also negative, meaning more fiscal gap is associated with less land for public housing. Intuitively, this association could reflect that cities facing the “revenue imperative” more intensely would value the revenue-generating function of land; nevertheless the finding provides some counter-evidence for the top-down pressure theory.

The coefficients on housing area per capita (measuring existing housing conditions) show that we fail to reject the null for the effect of existing housing conditions on public housing land allocation behaviors. The coefficients on price-to-income ratio are negative and significant at a 0.1% significance level except for model 3 with provincial fixed effects. This suggests, high and less affordable housing pricing is associated with lower proportion of land allocated for public housing. Given the ratios are computed with provincial-average commercial housing prices and local-average income, with provincial fixed effects as in model 3, the ratios no longer measure housing affordability but the average income of working people in localities. In short,

these result corroborates with existing research on the lack of evidence supporting the effect of bottom-up pressure on public housing, or more generally local land behaviors.

In model 4, I add the independent variables to the specifications. In model 5 and 6, I gradually add the year and provincial fixed effects. Across the three models, we found no sufficient evidence to reject the null for the effect of public sector elite power on public housing land allocation behaviors. In the twoway fixed effects model, the coefficient on manufacturing elite power and service industry elite power are positive and significant at a 5% significance level. This supports the hypothesis that manufacturing and service industry elites would welcome the cost reduction effect from increased provisioning of public housing. We also fail to reject the null for the effect of real estate elite power on public housing land allocation at a 5% significance, though statistically we could reject at a 10% significance level.

Model 7 further investigates the elite influence from the real estate industry. In model 7, I leverage the previous year inventory-to-sales ratio to interact with real estate elite power. I use the previous year data as real estate developers would perceive sales pressure from previous performances. Due to data availability limitations in prefectural level inventory-to-sales ratios (the China City Statistical Yearbook only provides sales and inventory data on commercial housing starting from 2017), there is limited variation if fixed effects were to be added to the specification. Endogeneity concerns also arise from this specification: since year fixed effects are not included, the past public housing land allocation outcomes could impact future predictors. The results show that, we fail to reject the null for the independent variables of interest, and there is not enough evidence to support that real estate developers, under inventory pressure, would further oppose land allocation for public housing.

## **Robustness checks**

One concern is that, the small sample size in the previous analysis may cause us to prematurely conclude that evidence for the effect of real estate elites is insufficient. To further test, I use provincial level inventory-to-sales ratio to proxy for prefectural level inventory pressure. In the model specification, I also add year fixed effects to account for unobserved time trends and alleviate endogeneity concerns. Alternatively, I also use local commercial housing prices to measure the intensity of real estate developers. Intuitively, when commercial housing prices are high, developers could reap higher revenue from unit sales. Adding commercial housing prices into the specification for model 8 would arguably bring forward multicollinearity concerns, so we would expect the estimated standard errors to be inflated. Year and provincial fixed effects are also included in model 8.

Table 3 shows the regression results. In model 8, the estimated coefficient on real estate elite power is positive while the interaction term of real estate elite has a negative coefficient; both coefficients are not statistically significant at a 5% significance level. In model 9, the coefficient on real estate elite power is negative while that of the interaction term of real estate elite power and local commercial housing prices is positive, though the coefficients are also statistically insignificant. In sum, the robustness checks, though using different model specifications, fail to provide more evidence in support of the hypotheses regarding elite influence from real estate developers and elites.



## **Conclusion**

This paper provides a large-sample examination of public housing land supply in China. The conventional model of local land behaviors in China is challenged by presence of certain cities with a consistent record of comparatively higher proportion of land allocated for public housing. The empirical findings suggest more power from manufacturing elites and service industry elites are associated with higher proportion of land allocated for public housing. Additionally, this paper does not find sufficient evidence to support that real estate elites have an effect on local land allocation behaviors regarding public housing, the supply side of public housing in China.

Due to limitations in data availability and the corresponding empirical design, this paper could neither provide a more granular picture of elite influence in local public housing land supply, nor could it provide causal inference with fewer falsifiable assumptions. In measuring the variables of interest, due to the lack of prefectural level data, provincial level data have been used as proxies (such as local commercial housing prices), and alternative yet inaccurate measures have been used in estimation. Data availability further constrains the estimation strategy employed. Limited variation in the data means that fixed effects could not be added to every model, thus introducing further omitted variable bias. Another concern from data availability is whether missing data would confound the relationship between local elite influence and land allocation. Potential causes of missing data could include poor infrastructure in the statistical apparatus, or intentional manipulation by the local government, which could lead to unobserved confounding.

For the study of public housing provisioning in China, future research could leverage alternative identification strategies to examine the causal effect of elite influence on public housing land allocation. Finding a good instrumental variable for elite influence could be

challenging given the government planning and elites' choice in which city to enter and invest in. Yet a more clear-cut change (or "treatment") in elite influence induced by exogenous events could be searched and leveraged in understanding elite influence on public housing. More specifically, how do real estate elites, in particular real estate developers, influence and approach public housing provisioning under different circumstances?

The findings of this paper invite future inquiry into elites' role in (re)distribution in China. In land-related behaviors, the conventional conception of elites' role is associated with expropriation against the incoming population with housing needs and the dispossessed, rural citizens (Cai et al., 2017; Jiang & Zeng, 2020). Yet the findings here suggest that elites' interest pursuits and intra-elite competition may produce overall redistributive policy outcomes in favor of the weaker population. One missing piece in this present preliminary analysis is through what mechanism do different elites influence local housing land allocation, if they do so at all.

With a change of perspective, naturally we are curious if the weak can exploit the cleavages among the elites, as some citizens have exploited intra-government conflicts for resistance (O'Brien & Li, 2006), for redistribution. Though the findings in this paper as well as in previous studies have not found enough evidence to support that bottom-up pressure and tactics have an impact on public housing programs, local innovations remain possible. Nevertheless, the urban bias in China (Wallace, 2014), and more generally, distribution in authoritarian regimes, has persisted: rural residents who face a less diversified elite composition would have fewer opportunities to exploit intra-elite cleavages and enjoy the redistributive benefits along the way.

The focus on the supply side of public housing in the present study also brings attention to the supply in authoritarian redistribution. Existing literature on authoritarian distribution has

largely focused on the distribution mechanism and the corresponding effects; yet the question of how to supply or finance distribution has been largely sidelined. One reason for this biased attention is that supplying the distributed goods is mainly and studied as a fiscal problem; yet when the supply of distributed goods is dependent on non-renewable or scarce resources (such as land, or time), how would the supply process impact our understanding of authoritarian redistribution?

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Table 1: Summary Statistics

	Num.Obs.	Mean	Std. Dev.	Min	Max
Proportion of public housing land	5098	0.03	0.06	0.00	1.00
Real estate elite power	5283	0.08	0.07	0.00	1.07
Inventory-to-sales ratio	870	4.86	7.62	0.00	167.58
Manufacturing elite power	5643	0.47	0.11	0.03	0.91
Service industry elite power	5640	0.39	0.10	0.09	0.85
Public sector elite power	5714	0.12	0.12	0.00	3.30
Housing area per capita	3372	0.00	0.00	0.00	0.00
Price-to-income ratio	2583	0.13	0.04	0.01	0.99
Fiscal dependence on transfers	5209	0.53	0.23	-0.54	0.97
GDP per capita	5438	35 071.74	31 047.97	99.00	290 477.00
Local population with household registration	5726	4 299 851.17	3 067 291.67	0.00	34 160 000.00

Table 2: Regression results

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7
Manufacturing elite power				-0.028 (0.040)	-0.030 (0.040)	0.092* (0.044)	0.073 (0.070)
Service industry elite power				-0.007 (0.040)	0.009 (0.042)	0.100* (0.048)	0.115 (0.080)
Public sector elite power				0.010 (0.022)	0.009 (0.021)	0.009 (0.018)	0.029 (0.054)
Real estate elite power				0.010 (0.020)	0.010 (0.020)	0.038+ (0.021)	-0.075 (0.065)
Inventory-to-sales ratio (lagged)							0.000 (0.001)
Real estate elite power X Inventory-to-sales ratio							0.005 (0.010)
Fiscal dependence on transfers	-0.036*** (0.008)	-0.029** (0.009)	-0.032* (0.013)	-0.037*** (0.009)	-0.024* (0.011)	-0.010 (0.014)	-0.030 (0.026)
Housing area per capita	259.758 (198.207)	252.908 (199.995)	200.128 (161.570)	199.086 (184.598)	173.858 (179.795)	143.547 (141.962)	625.111 (902.237)
Price-to-income ratio	-0.076*** (0.023)	-0.078*** (0.023)	-0.018 (0.029)	-0.092** (0.028)	-0.101*** (0.028)	-0.016 (0.033)	0.002 (0.076)
GDP per capita (logged)	-0.015*** (0.003)	-0.012** (0.004)	-0.015** (0.005)	-0.014*** (0.004)	-0.009* (0.004)	-0.020** (0.006)	-0.023 (0.014)
Population with household registration (logged)	-0.006** (0.002)	-0.006* (0.002)	-0.008** (0.003)	-0.007** (0.002)	-0.006** (0.002)	-0.008** (0.003)	-0.003 (0.005)
Year fixed effects	N	Y	Y	N	Y	Y	N
Provincial fixed effects	N	N	Y	N	N	Y	N
Num.Obs.	1919	1919	1919	1886	1886	1886	240
R2	0.025	0.030	0.206	0.028	0.035	0.213	0.053
R2 Adj.	0.022	0.025	0.190	0.023	0.028	0.195	0.007
AIC	-6205.7	-6204.8	-6532.9	-6079.0	-6081.7	-6410.2	-798.4
BIC	-6166.8	-6132.5	-6305.0	-6018.1	-5987.5	-6160.8	-753.2
RMSE	0.05	0.05	0.04	0.05	0.05	0.04	0.04

+ p &lt; 0.1, \* p &lt; 0.05, \*\* p &lt; 0.01, \*\*\* p &lt; 0.001

Table 3: Regression results for robustness checks

	Model 8	Model 9
Manufacturing elite power	-0.026 (0.042)	0.096* (0.044)
Service industry elite power	-0.012 (0.046)	0.084+ (0.048)
Public sector elite power	-0.013 (0.015)	0.002 (0.014)
Real estate elite power	0.024 (0.034)	-0.612 (0.405)
Inventory-to-sales ratio (lagged)	0.011 (0.011)	
Real estate elite power X Inventory-to-sales ratio	-0.031 (0.086)	
Commercial housing price (logged)		0.029* (0.013)
Real estate elite power X Commercial housing price (logged)		0.074 (0.047)
Fiscal dependence on transfers	-0.025* (0.012)	-0.006 (0.015)
Housing area per capita	796.552* (348.425)	114.998 (126.179)
Price-to-income ratio	-0.074** (0.025)	-0.075 (0.047)
GDP per capita (logged)	-0.011* (0.005)	-0.023*** (0.006)
Population with household registration (logged)	-0.003 (0.002)	-0.010*** (0.003)
Year fixed effects	Y	Y
Provincial fixed effects	N	Y
Num.Obs.	1608	1886
R2	0.042	0.219
R2 Adj.	0.033	0.200
AIC	-5207.4	-6420.7
BIC	-5110.5	-6160.3
RMSE	0.05	0.04

+ p < 0.1, \* p < 0.05, \*\* p < 0.01, \*\*\* p < 0.001