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# Unequal school enrollment rights, rent yields gap, and increased inequality: The case of Shanghai

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## ABSTRACT

This paper first builds a simple theoretic model to explore how a special feature of enrollment policy of public primary schools in urban China, the unequal enrollment right between home owners and tenants, would produce rent-yields gap between different housings. The model also predicts that an enrollment policy featuring with tenant discrimination, accompanying with strict credit constraint, would reduce the chance of kids from middle-income families to attend better public schools while allow families with high initial wealth to access better high-quality public education at a lower cost. Using a hedonic pricing model, we find that, in Shanghai, rental yields of housings in neighborhoods associated with reputed public primary schools is on average 0.1–0.35 percentage-point lower than those associated with ordinary ones. We also explore how the rent-yields-gap varies across housing types, locations and changes over time. Nonetheless, our simulation computation suggests that the estimated opportunity cost of holding such schools in Shanghai is generally not a big amount and affordable for many families. Overall, the high entry costs of owing a housing is the major obstacle to access high-quality public primary education in urban China. These findings highlight how an education policy with features of inequality may contribute to education and residential segregation, and then reduce intergenerational mobility.

## 1. Introduction

Starting from [Oates \(1969\)](#), the capitalization of school quality into house price and rents has been widely recorded and analyzed in many countries, such as the United States ([Bogart & Cromwell, 2000](#); [Clark & Herrin, 2000](#); [Crone, 1998](#)), the United Kingdom ([Gibbons & Machin, 2003](#); [Gibbons, Machin, & Silva, 2013](#); [Rosenthal, 2003](#)), France ([Fack & Grenet, 2010](#)), and China ([Feng & Lu, 2013](#); [Zheng, Hu, & Wang, 2016](#)).

In Chinese cities, the kid's enrollment to public primary school is also proximity-based, a principle not very different from those in the West. However, what China differs from most advanced countries is that the enrollment right of public primary school is unequal between home owners and tenants. In major Chinese metropolitans like Shanghai and Beijing, kids from families who own a housing in the local enjoy priority in the enrollment of public primary school, while kids from tenant families are ranked after them ([Feng & Lu, 2013](#)). Since generally the number of applicants for entering popular public schools much exceeds the enrollment capacity of these schools, kids from renter families are essentially excluded. To assure the kids' chance to enroll in good public schools in Chinese cities, the precondition is to purchase a housing with enrollment qualification to these schools ([Feng & Lu, 2013](#); [Zheng](#)

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et al., 2016). The so-called “tenant discrimination in the access of public school” creates a housing market that sees extremely high price of housing with enrollment equalization to good public schools (called “good-school housing” in China) but the rents of these housing are generally having no premium (Zheng et al., 2016).

On the other hand, it has been widely suggested that, with the lack of property tax, the most prominent obstacle for Chinese households to access homeownership is the shortage of down payment rather than income deficiency (Chen & Yang, 2017). This implies that, due to both credit constraint and low user cost (due to lack of property tax), the chance of families with high initial wealth but low cash income to own a high-valued housing is higher than middle-income families in Chinese cities.

In this paper, we analyze how tenant discrimination of access to public schools, together with credit constraint but low user cost (lack of property tax), contributes to the proliferation of the unequal access to high-quality public education resources among households in Chinese cities. Our theoretic model predicts that, when both discrimination of tenants' access to public schools and credit constraint are present, rental yield is lower for a representative apartment in a neighborhood with a good primary school and then leads to owners of such housings suffering financial costs due to lower rent yields. Using a large matched dataset of listed offers of both prices and rents for housing in Shanghai, we calculate the rental yield for each housing using hedonic pricing models. We then treat the difference in rental yield, or the rent-yield-gap, between housings located in neighborhoods with good public primary schools and those located in neighborhoods without such schools as the opportunity cost of possessing “good-school” housing. Our simulations suggest that such opportunity cost is averaged about 15,000 to 17,000 yuan per year between 2013 and 2014. We also find that a reasonable estimate of the total opportunity cost of holding “good-school housing” mounts up to 100,000 yuan. However, the number is just about twice the average annual income of an individual person in the city in the same period, affordable for a large share of the population in the city.<sup>2</sup> Nonetheless, with the enrollment policy featuring “tenant discrimination”, the only pathway to access good-quality school is through home purchase, which usually costs four to six million yuan in Shanghai between 2013 and 2014 (Chen & Yang, 2017). That amount excludes most middle-income households due to enormous downpayment requirement. In this sense, we argue that an enrollment policy exhibiting features of “tenant discrimination” creates high entry cost that reduces the chances of kids from middle-income families to attend better public schools, while families with high initial wealth can enjoy high-quality public education services at a lower opportunity cost. This result harms the equalization of public education services, which in turn reduces intergenerational mobility.

This study provides a new prospect on how the financial modes of public education may affect the spatial landscapes in the cities. Public schools are financed primarily by the local government via property tax in the U.S., implying that kids from wealthier families can attend better schools and then have more opportunity to be enrolled in famous colleges. This polarization effect reduces intergenerational mobility and also causes residential segregation between wealth and income levels (Chakrabarti & Roy, 2015; Frankenberg, 2013). In contrast, public schools in China are co-financed by the central and the local governments, and the central government plays an affirmative role. Although there is still disparity of educational public service across regions and between urban and rural areas, within-city disparity has been greatly reduced (Wu, 2013).<sup>3</sup> However, it seems that the central government's effort of equalization has not resulted in the desired equalization of quality reputation among public schools as wealthier families are still sorting themselves to schools of good historical reputation. The sorting behavior and the sky-rocketing housing price in these school districts are self-enforcing, which cause both education and residential segregation by wealth levels.

Our research also sheds some new light on the literature on credit constraints and education attainment. In a cross-country research, Mimoun (2008) finds that school enrollments are negatively correlated with income inequality and positively correlated with financial-market development. Whereas the correlation exists for all stages of education in the developing world (Jacoby, 1994), for the developed states it only appears for high-school and college education, mostly due to compulsory education laws (Keane, 2002; Keane & Wolpin, 2001; Lochner & Monge-Naranjo, 2011). Our research adds to this strand of literature by investigating the consequence of credit constraint on the cost of high-quality primary education. Although primary education is nominally free in Shanghai, households compete for the enrollment of reputed primary schools by purchasing apartments in these school districts. We argue that, with the presence of credit constraint, families with low initial wealth become unable to make the purchases, which results in lower cost at the equilibrium for those who can afford. Thus, when only kids of home-owners are eligible for enrollment, wealthy families not only have more chance but also pay less for good public education, which further intensify the inequality of public education resources. In this way, we find that credit constraint reduces intergenerational mobility not only at the lower tail of the income distribution, but all around the whole income spectrum.

Lastly, this paper adds some new important insights to the studies on household behaviors in China's housing market. For example, it helps to understand the extraordinary price hike in several metropolitans which fundamental factors cannot explain (Huang, Leung, & Baozhi, 2015; Wang & Zhang, 2014; Wu, Gyourko, & Deng, 2012). The results of this paper particularly suggest that the lack of property tax has played a significant role in the speculation of the real estate market which also distorts the distribution of primary education. Empirical evidence from two small-scale pilot property tax collection in Shanghai and Chongqing suggests that the existence of property tax, even at a limited scale and scope, can lower the growth rate of housing price (Bai, Li, & Ouyang, 2014; Du & Zhang, 2015) as it adds to the opportunity cost of holding real estate ownership. Results in this paper suggest that given other

<sup>2</sup> This amount is slightly lower than what Zheng et al. (2016) have estimated for the case of Beijing, where they find a housing associated with access to good school in Beijing is on average associated with a premium around 130,000 yuan in 2013. The authors speculate that this gap may be partly due to the private primary schools in Shanghai are much more developed and more popular than in Beijing and thus the frenzy for good public primary housing is slightly less in Shanghai. However, further research is called to test this conjecture.

<sup>3</sup> According to the authors' interview with a key member of the Education Committee of Shanghai Municipal Government in 2015, the per-student expenditure has been fully equalized in Shanghai.

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