RESEARCH STATEMENT
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I conduct empirical research in the areas of urban economics, political economy and finance using reduced-form and structural methods. My research is mainly concerned with the interaction between policy innovations and dynamics in housing and securitization markets in unorthodox regulatory contexts. In an emerging market context, I explore how the Chinese government’s land allocation and housing purchase restrictions affect housing supply and home price appreciation. I have also conducted research on the effect of quantitative easing on the pricing of mortgage backed securities and volatility in primary mortgage rates in the US after the financial crisis.

China’s Housing Market under Regulatory Control (Job Market Paper)
The supply side of housing and political economy of housing policies are an understudied topic in existing literature. This paper examines the effect of land and housing allocation policies on housing supply elasticity and home price in China, and estimates the welfare consequences of potentially sub-optimal land allocation decisions by a local government with political incentives. At a reduced-form level, I estimate the elasticity of housing supply accounting for land value, geographical constraint and regulatory stringency. Preliminary results indicate that housing supply is relatively more elastic in cities with more relaxed land supply policies, consistent with results from existing literature. Structurally, I build a dynamic model featuring a monopolist land supplier facing the trade-off between current fiscal constraints and future productivity growth.

The paper attempts to answer the following questions:

1. **What is the effect of allocation policies on housing supply and price elasticity of housing supply?** The two policies I specifically study are the Home Purchase Restriction program (HPR) and land auction policies, with the former being a direct demand-side intervention and the latter a supply-side quantity control mechanism.

2. **How to characterize a housing market equilibrium with a quasi-market mechanism of land allocation?** On one hand, land for residential property development is allocated in a competitive auction market. On the other hand, local government has extensive control over auction design, land designation for residential or industrial use

3. **What is the welfare consequence of sub-optimal land allocation caused by the political motivation of local government officials?** As the monopolist supplier of land, local government officials have private incentive to allocate land for industrial use to firms in order to attract business investment at the social cost of reduced housing supply and higher home price. The dynamic trade-off here is between current higher fiscal revenue and investment and lower future population and productivity growth

Regulatory Structure and Policy
At the central level, the ministry of housing and urban-rural development, the ministry of land and resources, China banking regulatory commission and People’s Bank of China are each responsible for creating a national policy framework regarding housing purchase, land supply, quantity of credit, and price of credit respectively. The layer of policies I focus on are at the local level, with the local housing registration office and land bureau endogenously choosing policy variables.

On the demand side, the Home Purchase Restriction Program (HPR) was first introduced in Beijing in April 2010, with the stated objective of stabilizing home price and restraining the speed of home price appreciation. Selection into HPR is done on a city-tier basis rather than actual home price: The scope of the program expanded to cover all first-tier cities, the majority of second-tier cities and select few third-tier cities, a total of 42, by February 2011. Provincial capitals are second-tier cities and by default included in the program.

The main component of HPR is a purchase cap: households with Hukou status can own a maximum of 2 homes, whereas households without Hukou can own a maximum of 1. It also contains a barrier to home ownership: households without Hukou have to satisfy certain lengths of local tax and social security payment history to be eligible for housing purchase. While the purchase cap is mostly uniform across cities in HPR, local authorities have discretion over the tax and social security criteria and the choice of municipal areas affected by the policy, i.e., some cities apply the policy to the entire municipality, others might only apply the policy to core districts.

On the supply side, local governments conduct regular auctions to transfer land use rights to private residential developers. The auctions are first price, ascending with non-sealed bids. Generally either the bids are submitted and displayed on an electronic bulletin board, or bidding agents are gathered in a central location in an open outcry format. A few characteristics of the auction process are economically important:

1. Local government have significant control over land parcels’ size, location, land use type, auction timing and maximum housing supply created.

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2. There is restriction on development timing: Winning bidder has to demonstrate significant development progress within two years of auction date. So the developer’s problem can be simplified.

3. Even though auction has become the predominant transfer mechanism for residential land, industrial land is still sold via private arrangement between firms and local government. Local government commits to a land use type ex-ante, and the decision is irreversible ex-post.

The last point is important for answering my research questions, as the contrast between a market mechanism of selling residential land and a non-market mechanism of selling industrial land, coupled with local government’s choice of land use type, can help identify the private incentives of local officials.

Data Sources and Description

I have used the following sources of data:

1. China Real Estate Index System (CREIS) database. The private data provider has been collecting land and housing transaction data since 2006.
2. Vanke internal data, containing monthly sales and inventory data for the company.

From these sources, I build a housing dataset with land auction data at 57 cities from January 2009 to April 2015. Each transaction contains the parcel size, built-up area, floor-area ratio, transaction date, auction reserve, winning bid, and winning bidder. The dataset also contains monthly new home sales in the 57 cities above, including home sales by floor area, average home price, number of apartment units sold, and supply side information such as units supplied and floor area supplied. At the municipal level, I have included monthly housing construction and investment, including residential construction and fixed asset investment in real estate.

Reduced-Form Estimation of Housing Supply Elasticity

To estimate the price elasticity of housing supply nationally, I first construct the three variables to account for geographic constraint, land supply by local government, and housing purchase restrictions. Housing supply elasticity is regressed against home price, the severity of housing purchase restrictions, land supply, the percentage of a city’s physical land available for development, and socio-economic control variables. Performance guarantees is small. Estimates show that nationally, the price elasticity of housing supply is 0.36, compared to around 2 for the US. This is consistent with results from existing literature that suggests markets with more stringent land use policies tend to exhibit lower supply elasticity. Curiously, the supply elasticity for China is similar to that in South Korea (0.5), which is the only other country to have adopted a similar housing purchase control policy. As a robustness check, I substituted home supply by floor area and number of home units supplied as dependent variables instead of residential construction, and the elasticity estimates do not change substantially.

The positive correlation between housing supply elasticity and land supply, and housing supply elasticity and percentage of physical land available for development are intuitive: Fewer geographic constraints and more relaxed land supply policy should be positively correlated with higher level of housing supply. However, the positive relationship between housing purchase severity and supply elasticity is counter-intuitive and inconsistent with theory prediction. Of course one would be concerned about the endogeneity of the HPR variable, and I have not found a convincing or easily replicable instrument strategy from existing literature on housing regulation. This gives additional support to using a treatment approach to examining the impact of HPR on housing supply rather than controlling for it directly.

I have also estimated city-level supply elasticity using similar specifications, and found that on a tier basis, first tier cities have on average lower supply elasticity compared to second and third tier cities. This result is not surprising as first tier cities generally have much more stringent housing policies. The positive relationship between average land supply over the sample period and supply elasticity is again consistent with existing literature results. However, I find no statistically significant negative relationship between average HPR severity over the sample period and supply elasticity.

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