



Incentive mechanism design of access management policy in affordable housing and analysis

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ABSTRACT

Affordable housing is of much importance for Chinese subsidized housing. However, the implementation of the affordable housing policy is facing several problems. One crucial problem is that the current policy cannot effectively identify high-income applicants who are not qualified to apply for affordable housing. Based on the theory of incentive mechanism design, this paper reveals that the current allocation institution has no incentive compatibility. To remedy this shortcoming, a new model for the management of affordable housing is established. Finally, an example is given to show how the proposed model can help improve the overall process of managing the allocation of affordable housing in China.

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Introduction

Market mechanism (Hou, 2009) has been applied to the Chinese housing allocation system since the urban housing reform in 1998. Nowadays, most Chinese urban inhabitants purchase dwellings from the real estate markets instead of waiting for the allocation from the government. Different from other countries, in China, all lands are state-owned. Therefore, real estate developers must pay the government a huge sum of money to rent the land for a predefined number of years, which varies by type of property.¹ However, this has not been a deterrent in the rate of development. Due to the recent housing reforms, the Chinese real estate industry has grown dramatically, benefiting from rapidly increasing quantity and price in the residential housing market. While this growth has resulted in improved housing conditions for a large of number of urban inhabitants, many residents still cannot afford a dwelling due to their low-income. However, traditionally, owning a 'home' has great meaning for most Chinese. As a result, each family wants to own a dwelling instead of renting, making the housing problem one of the toughest current social problems in China. To respond to this problem, the Chinese government has established an urban housing security system, within which *affordable housing* is the most well-known policy.

The affordable housing (Duda, Zhang, & Dong, 2005; Nie, 2004) is a type of subsidized housing. The government offers certain

lands free of charge, and the property developers who have succeeded to bid will construct and sell 'affordable units,' with profit caps, to citizens who can get the necessary purchasing permissions from the government (China Business Intelligence, 2008). The relationships among the above three parties are shown in Fig. 1.

The affordable housing policy appeared in 1998 and the first version remained in effect until May 2004 (Chinese Government, 2004). Three years later, a new version was brought into practice (Chinese Government, 2007). Through this policy, low and moderate-income citizens are supposed to afford dwellings of particular sizes.

The affordable housing policy is acting with good motives. However, the execution is not very effective. There are a number of debates whether such a policy should exist or not (People's Daily Online, 2009), with some researchers suggesting that the affordable housing policy should be replaced with financial housing allowance (Chen, 2008). Although experience from other countries suggests that, in most cases, financial allowance is better than subsidized housing (Rosen, 1985), many researchers, as well as Chinese authorities, still believe that provision of subsidies has its own advantages (Hills, 2007; People's Daily Online, 2009). Besides, the policy of financial allowance has some disadvantages too (Rosen, 1985). As a result, instead of shifting to other policies, it might be more helpful to improve the affordable housing policy.

During the implementation of the affordable housing policy, one intractable problem is that applications from many high-income inhabitants are mixed with those of other applicants (Zhang, 2010). While the policy does set prequalifying criteria, such as

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¹ Lease for a residential property is for 70 years.

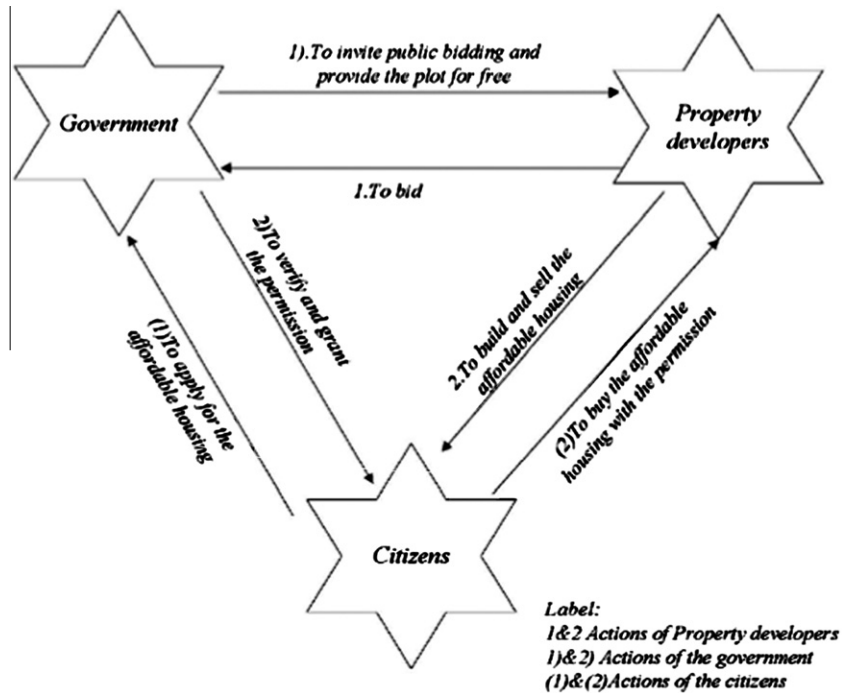


Fig. 1. Relationships in the affordable housing policy among the government, the property developers, and the citizens.

income, household type, total assets, and current housing conditions, the requirements are not effective enough. One important reason is that the prequalification process is a ‘You say – I check’ process. The truth is that the submitted information is always incomplete and asymmetric, which is caused by some dishonest applicants. According to the affordable housing policy, all the inhabitants can be divided into two groups: eligible and ineligible applicants. However, only the applicants truly know whether they qualify or not. In order to obtain more benefits, the ineligible applicants might claim that they were qualified too. The government surely will check the qualifications of all the applicants; however, the monitoring system for income in China is ineffective. For example, according to a 2002 report (Deng, 2005), the salary of inhabitants was CNY120 billions (approx. \$17 billions), which accounted for only 33% of their total disposable income. This means that about CNY240 billions was not accounted for by salaries. As a result, the government does not have adequate control and information regarding these additional moneys, which complicates the process of having applicants provide proof of their low-income status by themselves. However, the ‘ineligible’ applicants usually have more resources (e.g., ‘net-work’). Sometimes they can get ‘proofs’ more easily to prove that they are qualified for the criteria. In many of these cases, when the government actually checks the qualification of the applicants, the proofs are confirmed. While the government certainly has the power and the ability to get the needed information, the verification of all the information will cost a lot of money and takes a tremendous amount of time. The immensity of this task could be easily imagined, when millions of families apply for affordable housing.

Even though the Chinese government is aware of this problem, suitable methods for solving this problem are not found. However, the need for a more efficient system remains urgent. In that regard, *the theory of mechanism design*, founded by Leonid Hurwicz (Hurwicz, 1960), may be the first and most notable theory with the ability to solve the asymmetric information problem witnessed in China’s affordable housing application process. The following

offers a brief explanation for this theory (The Prize Committee of the Royal Swedish Academy of Sciences, 2007):

“In Hurwicz’s formulation, a mechanism is a communication system in which participants exchange messages with each other, messages that jointly determine the outcome. These messages may contain private information, such as an individual (true or pretended) willingness to pay for a public good. The mechanism is like a machine that compiles and processes the received messages, thereby aggregating (true or false) private information provided by many agents. Each agent strives to maximize his or her expected payoff (utility or profit), and may decide to withhold disadvantageous information or send false information. This leads to the notion of ‘implementing’ outcomes as equilibria of message games, where the mechanism defines the ‘rules’ of the message game. The comparison of alternative mechanisms is then cast as a comparison of the equilibria of the associated message games.”

Within this framework, market and market-like institutions could be compared with a vast array of alternative institutions. Initially, many of the interests focused on the informational and computational costs of mechanisms (Groves, 1973; Marschak & Radner, 1972). After Hurwicz introduced the key notion of incentive compatibility (Hurwicz, 1972), the mechanism design theory enabled a rigorous analysis of economies where the agents are self-interested and have relevant private information. There are many applications of the mechanism design theory, including optimal selling and procurement mechanisms, regulation and auditing, social choice theory, etc. In the 1970s, the formulation of revelation principle (Dasgupta, Hammond, & Maskin, 1979; Gibbard, 1973; Holmstrom, 1977; Myerson, 1979) and the development of implementation theory led to great advances in the mechanism design theory. Based on the theories above, the mathematical model of incentive mechanism design was developed (see Appendix A). This paper deals with the Chinese public housing allocation problems with the help of incentive mechanism design theory.

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