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Theoretical Analysis of Public Rental House Supply

Abstract The public rental house (PRH) plays a significant role in our housing security system. Using the theory of public goods, both government and private enterprises have advantages and disadvantages in supplying the PRH. In order to optimize the present supply system of the PRH, this article introduces the delivery pattern of public and private partnerships (PPP) into the government allocation system, and improves it into public-intermediary-private-partnerships (PIPP), a new supply system through government, private enterprises and intermediary organization cooperation. It helps to better achieve the security role of the PRH in our society.

Keywords: public rental house, government supply, PPP, PIPP

1 Introduction

As one of indemnificatory housing, the public rental house (PRH) aims at solving the housing difficulty of the low-income families. It is a popular appeal of today that the system of affordable housing allocation should be optimized and the construction of low-rent public housing and public rentals will gradually merge. At this point, the importance of the public rental house has further increased. The supply of the PRH at present is totally managed by government, but several issues in this process deserve necessary attention, including, but not limited to, financial issues, inferior design issues, potential quality hazard issues, and management vulnerability issues. All these problems raise intense discussions on the efficiency of the

current supply tunnel of the PRH, and further what would be better alternatives (Brubaker, 1975).

Many disputes exist about who should be responsible for the supply of public goods and who can better do it since the early years. Welfare economists represented by Samuelson thought that government allocation would be much more effective than market mechanism—private enterprises supply public goods (Chen, 2001). Due to the non-excludability and non-competitiveness of public goods, it's even more difficult and costly to reach excludability through market mechanisms. Worse is the inefficiency of economy of scale. But since the 1960s and 1970s of the last century, crises in welfare states have broken out (Song, Huang, & Chen, 2000). A group of economists who claim economic freedom, like Goldin, Brubaker, Schmidts, Demsetz and Coase, have come to doubt the reasonableness of government as the sole supplier of public goods, with proved probability that private enterprises could as well supply public goods (Li & Ye, 2011).

In order to figure out a better supply system for the PRH that can solve the urgent ongoing problems, the authors employ the theory of public goods initiated by Samuelson. Starting from defining the property of the PRH, the authors analyze both advantages and disadvantages of government and private enterprises in supplying the PRH. Furthermore, combining the actual characteristics and implementation of the PRH, a new supply system through cooperation of governmental institutions, private enterprises and intermediary organizations is created to better achieve the social role of the PRH by solving the large fund pressure, management confusion, potential quality hazard, low efficiency, etc. Finally, a conclusion is made based on improved public-intermediary-private-partnerships (PIPP) (Coase, 1974).

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2 Property analysis of the PRH

Since Samuelson, more economists have devoted their research into public goods, resulting in a series of theories, as well as debates. As for the classification of public goods, they are usually divided into three categories: purely public good; purely private good; and quasi-public good. Purely public good, as firstly defined in *The Pure Theory of Public*

Expenditure (Samuelson, 1954), is the kind of good which all enjoy in common that each individual consumption of such a good leads to no subtraction of that good (Demsetz, 1970). Three main features of purely public good can be concluded as:

(1) Non-competitive consumption. It means that the increase of people who consume the same good will not cause any decrease of utility enjoyed by the previous consumers.

(2) Non-excludability. It means consumers cannot be stopped from benefiting from the provided public good due to technique and economic infeasibility.

(3) Externality. Purely public goods have inalienable utility and strong externality which makes them unable to be excluded technically or to involve high cost.

Compared to purely public good, purely private good is both competitive and exclusive (Goldin, 1979). Moreover, it is an exclusive use in that purely private good can be separable among consumers without any external or overflowing effects. However, most goods in real life range from purely public good on the one hand to purely private good on the other. Then quasi-public good, with incomplete competitiveness and excludability, was proposed by Buchanan to fill the Samuelson gap between the purely public good and purely private good (Guo, 2005).

In terms of consumption, the PRH can be defined as a quasi-public good due to its limited competitiveness and partial excludability. A theory of clubs, or consumption ownership-membership arrangements, can be applied to explain it (James, 1965). The corresponding cases are those of goods, the consumption of which involves some finite “publicness”, where the optimal sharing group is more than one person, or family, but smaller than an infinitely large number (James, 1965). The PRH exactly has a specific qualification restriction to available applicants, which results in finite consumers. As Goldin put it, no goods, or services, are inherently public goods, or externalities. There is always a choice between equal and selective access (Coase, 1974). Consequently, the PRH indeed has selective access to consumption. Under certain consumption capacities, qualified consumers of the PRH will not affect, or decrease, consumption availability for other individuals. The same is true with purely public goods. When a certain capacity is surpassed, supply falls short of demand and non-competitiveness gradually disappears, and congestion will naturally appear. This is called limited competitiveness (Jin & Ding, 2005). Moreover, the PRH has strong externality, like relieving the rigid demand of housing market, stimulates domestic demand, improves the investment climate, and raises the level of the overall social welfare (Li & Zhang, 2009). Therefore, the authors can employ the theory of public goods to solve the problems within the PRH supply since the PRH has fundamental characteristics of public goods, though limitedly or partially (Lv, 2002).

3 Necessity of government supply

3.1 Market failure in public rental housing

A. Smith, J. S. Mill and P. A. Samuelson all considered public goods to be allocated by government in cases of market failure. When an idealized competitive market cannot let resources equilibrium configuration achieve the Pareto optimal state—namely the market in the allocation of resources is of low efficiency—then market failure emerges. Specifically, market failure of the PRH has the following aspects:

(1) Market directs the operation of economy by law of value based on the principle of voluntariness, without compelling force. However, the PRH is not for all the residents, and unable to define its beneficiary range through spontaneous adjustment of market.

(2) Market employs price to reflect the strength of individual preference, but since the PRH is exclusive to its beneficiary, consumers tend to send out misleading signals of his/her own interest, pretending that his/her has lower interest in these collective consumption activities. Thus, the dispersion of price mechanism is unable to determine the optimum of collective consumption, triggering “free ride” (Samuelson, 1954).

(3) Owing to the strong externality of the PRH, it is difficult for suppliers to recover their investment. If suppliers raise the rents to protect their revenue, it leads to the failure of the housing security function of the PRH (Zheng, 2007).

3.2 Government advantages

Due to the above market failure, it is a necessity for government to intervene in the supply process of the PRH. Different from general economic organizations, the government is administrative machinery having strong power to restrain each member of society. This governmental property gives the government itself an obvious advantage in resource allocation over the market, performances are as follows:

(1) The government can stipulate the application requirements of the PRH, excluding the middle-income and high-income consumers by administrative measures, which effectively defines the beneficiary range.

(2) The PRH is a hypothetic project, and it has to keep a lower rent level so that the low-income families can really afford it. If under the market mechanism, the lack of profit for private enterprises tends to cause invalid supply, the government can use strong force to keep it operating well, regardless of profits.

(3) Adjustment ability of market usually lags, leaving low-income families housing demand unmet. In contrast, government, with administrative force, can always conduct productions in a short time.

(4) The auto-adjustment of market rapidly accelerates polarization between the rich and the poor, making it more difficult for the low-income to afford a house as housing prices soar. Society becomes unstable (Su, 2010).

4 Necessity of private-enterprises supply

In his *The private production of public goods*, Demsetz (1970) said, "Given the ability to exclude non purchasers, private producers can produce public goods efficiently." Brubaker (1975) argued that the dominant position occupied by the free-rider hypothesis regarding it as lacking an empirical scientific basis. Coase (1974) used a case study of lighthouses to support the idea that public goods can be supplied by private enterprises. Though, the PRH is defined as a quasi-public good, the theory of public goods still can be applied with necessary changes. In all, combined with these empirical analyses, though government is proved to necessity and advantages in supplying the PRH, insurmountable latent defects and external restraints make the PRH supplied by private enterprises possible.

4.1 Latent defect

(1) Government consists of "economic men". The necessity of private supply stems from government failure in the real world. In public choice theory, it is believed that modern western economics always implies an assumption of "moral person" in research related to government behavior. They regard the government as a ruler having high morality and perfect rationality, but the assumption is of questionable. In fact, government also consists of common "economic men" pursuing interest maximization. In the process of the PRH construction, the monopoly power of public departments easily generates rent-seeking behaviors. Moreover, as information asymmetry between government and construction party, it is hard for the government to avoid mistakes (Tian, 2008).

(2) Invalid supervision of resources. Specifically, government management is seen as lacking effective entrusted agency-supervision mechanisms and incentive mechanisms. With the assumption of an "economic man", behaviors like cutting corners and transmitting costs will appear in the construction process of the PRH, usually resulting in poor-quality the PRH.

(3) Ineffective mechanism of cost control. The government is in charge of the PRH construction but does not pursue economic profit maximization. This causes inefficiency in cost controls and construction funds cannot achieve maximize utility.

4.2 External restraints

(1) Construction cost. Government needs to conduct a

large amount of investments in the construction process to supply the PRH; however, the present financing pattern—government investment + bank loan + housing provident fund loans—indeed cannot continually satisfy the large demand of the PRH. Little can be improved in this structure.

(2) Management cost. In each phase of the PRH operation, construction phase, or in-service phase, government has to set up corresponding organizations to manage it, which causing a significant operational cost to government.

(3) Opportunity cost. On one hand, government's domination of the PRH supply is less efficient than private enterprises; on the other hand, many vacant houses are not effectively used in the market.

(4) Local government interest. Since the PRH is mainly provided by the central government, local governments can response differently toward this policy due to their having different interests from the national government.

5 Improvement of PPP

5.1 Introduction of PPP

There are mainly two types in terms of private enterprises providing public goods: private supply completely; private and government joint supply. We apply the second pattern to improve the supply system of the PRH. Therefore, here comes PPP. PPP is the pattern that public department cooperates with private enterprises in public projects. In this pattern, both sides can play their respective advantages in providing public service, sharing risk, responsibility, and interest.

Specific application of PPP in supplying the PRH can both improve the efficiency of resource allocation, and to a great extent relieve capital pressure on governments in large-scale construction.

(1) Improvement of resource allocation efficiency. In the original solely supplied-by-government pattern, the PRH is provided for the beneficiary without entering the market. In this way, it's difficult to conduct precise cost-benefit analysis, and as a consequence easily cover the low-efficiency of government investment. In addition, government has relatively higher external cost and management cost since it is not easy to make sure of market change and information asymmetry in time.

After applying PPP, a government can make use of the appeals of enterprises for profits to save the construction cost, and increase utilization rate of fund. Meanwhile, better knowledge of the market of enterprises can help a government avoid investment blind spots, further changing its lower fund utilization rate. For instance, construction material price varies with the market fluctuation, and enterprises are able to choose a better time to conduct proper procurement according to its information of market.

The involvement of enterprises can also to some degree prevent the government from blindly following the investment performance. After all, the responsibility and right is equal under the cooperation of the public and the private. Private enterprises can improve the utilization of fund by weakening government's blindness of investment and dominance of performance (Wang, 2004).

(2) Encouragement for private investment. In the case of Chongqing's PRH, in 2010, Chongqing planned to build 600,000 sets of the PRH in 3 years with a required investment of 75 billion yuan. An estimated 1/3rd of investment would be provided directly by government, with the rest financed. Both the direct investment of 25 billion yuan and the large interest for the loan bring heavy pressure to the government. At the same time, saving deposit balance of local residents experiences continual rise. By the end of August 2012, Chongqing resident deposit balance had reached 805.077 billion yuan, achieving a 21.64 billion yuan increase. If the government uses policy guidance and tax preferences to encourage private investment in the PRH, idle funds of society can be better utilized. This solution provides more opportunities for private investment, and also largely eases government financial pressure. With investment diversification, government also disperses risk to better guarantee the financial investment. All these are good examples of the PRH's externality (Yang, 2001).

(3) Speeding the change of governmental functions. The PRH supplied by private enterprises does not mean it is entirely non-governmental. On the contrary, the government still plays a significant role in this process (Jin & Ding, 2005). The main part the PRH construction by the government included such things as financing, site selection, construction, and maintenance. Regardless of the ability of government to undertake such professional real estate development and operational work, many aspects of work are also undertaken by the government and would inevitably impose much pressure on it and throw it into frequent micro decision-making. This would lead to dysfunction in macro decision-making and management. When private enterprises and government have joint investments in the PRH, a government can stay out of the heavy work described above and concentrate more on how the PRH can better satisfy public demand to realize the harmonious development of economy and society (Yu, 2007).

First, government should provide policy incentives to private enterprise to create a sound institutional environment for this change. Since the PRH construction is high cost and almost completely non-profit, government can offer subsidies and preferential policies to motivate private enterprise participation.

Market failure is inevitable and government must regulate and superintend these negative externalities while private enterprises supply the PRH, such as like monopolies and information asymmetries. Profit drive may

lead to low-quality housing, and housing with inconvenient traffic. Thus, government intervention is needed to protect consumers from being cheated.

When private enterprises supply the PRH, government also needs to support the beneficiaries of the PRH. The PRH consumers are always dispersed and easily involved in collective actions due to the reason of "economic men". They become vulnerable to private enterprises, which calls for necessary support from government.

These functions show complementarity between government and private enterprise after private enterprises enter the PRH supply system.

5.2 Existing limit son PPP

Allowing private enterprise involvement, the authors employ PPP to illustrate the PRH supply systems. Further discussion shows that even though PPP has the advantage of both market supply and government supply, some limitations exist. Table 1 shows the contrastive analysis of PPP.

5.3 Introduction of PIPP

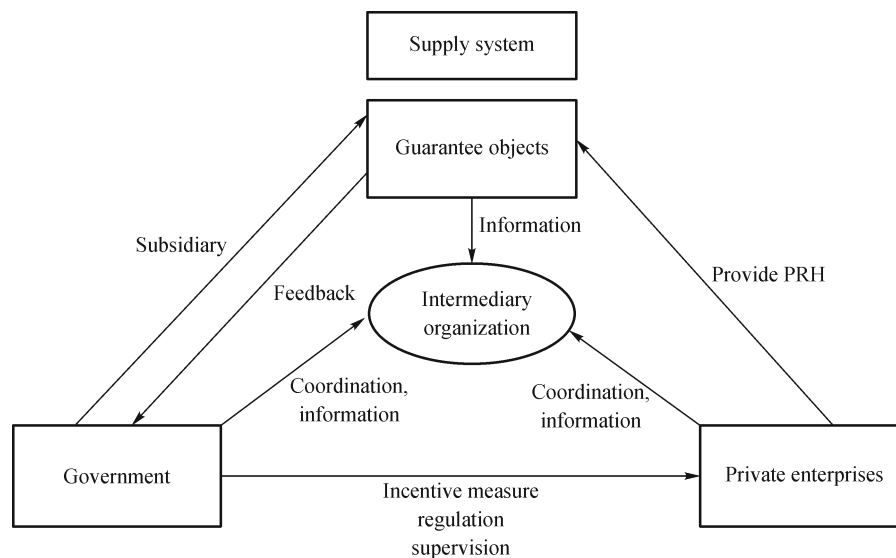
According to the above analysis, PPP also necessitates optimization to offset these defects. This paper proposes a solution to add intermediary organizations into the cooperation between government and private enterprises, which coordinate the PPP. It can accelerate information transformation, take responsibility for some work no fit for government management and help reduce both the failure of market and government. This optimized pattern can be called PIPP. Specifically the supply system is as follows (see *Figure 1*).

As the supplier of the PRH in PIPP, private enterprises have advantages in capital and efficiency. The availability of PIPP stems from private enterprises preferences for low risk and high yield, namely realizing effective returns of its own funds and extra profits. This is exactly why the PRH can attract private investor interest, stable rent incomes, and sales of commercial parts, as well as compensation and incentive in policy and good reputation are involved in livelihood projects. This is especially true for the stability of policy incentives as they become the gist of private enterprises decision-making. Since our micro-policy gives great impetus to the PRH, local governments will provide many preferential policies to attract private investment to solve the funding problem.

With the transform of government functions, a market-based independent space forms. In this space, an intermediary organization is needed to connect governmental and private enterprises. It can diversify social economy, offset market mechanism deficiencies and governmental management. Presently, chamber of commerce and industry associations are the most representative of intermediary organizations. They rely on trust and

Table 1*Contrastive Analysis of PPP*

PPP pattern	Type	Advantages	Disadvantages
Newly-built projects	BOT, BOOT		
	BTO, BOO	1. Market mechanisms bring public good, reduce input from public departments and increase work efficiency, rationalizing resource configuration	1. Difficulty in finding private enterprises and may cause rent-seeking behaviors
	BT, BOST		2. Laws and regulations and contract environment are not transparent
Expansion project	LBO, BBO	2. In the bidding process, more private enterprises participate and putting forward advanced technology and management experience	3. Requires high level government management
Existing projects	Service Agreement	3. Reduces or eliminates investment risk to government	4. Requires frequent communication and coordination to set the rate of return on the project
	Operate Maintenance contract		

*Figure 1. Supply system of the PRH based on PIP.*

cooperation among members, self-discipline, and social punishment to reduce the opportunistic behaviors, correct and avoid market and government failures, thereby resulting in smoother transactions.

In terms of transactions, involving complexity, uncertainty, and strong externality, adjustments from chamber of commerce can act more effectively than market mechanisms. Both market failure and government failure tend to take place in developing countries with incomplete information and underdeveloped judiciary systems. Even if market transactions can guarantee contract performance with the help of law, it will bring high transactional costs to these owners through applying law since most transactions are small. Differentially, intermediary organizations are able to focus smooth these small-scale transactions through cooperation, self-discipline, and negotiation thus reducing transaction costs in the PRH. Therefore under the cooperation of government, market and intermediary organizations, developing countries are able to better promote a balance between economy and society.

Due to the existence of market mechanism failures, such

as monopolies, information asymmetries, externalities, and, unfair distributions, it is necessary for government to intervene. After applying a PIPP pattern, government acts as a manager rather than an executor in the PRH supply. It takes charge of controlling the entire housing market, focusing on approving private enterprise admittance, supervision of the implementation process, and ex-post evaluation. The specific work of the PRH will be left to intermediary organizations and private enterprises. It is helpful to achieve better the PRH allocation operation (Zhang, 2012).

Theoretically, with its unique independence and good communication skills, intermediary organizations can better alleviate PPP defects while combining the advantages of private enterprises and government.

6 Conclusions

The PRH is the main part of a housing security system in our country and is being built in a large scale at present. But

presently government allocation still brings some problems to public rental housing stability. This paper combines a property analysis of the PRH to argue the possibility, necessity, and potential advantages of government's involvement in allocating this public good, but it also finds a series of limitations in its sustainable allocation. To optimize government allocation, the research introduces PPP, and creates a new pattern of PIPP by adding an intermediary organization into PPP. A new PIPP pattern can improve resources allocation efficiencies, assuage capital pressures on government when it provides the PRH, as well as optimize the function of government in this process.

As a club good, the PRH supplied by private enterprises with participation of intermediary organizations and is of significance to the management structure of government. It signifies changes to models of governance. No longer dominant is the notion that government is the sole center for allocating public goods, but government, market and intermediary organizations jointly constitute a new supply system. It doesn't mean that the role of government in this field is weakened, but to the contrary results in a more clear function. On behalf of the public interest, government is responsible for improving the quality of public goods and their equal allocation. Finally, the authors look forward to further research to test the effectiveness of PIPP in real supply system of PRH and how can it help improve the operation of the PRH.

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