INTRODUCING PUBLIC-PRIVATE PARTNERSHIPS FOR AFFORDABLE HOUSING IN CHINA.

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Abstract

Though China is taking many steps to offer affordable houses to the public, the gap between the demand and supply for such affordable houses is still huge. Rapidly growing demand for affordable housing has encouraged large Chinese cities, faced with housing imbalance, to invest in developing affordable properties. As a result, the Chinese central government has started to encourage local governments to use Public-Private Partnerships (PPPs) and private capital to supplement the funding deficit. There is also an on-going debate regarding the need to establish prerequisites for institutions to meet in order to achieve effective PPPs. In this paper, we examine what the current institutional environment is in China and how China is meeting these prerequisites for effective PPPs. We also examine the main programs on affordable housing and propose a potential field for using PPPs. We draw the conclusion that PPPs are more favorable for renting-oriented type projects than owning-oriented projects. In this context, the advantages of the PPP model for China's renting-oriented affordable housing programs are would be the provision of private financing, the enhancing efficiency by involving private sector experts and the statement of bundling constructions and maintenance and operation work in the contract, which motivates the private sector to build properties up to standard for its cost efficiency from the whole project perspective.

Keywords: Affordable Housing, Public-Private Partnership, China

1. Introduction

Affordable housing is an important tool for ensuring basic living conditions for people, stabilizing society, keeping social harmony and promoting economic development.

China has experienced in recent years a process of rapid urbanization, industrialization and the introduction of a market economy, together with the continuous expansion of urban populations. This has led to high urban house prices.

Promoting affordable housing construction is practically required in building a new people-oriented urbanization. The Chinese Central Rural Work Conference in 2013 and the 2014 "Government Work Report" clearly emphasized the need to solve the 3 one-hundred-million problems people have, namely, to help 100 million rural people get town residential identities, to transform shanty-towns and villages in cities for 100 million people and to give instructions to people in the middle and west regions about the 100 million urbanization program. The primary issue for the above is solving their living space and to make sure they have accommodation. Thus, building a thorough social housing system, enlarging the coverage of social housing system and getting the migrant rural population into the urban social housing system remain the short and medium term objectives (Research Group of the Marketing Department in the State Council Development and Research Center, 2012).

It was clearly stated in the 2014 "Government Work Report" that more effort will be made to increase

affordable housing constructions. New constructions will include more than 7 million apartments and 4.8 million affordable housing units that will be basically completed within 2014.

Currently, most literature on China's housing issues relate to: policy changes from the 1980s housing reform to the current various housing policies, the results of housing reform, the market forces that drive house prices which influence an equilibrium or bubble housing market and also the potentially less desirable outcomes of housing reform (i.e. unfair distribution mechanism, biased housing price etc.). Few papers focus on solving China's affordable housing problems (Dang, Liu & Zhang, 2014; Hui & Wong, 2006; Yeung, & Howes, 2006; Zou, 2014).

In this paper we address one possible way of addressing the affordable housing issue, i.e., Public-Private-Partnerships (PPPs), and how PPPs can be applied to China's affordable housing supply. We contribute with such insights as the advantages of this method for new housing supplies, potential risks relating to this kind of application, better ways for risks allocation and incentives for private investors to get involved in this cooperation. Section 2 explores the affordable housing programs that have been implemented in China in the last years. Section 3 explains the advantages and limitations that PPP arrangements could bring to the affordable housing sector in China. Section 4 provides specific PPP arrangements that could be used in the Chinese affordable housing arena. Finally, in section 5 we offers the main conclusions of this paper.

2. Affordable housing programs in China

During the past twenty years, China's housing reform has transformed substantially. The Government has launched several affordable housing programs to support this reform, and there is extensive academic literature covering them (see, for instance, Zou, 2014 and Chen et al., 2010).

Before the 1980s, it was the responsibility of the central government to invest in housing. During the 1980s, local governments and work units started to share the burden of housing provision together with the central government. As stated by Eddie C.M. et. al (2006), "Prior to urban housing reform, most Chinese people lived in rented accommodation provided by state agents—namely local governments, state-owned enterprises (SOEs) and work units. Tenants paid only a nominal rent to the housing providers. This, however, proved neither financially viable, nor sustainable."

In 1994, the State Council launched "The Decision on Deepening Urban Housing Reform".

In 1998, the central government was determined to deepen the decentralization of housing provision and initiated a housing privatization and introduced property rights (Wang & Murie, 1999, 2000). Chen et. al (2011) found that the abolition of the policy on the provision of welfare housing in 1998 is an important milestone in Chinese urban housing reform, which resulted in the market-oriented urban housing provision system.

In the meantime, urban workers were still earning comparatively low wages so it was unrealistic for them to buy commercial houses on the market.

In September 2011, the State Council announced the "Guidance on affordable housing construction and management" requiring focus on public rental housing development. The Land and Resources Department instructed Beijing and Shanghai, in January 2012, as the pilot cities for building public rental houses with collective owned land.

All these programs implemented since the 1980s are meant to support the housing reform but they play a more important role for being part of social security and social welfare for the population. Thus, the social impact of these programs in China is considerable. Li et al. (2014) assess the social impacts of affordable housing projects through a new methodology and conclude that these projects produced quite positive social impacts, and reveal potential improvement such as socio-economic effects that should be emphasized. For these indicators, they cite as pressing issues: reduced crime around the projects studied, better communication, convenient water supply facilities and improved outbound public transport.

In order to gain deeper understanding of the affordable housing projects and maximizing the positive social effects of those projects, we have to take a look at these programs first. Examples of such programs are:

- **Peaceful Living Project (PLP):** According to Wang (2001) this project was launched in 1995 and co-financed by a loan from the central government (40%) and local governments self-funding (60%). The target

population was middle- and low-income families. The PLP was the first ownership-oriented affordable housing program.

- **Economic and Comfortable Housing (ECH):** This program was launched in 1998 and is still operational. The target population is low-income families, which are often capable of certain payment or with certain expected payment ability. It is supported by land transfer from the government, and developments are free of all kinds of administrative fees (such as infrastructure fees) and enjoy tax discounts. The Government determines the house prices, and the house owners own limited property rights.

- **Two Caps Housing:** This program was launched in 2006 and is still operational. Local governments may organize bidding for land to construct houses with certain constraints on the size and price of each apartment. The winner of the bid has to build houses that meet the agreed standards and sell them at the pre-determined price to qualified buyers.

- **Cheap Rental Housing (CRH):** This program was developed since 1999 until 2004, and then on a second phase since 2007. The target population is the lowest-income families. The houses constructed in the program are owned by governments or public organizations. Governments lease these houses at very low rents (or even waive rents altogether) to low-income families. The beneficiaries of the program have no ownership rights. According to Zou (2014), the Central government urged all cities and counties to establish a CRH provision system by 2007 because some households could not afford their own house. However the development of Cheap Rental Housing is still sluggish due to a lack of complete alignment on the interests of central government, local governments and low-income households.

- **Public Rent Housing (PRH):** Public rental houses are provided by organizations, delegated by governments, to middle- and low-income families at market prices. Meanwhile, the government subsidizes a certain percentage of the rent to these families. The program was meant to solve the living problems of those who do not qualify for CRH but cannot afford economic and comfortable houses. The PRH program in Changping District, Beijing was at an advanced stage in June 2012 and was ready for operation.

The Ministry of Housing and Urban-Rural Development of the People's Republic of China (MOHURD) announced a document on merging the operation of public rental houses and cheap rental houses in 2013 ("Notice Regarding Combining Operations of Public Rental Housing and Cheap Rental Housing"). This announcement is explained by the State Council's forwarded document "Notice Regarding Deepening Economic Mechanism Reform Key Issues" initiated by the National Development and Reform Commission and the "Recommendations Regarding the Construction and Management of Affordable Peaceful Living Projects" initiated by the General Office of the State Council. This announcement stated that public rental housing and

cheap rental housing are harmonized as “Public Rental Housing” starting from 2014.

There are many problems with the implementation of the “owning-oriented” affordable housing programs (Economic and Comfortable Housing and Two Caps Housing), such as the lack of affordable housing property and loose eligibility standards. Economic and comfortable houses are targeted at middle-and low-income household but the main buyers are middle-and high-income people. This is because there is no obvious difference between commercial houses and economic and comfortable houses. The economic and comfortable houses have no evident price advantage. Also, the economic and comfortable houses do not work well as part of social housing program. The eligibility screening process of these houses is not strict and formal (even developers can decide who is eligible for these houses in some places). Some developers are so motivated by these affordable upper-income customers that they prefer to build larger houses to attract these upper-income clients which also make it more difficult for middle-and low-income families to buy an affordable and comfortable house for their income level. The debate regarding Economic and Comfortable Housing is mainly on the positioning, pricing and quantities of these houses. For positioning, in some districts, economic and comfortable houses are even constructed such as villas which well exceed the area standard of economic and comfortable houses. In Tianjin “Meijiang” Economic and Comfortable Housing Zone, there are even garden villas which average 170 m² per unit with the largest one being 269 m². Free riders are common in the provision of economic and comfortable houses while the low income households are powerless. As for the pricing issue of economic and comfortable houses, since the land for economic and comfortable houses is offered by the government with several tax reductions, the economic and comfortable houses should naturally be cheaper than the commercial houses in the same location. However, in practice, the economic houses are not economic at all. There is great potential for China’s housing market. With the economic development, population growth and urbanization, huge housing market potential is expected in the coming 30 years. However, Economic and Comfortable Housing cannot meet the needs of middle-and low-income families with small scale projects while a larger scale project might hurt the commercial housing market. So the perfect calculation of the right amount is another issue. There are also some contradictions in economic and comfortable housing. On the one hand, economic and comfortable houses are socially affordable in the housing supply system according to the regulations and policies. On the other hand, in practice, the construction and sale are clearly in line with the market. The large quantities of economic and comfortable houses cannot be borne by the government alone in terms of developing, constructing and selling. But for the real estate developer, economic and comfortable houses are just operation activities just like the common commercial houses. The developers will build larger sized and luxury conditioned houses to attract high-income people. This will further bias the original target of the project. Plus, the supervision of the

Programs	Period	Tenure	Target Groups
PLP	1995-1999	Ownership	Low- and moderate-income households
ECH	1998-Present	Ownership	Low- and moderate-income households before 2007; Low-income households after 2007
TCH	2006-Present	Ownership	Middle class who cannot afford market housing
CRH	1999-2004 2004-2007	Rental	Very poor households
PRH	2010-Present	Rental	Low- and moderate-income households; new employees, and eligible migrants in some cities

Note: above contents are summarized according to the public announcements by the government.

Table 1. Affordable housing programs in China. Note: above contents are summarized according to the public announcements by the government.

construction of economic and comfortable houses is underdeveloped. The income level varies among different areas so this makes it harder to set a clear standard for middle-and low-income level households who are eligible for such houses.

Moreover, Economic and Comfortable Housing programs are regarded as a temporary measure to solve living problems of the middle-income households who are willing to owning a house instead of renting. Since the execution process of such programs was not satisfactory, the prospect of such projects is unclear.

A summary of these programs, their dates of implementation and the population targeted by them can be found on the following table:

3. Using PPP for affordable housing in China

PPP projects involve an important risk transfer to the private sector when compared with projects that are delivered through traditional procurement. PPPs create value when the risks arising from these projects are allocated among the players who can handle them best. The precise allocation varies case by case. (European Commission 2004)

The concept of PPP is confusing among politicians and the social arena. It is, therefore, rather necessary to clarify what public-private partnerships imply in order to avoid misunderstanding. According to the Canadian Council for Public-Private Partnerships (Moskalyk, 2008), the definition of PPPs is “a cooperative venture between the public and private sectors, built on the expertise of each partner that best meets clearly defined public needs through the appropriate allocation of resources, risks and rewards.” In the present study the concept of PPP is broader and inclusive, originating from the European Commission (2004) definition of PPPs as follows:

In general, the term (“PPPs”) refers to forms of cooperation between public authorities and the world of business which aim to ensure the funding, construction, renovation, management or maintenance of an infrastructure or the provision of a service.

In these arrangements the private developer is expected to perform all the developments that are comprised in

the project, while the public agencies may take the roles of regulator, enabler, moderator and facilitator all at once (Abdul-Aziz & Jahn Kassim, 2011).

There are some common misunderstandings when it comes to PPPs:

- The concept denotes “an image of private-sector, for-profit business, working in parallel, perhaps as an equal partner, with the public sector to provide some societal benefit” which can be misleading to some extent according to Wallace et al. (1998). Most of the time, it is the public sector that has been the main motivator and initiator that starts the partnerships, yet their importance is not reflected in the term title.
- PPPs are often understood as a synonym of privatization. Savas (2000) regards public private partnerships as a particular malleable form of privatization. This is wrong however - as Bult-Spiering and Dewulf (2008) write: “public and private parties share costs, revenues and responsibilities in a partnership, whereas in privatization, private sectors take all the responsibilities over provisions.”

There are certain general characteristics which are common to PPPs. PPP projects usually have a relatively long duration and this kind cooperation involves both the public and the private partners working together on different parts of the project. Funding of the PPP projects mainly come from the private sector, often in the form of complex arrangements among various players. In some cases public funds, which may be substantial, are used to co-finance the project. The private sector usually manages the design, construction, operation and maintenance of the related infrastructure or public service, retaining the associated risks.. The public sector stands for the public interest and tries to monitor the quality of the services provided

Advantages and disadvantages of PPPs

Partnerships between the public and private sectors lead to “synergy”, the pooling of expertise, resources and skills in a collaborative fashion rather than a purely competitive one. Each party contributes its strengths and delivers a better outcome at lower cost (Houghton & Whitney, 1989; Mackintosh, 1992). A further advantage is that risks are shared between public and private sectors at different stages (Shen, Platten, & Deng, 2006). The risk of cost overruns and project delays can be drastically reduced with the commercial disciplines brought in by private sectors (Ho, 2006; Li & Akintoye, 2008). Also, “it becomes possible to allocate particular risk to the partner best able to manage the risk” which makes the partnerships achieve value for money (Allan, 2001). Regarding the cost of PPP projects, Hart (2003) concluded that the contracting costs, which seem to be secondary to financing issues, may shift to become the central issue. Hart distinguishes between productive investment and unproductive investment in the construction phase of projects. Productive investment reduces operational costs and enhances quality of the service. Unproductive investment saves operational costs but

quality decreases. In conventional provision (“unbundling of building and operation”), the builder internalizes neither the social benefit nor the operating cost. So the builders under conventional provision do too little on the productive investment and just the right amount of the unproductive investment. However, under a PPPs agreement (“bundling”), the private party does more of both the productive investment and the unproductive investment. Under these conditions, the bundling model may outperform the conventional provision in some sectors (Hart, 2003).

The private sector can inject flexibility, technical knowledge, fair risk allocation to players who handle this best, marketing expertise, and quick reaction to unexpected changes of PPPs projects. All the above contribute a lot for successful PPPs in infrastructure developments (Abdel Aziz, 2007; Harris, 2004; Li et al., 2005; Zhang, 2005).

Finally, through PPP arrangements it is the private sector the one in charge of financing the construction of the project. Budgetary constraints and technological changes have left many governments almost no space to uphold large-scale investments in delivering public services (Allan, 2001; Bult-Spiering & Dewulf, 2008). Thus, PPPs allow to bring forward investments in time, developing projects that would have to wait several years under the traditional procurement approach.

PPPs also present some disadvantages however. Although PPPs are taken as a way of providing public services at little or no cost to the general public, this does not mean it is cost free. Kumaraswamy and Zhang (2001) introduced several BOT (Build-Operate-Transfer) venture cases that had encountered problems due to cost overruns, unrealistic prices and income projections, and legal disputes between private and public partners. Also, in occasions the tendering process of large PPP projects is biased to favor well-known companies, resulting sometimes in ineffectiveness, slow progress, lack of transparency and even widespread corruption (Rui et al., 2008) – something that can be avoided with an open tendering (Xu, 2008).

Why introducing a PPP housing program in China?

The amount of investment required for affordable housing construction projects, as previously stated, is quite large. As a result, Chinese public authorities suffer **budgetary constraints** or lack of sufficient financial resources for solving affordable housing problems. Using a PPP social housing program would take some pressure from the budget, and still allow many Chinese families to have affordable dwellings. Financing advantage is often the dominant motive for adopting PPP infrastructure projects in developing countries.

Although important, this shouldn't be the only motivation. There are already a large number of companies in China with expertise in the construction and operation of buildings. Bringing those capabilities to a social housing program through a PPP could lead to high standard public products or services provision - that is, higher standards than if the government was to implement the programs on its own, without transferring enough risks to other parties that have high capabilities in the design, construction, operation and maintenance

of buildings that may be used for social housing programs.

4. Potential areas for affordable housing PPPs in China

In this section, we will make an in depth analysis on the possibility of applying PPPs to affordable housing projects in China.

The affordable housing programs can be categorized in two broad-groups: renting-oriented and ownership-oriented. CRH and PRH are classified as renting-oriented as the objective of such programs is to provide qualified people with houses for renting. While ECH and TCH are grouped as ownership-oriented since they are intended for people who are capable of buying or owning a house.

As for ownership-oriented housing program, the funding issue is not as prominent as renting-oriented housing programs, because they are aimed at middle- and low-income households who can afford to purchase a house/apartment. Thus, the use of PPPs in these programs would require less financing from the private sector, which in practical terms would limit the capacity of the Government to effectively transfer risk to the private sector sponsors. This issue questions the logic of using a PPP arrangement for this sort of programs.

Therefore, in what follows we shall focus on the possibility of applying PPPs to renting-oriented social housing programs.

PPPs could be implemented to support the current social housing programs. The private partner could be required to fund, design, construct, operate and maintain the dwelling units. These units would then be rented to families. The economic incentive of the private sector would lie in the remuneration that it perceives for the capital and services provided, as well as the risk assumed – a remuneration that could be financed thanks to the rents of the families that would rent the dwelling units, plus eventually (if this is not enough) some additional contribution from the government.

The target population for renting-oriented housing programs is low- and moderate-income class households which makes gloomy expectation on future rent cash flow. Although the government may subsidize these tenants in various ways, the uncertainty and comparatively longer time span of return could harm the attractiveness of these programs for investors. So if PPPs should be used for China's affordable housing, their strength in cost efficiency and funding resolutions should be further highlighted and made the best use in renting-oriented affordable housing.

Given that the public rental housing and cheap rental housing share many similar characteristics, we will discuss here the potential applications of PPPs for such programs together.

Here we present a possible PPP model for Cheap Rental Housing and Public Rental Housing programs which we will call Design-Finance-Build-Maintain-Operate-Transfer plus Special Arrangements on Land Provision Model ("DFBMOT+SALP"). Two components form the whole model, the prevailing traditional PPP model of Design-Finance-Build -Maintain-Operate-Transfer and a specification regarding the spe-

Figure 1. Simplified Proposed DFBMOT PPP arrangement

cial way of offering land to private land operators.

DFBMOT PPP arrangement

The process would work as follows: a contract would be made between the public sector and private investors. The new Public Rental Housing project (merged by Cheap Rental Housing and Public Rental Housing) is granted to certain investors through bidding or other competitive selection method. Investors are responsible for designing, financing, building, maintaining and operating the construction within a time span specified in the contract. On the other hand, governments have to provide the land in which the project will be developed, provide compensation to the private sector investors (for instance letting them keep the rents paid by the beneficiaries of the program, eventually complemented with some additional funds if necessary), keep their promise of the agreed special policies supporting such projects and taking over the project after the maturity of the contract.

During the tendering process, the government should focus on the financial and technical capabilities of private companies. The primary reasons for choosing PPP provision are to improve the quality standards of the program and to solve the absence of capital in Public Rental Housing program. Penalty and reward clauses should be included in the contract so as to ensure the private and public parties act professionally.

The above figure1 proposes a PPP arrangement in which design, financing, construction, availability and demand risks are transferred (are least to a certain extent) to the private sector. This generic scheme could be modified in several ways. For instance:

- No transfer of demand risk to the private sector: tenants would pay the monthly rent to the public management entity in charge of the project, that would perform an availability payment to the SPV.
- Depending on the economic conditions of the project (that is, if the project is self-financing or if it needs some economic support in order to guarantee its feasibility), the Public Sector could perform some payments to the SPV in order to compensate the lack of revenues coming

Partners	Obligations
Government	Organizing bidding for land tenure
	Harmonizing the target developing land with its overall surroundings and coordinating all the factors under the developing plan
	Setting up comprehensive, clear and reasonable specifications, standards and management regulations regarding PRH constructions
	Possessing property right of those cheap rent houses and allocating them fairly
	Supervising and checking the whole construction with diligence
Private Sector Sponsor	Designing the houses according to contract specifications
	Constructing cheap rent houses as agreed in the contract
	Taking charge of financing for Public Rental Housing construction
	Assuming the maintenance obligations until the termination of contract
	Transferring the whole project back to the government unconditionally

Table 2. Obligations of Government and the Private Sector Sponsor under the previously described PPP arrangement.

from the tenants. If the tenants could pay very high rents, then the opposite could also be implemented: the SPV paying a canon to the Public Sector, that could be used to pay for the Public Sector monitoring of the contract.

- The public sector could be a shareholder in the SPV, creating an effective Joint Venture between the public and the private sectors.

Table 2 represents the obligations of both the public (government) and the private (developer) parties.

The partnership binding contract will specify the investment, project duration, transfer clause, quality standards etc. Such a contract can constrain the cost of the projects and allocate risks efficiently. For example, adding maintenance obligations to the private partner motivates the private company to build the houses to the required standards.

The project company can use the market to raise funds and divide the capital burden into several stages which makes the capital more efficient. Also, there is a vertical integration of the whole project, namely the preparing, designing, implementing and managing process are all integrated and handled by the project company. It enhances the connection of each stage and helps reduce overall costs, since a lifecycle approach is used. As private investors take the responsibility of maintaining the houses after the construction within the contract period, they have more incentives to build qualified houses to avoid following quality issues in order to keep the whole cost low.

SALP

The private sector sponsor will need to recoup its initial investment. If this was a regular private real estate development in China, an important part of this investment would be destined to land acquisition rights. Reducing the cost of land acquisition rights to the private sector sponsor would contribute to the project requiring a lower capital expenditure, and ultimately in having a low rent.

Governments can cooperate with private real estate developers by offering cheap rent houses in way of co-developing land. This represents an option of

involving private capital in construction and provision of public rental houses. This is achieved by providing developers with the right to develop certain land at a discount price and in the meantime requiring certain proportion of the construction land used for public rental houses. It is also an initiative of Public Rental Housing project given by the government since this is like implicitly giving away some payment obtained on the land transfer to private developer. It saves some detailed processes and problems for the government since the public rental houses are explicitly offered by the developer. The cost is directly reduced from the land transfer payments. Namely, the private developer has already deducted the cost of offering cheap rent houses in their quotation.

In summary, we regard the Design-Build-Finance-Maintain-Transfer plus Special Arrangements on Land Provision Model ("DBFMT+ SALP") in the construction of public rental houses, as valuable for the following points. First of all, the operation efficiency of the asset is enhanced as the private sector keeps on managing these houses instead of the government providing maintenance themselves. The acute insights of the private sector of the market and advanced management mechanisms can make the whole project work better. The government is also free of these detailed operations and management issues. All in all, since land is offered by the government at a discount price, or even free, which makes the final charge to end users comparatively less and the incorporation of maintenance work by the private sector in the agreement, makes the project quality better which is another benefit for the end users.

What is more, it helps solve the financing problem. Private developers can use their own capital or financing through capital market and enlarge the financing channels for public rental house construction. Since the private investors get all their investments back after a rather long period of constructing and operating period of the project, the government is not exposed to any significant financial pressure during this time. Also when the contract is finished, the government can get all the property rights of the public houses back unconditionally which makes the previously money-consuming public rent housing projects affordable for the public sector. Moreover, since the government invests less or no capital investment at all, the whole project is constructed and managed by private investors which have an important incentive to speed up the construction of public rental houses so that the middle-and low-income households can move into those houses earlier. Private developers have the right and obligation to operate after the construction so that the investors can make a profit through rent collection and other subsidy or favorable policy support.

So using PPPs in Public Rental Houses is a win-win solution for both the public and private sectors and benefits the general public both on the low rents and satisfying quality of those houses.

5. Conclusions

China's social housing reform has made some progress. Several affordable housing programs offer different income level households different ways of owning or renting a property. But the lack of financing support and project efficiency is still an urgent issue.

China's social housing programs can be categorized in two broad groups: programs which aim at helping middle-and low-income households rent a house, and programs which are for middle-income households to own a property.

Based on our analysis of those affordable housing programs, we draw the conclusion that PPPs are more favorable for renting-oriented type projects than owning-oriented projects. The advantages of the PPP model for China's renting-oriented affordable housing programs are: the provision of private financing, the enhancing efficiency by involving private sector experts and the statement of bundling constructions and maintenance and operation work in the contract, which motivates the private sector to build properties up to standard for its cost efficiency from the whole project perspective.

More specifically, as for the renting-oriented affordable housing programs we propose a Design-Build-Finance-Maintain-Transfer plus Special Arrangements on Land Provision Model ("DFBMOT+SALP") which falls in PPPs scope. Hopefully, it offers some implications for future academic research.

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