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# Factors Influencing the Project Duration of Urban Village Redevelopment in Contemporary China

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**Abstract:** Project duration is one of the methods to measure the efficiency of project implementation. This study identifies the factors influencing the project duration of urban village redevelopment projects (UVRPs) in China. Based on the theory of new institutional economics and behavioral economics, this study develops three hypotheses regarding the causal relationship between institutional arrangement and project duration. Statistical analysis of data on 439 UVRPs collected from seven Chinese cities revealed that projects implemented through top-down institutional arrangements were more likely to take a long time than those implemented through bottom-up institutional arrangements. Projects implemented through top-down and government funding were more efficient than those implemented through top-down and villager funding. For bottom-up projects, there was no conclusion about whether village funding or private developer funding led to shorter project duration. Other determinants, including city, project attributes and initiation year, number of households involved, size of temporary relocation fee, and methods of selecting relocated housing, calculating temporary relocation fee and calculating relocation area influenced project duration.

**Keywords:** bottom-up redevelopment; urban village; project duration; land redevelopment; new institutional economics; China



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## 1. Introduction

The development, continuance and demolition of urban villages in different Chinese provinces reflect the various developmental stages of urbanization of the nation after the implementation of the Open Door Policy in 1978 [1]. These also illustrate the different redevelopment stages of China's urban-centered growth in the post-reform era [1]. Urban villages provide low-rent accommodation for new immigrants, facilitating community interaction [2]. However, there are potential hazards that could be brought by the proliferation of urban villages. Thus, it is dangerous to conclude that urban villages offer an optimal way to house marginalized groups in urban areas [3]. Considering this, neoliberals regard urban villages as the origin of various social, spatial, economic, and political problems [4]. Historically, the demolition of urban villages was inevitable in the process of urbanization. Urban village redevelopment projects (UVRPs) can effectively release land value, upgrade environmental quality, and improve living conditions [5]. Yet, it can also deepen class conflict due to economic antagonism between the dispossessed farmers and the upper class [6,7]. Therefore, in the process of urban redevelopment, the negative impacts of urban villages have aroused concern among academia and local governments. Local governments have committed to modifying or finetuning policies regarding future UVRPs in order to balance shareholder rights. To achieve the desired outcomes, local

governments are exploring and adopting various approaches to implementing UVRPs, with different cities and districts adopting different modified urban village redevelopment approaches, exemplifying the neo-liberal and heterogeneous characteristics of urbanization in China. In previous studies, various indicators such as increased land value and enhanced land use efficiency have been used to evaluate government performance in facilitating UVRPs [8,9]. However, project duration, which is an important indicator, has rarely, if not ever, been employed to measure the outcome of UVRPs.

The developmental stages of UVRPs often have set timeframes as outlined in government agendas. On initiation of an UVRP, a consensus agreement of all affected villagers is required in order to transfer their property rights to the land and housing over to the government. Demolition and reconstruction can only proceed after a consensus agreement is achieved, which directly influences the timeframe of the entire reconstruction project. As delays in reconstruction projects lead to extra social and financial costs to the government, developers and residents, the local government generally adopts a target timeframe for completing the contracting stage [10]. This is usually an ambitious deadline in order to ensure the effective use of land and decrease relocation costs that arise from temporarily housing the original residents [11]. However, constraints are commonly found in the implementation process and most UVRPs are unable to comply with government targets [12].

The causes of the delays in UVRPs remain unclear in the extant literature. From the perspective of new institutional economics, this study aims to investigate the main factors influencing the project duration of UVRPs. More specifically, this study attempts to answer the following two research questions: (1) What institutional arrangements, top-down or bottom-up, can help to shorten UVRP duration? (2) What are other factors that influence, and to what degree do they influence, UVRP duration? The novelty of this study lies in the fact that it sheds light on project duration, a significant indicator for measuring the efficiency of UVRPs and local government performance in UVRPs. Theoretically, this study contributes to determining the factors that influence UVRPs and measuring project duration through dynamic statistical modelling in order to predict the most efficient institutional arrangements for UVRPs. Practically, this study provides scientific evidence to interpret the possible causes of delays to previous UVRPs, with policy implications for future UVRPs.

## 2. Research Hypotheses

To answer the first research question, this study classifies institutional arrangements of UVRPs with reference to the decision-making approach and the source of funding. This study utilizes two decision-making approaches, “top-down” and “bottom-up” approaches, in order to differentiate institutional arrangements. The funding source for constructing the relocated high-rise building is classified into villager funding, government funding and private developer funding. The two decision-making approaches and the three types of funding source constitute four scenarios of institutional arrangements of UVRPs, namely top-down with government funding (TGF), top-down with villager funding (TVF), bottom-up with private developer funding (BPDF), and bottom-up with villager funding (BVF). The overlaps of the two dimensions of the institutional arrangement can be theorized as a new variable: DMSE.

The top-down institutional arrangement means that UVRPs are led by the local government. The government has not only accumulated certain experience in implementing these projects but has also developed more effective approaches to pooling financial resources to fund the project. With the accumulated experience, the government can save costs on policy development and contract design. Government-led UVRPs in the same district are redeveloped guided by the same set of policies and contracts, which are developed based on the social-economic characteristics of that specific district. The unified “transparency policy” that ensures disclosure of factual information and openness of information to the public encourages public participation, because a bandwagon effect occurs, where villagers make decisions primarily because other villagers are doing something regard-

less of their original beliefs. However, there is always some resistance to UVRPs, as the designed policies can never satisfy every affected villager. In some cases, some villagers may receive more benefits than others because of the “one-size-fits-all” (*yidaoqie*) policy. The local government often settles this issue through forced eviction when the project is being redeveloped on the basis of public interest, such as for the construction of an airport, highway, subway, university, or hospital. In such cases, the local government can use the power of eminent domain to purchase their property rights forcibly with appropriate compensation in a legitimate way. The active roles of local governments serving as both policy maker and project implementer gives them an advantageous position. Vulnerable villagers often choose to compromise and sign the contract when confronted by the powerful government. All these factors generally help the local government to expedite the redevelopment process.

The bottom-up institutional arrangement means that village committees (VCs) are empowered to develop their own policies based on the guidelines put forward by local governments. The costs of policy development and contract design are relatively high because of the high levels of the asset specificity of policies and contracts. The high levels of asset specificity manifest in terms of: (1) the time VCs spend on negotiation, (2) the time VCs use to build up informal strategies; (3) the time VCs use to handle resistance from affected villagers. From the literature in the international context, a bottom-up approach to urban or rural development (and redevelopment) has long been advocated for fairness [13,14], community building [15,16] and reduced friction [17,18]. Yet, the popularity of the bottom-up or community-led approach for rural development has declined quite recently, particularly in Europe [19]. On the other hand, there is a dearth of empirical evidence suggested that a bottom-up approach can shorten project duration. Even worse, bottom-up land readjustment projects for urban development have been criticized for eternal postponements or delays in Portugal [20]. Similarly, a land readjustment approach has been considered a time-consuming process for urban land development [21,22]. To study how different institutional settings of UVRP affect project efficiency, three hypotheses, as presented in Table 1, will be empirically tested in this study. The rationales behind their development are discussed below.

**Table 1.** Hypotheses for empirical testing.

Hypothesis	Hypothesis Statement
H1	<i>The project duration of UVRPs implemented with a top-down approach is shorter than those implemented with a bottom-up approach, keeping other factors constant.</i>
H2	<i>The project duration of UVRPs implemented with TGF is shorter than those implemented with TVE, keeping other factors constant.</i>
H3	<i>The project duration of UVRPs implemented with BVF is shorter than those implemented with BPDF, keeping other factors constant.</i>

First, VCs need to negotiate repeatedly with private developers regarding compensation and relocation in order to design suitable policies. In addition, VCs need to communicate with affected villagers on the details of the policies for their support and the proposed policies can only be considered for approval when a minimum of two-thirds of the villagers show their support. Second, as VCs cannot use the power of eminent domain to expedite the project, they often use “informal strategies”, such as social networks and relative clans, to facilitate policy development. As a result, the costs of negotiation are much higher in bottom-up institutional arrangement. VCs generally need to negotiate with householders one by one, and a considerable amount of time spent negotiating is required when dealing with those who are not willing to participate in the redevelopment project. Third, VCs face an ethical risk where the selection process involves bribes and corruption. In other words, incompetent members of VCs may be selected as village cadres. If so, corruption and abuse of power easily occur when private developers are invited to fund the project. Resistance

from affected villagers may delay the project. Therefore, based on the reasoning above, Hypothesis 1 is developed as follows:

**Hypothesis 1 (H1).** *The project duration of UVRPs implemented with a top-down approach is shorter than those implemented with a bottom-up approach, keeping other factors constant.*

The top-down institutional arrangement can be differentiated into TGF and TVF when considering the dimension of funding source. When the relocated buildings are funded by the local government, the government is responsible for bearing the costs of searching for a qualified constructor or a private developer. Affected villagers cannot obtain information about the relocated buildings. The uncertainty about their quality and construction speed can increase the costs of information acquisition. In addition, the cooperation model between the private developer and local government is similar to the public–private partnership model. The transaction costs incurred are attributed to the potential factors of the principal–principal relations, renegotiation and hold-up problems, and soft budget constraints [23]. Many researchers have claimed that the local government and the private developers have formed a land interest-based coalition [24,25], which may be profit driven and neglect the interests of affected villagers by diminishing compensation. Consequently, resistance may be aroused and the time required for resolving the conflicts and disputes may delay the project.

In the TVF institutional arrangement, the affected villagers fund and construct the relocated buildings. They bear the costs of searching for a constructor or a private developer. Through this approach, the affected villagers can master the construction information and thus their concerns over the speed of the construction and the quality of the relocated buildings are eased. Furthermore, the newly constructed neighborhoods (four-story low-rise houses) can give the villagers a strong sense of belonging. However, such a setting is often adopted in peri-urban areas with sufficient land resources or initiated in early years. With increasing urban growth, land use is becoming increasingly intense. Relocated high-rise buildings are required by the local government to optimize land use, especially for the practice of new community agglomeration initiated in recent years. Despite the construction fees of relocated high-rise buildings funded by the villagers, the local government holds responsibility for construction. The latter practice resembles what is undertaken in a government-funded project, but the size of the transaction costs involved is different. The construction fees the villagers need to pay are influenced by different factors (e.g., the size of the relocation area). During such a process, the time used for measurement and calculation is long. Sometimes, the villagers are dissatisfied with the outcomes of the evaluation. To settle this issue, repeated negotiation and conflict resolution often increase the size of the transaction costs. Therefore, based on the predictions above, Hypothesis 2 is posed as follows:

**Hypothesis 2 (H2).** *The project duration of UVRPs implemented with TGF is shorter than those implemented with TVF, keeping other factors constant.*

The bottom-up institutional arrangement can be differentiated into BPDF and BVF when considering the dimension of funding source. Since VCs have limited financial resources to fund the redevelopment projects, cooperation with the private developers becomes necessary and inevitable in some cases. The practice of VC-led UVRPs funded by the private developers is implemented in a few cities in contemporary China, and this is one kind of innovative institutional reform, meaning that the VCs are empowered to implement UVRPs and the private developers are allowed to fund the projects. However, the relatively weak social networks become a barrier for the VCs to find a reliable co-operator (private developer). A consensus between a VC and a private developer might take a long time to achieve due to the continuing and repeated negotiations. As a funder, private developers tend to take more active roles in the redevelopment projects. For instance, they are invited to participate in the policy-making process in order to discuss compen-

sation and relocation issues with the VC. Both participating parties want to maximize their benefits from the redevelopment projects. The local government generally does not intervene in the negotiation and bargaining processes. Therefore, it often takes a long time to reach a consensus on the final compensation and relocation policies, including the size of monetary compensation for each household, temporary relocation fees, and the floor plan of the relocated buildings. The repeated discussions and revision of policies increase the transaction costs.

In contrast, the practice of BVF indicates a more active role of VCs, during which the VCs are empowered to design relocation policies based on the guidelines put forward by the local government. Since the construction fees of relocated buildings are funded by the villagers, VCs need to pool the funding from the villagers based on the floor area allocated to them. In such a model, the private developer or constructor does not need to participate in the policy-making process to discuss compensation and relocation issues with the VC. It is assumed that the fewer the number of participants involved in the policy-making process, the lower the transaction costs will be. Therefore, based on the predictions above, Hypothesis 3 is set up as follows:

**Hypothesis 3 (H3).** *The project duration of UVRPs implemented with BVF is shorter than those implemented with BPDF, keeping other factors constant.*

### 3. Models and Methods

#### 3.1. Model Specification and Variables

##### 3.1.1. Dependent Variables

This study uses project duration (PD) as the dependent variable. PD is measured from the date when the local government or VC publicly announces the initiation of the UVRP to the date when all affected villagers signed the contract of transferring their property rights. During the data collection process, project dates required for the measurement of project duration were seldom included as not all local governments record relevant information. Through interviews with the government officials, village cadres and ordinary villagers, approximate project dates were identified. Some of them found the records of policies and contracts so that the date could be checked. As some of the dates can only be identified on a month and year basis, PD is transformed into a categorical variable, with seven categories (1 = very short to 7 = very long) in order to provide a more accurate measure, as shown in Table 2.

**Table 2.** Ranking results of PD.

PD	1	2	3	4	5	6	7
Months involved	0–3	4–6	7–12	13–24	25–36	37–72	73–
Meaning	Very short	Short	Fairly short	Normal	Fairly long	Long	Very long

##### 3.1.2. Independent Variables

The independent variable is the institutional arrangements of UVRPs. Institutional arrangements shape the interactions between the actors and determine the transaction costs incurred, which leads to different project durations. DM is a binary variable with two levels: top-down (coded “1”) and bottom-up (coded “2”). SF is a categorical variable with three levels: villager (coded “1”), government (coded “2”) and private developers (coded “3”). DMSF is a categorical variable with four levels: TGF (coded “1”), TVF (coded “2”), BVF (coded “3”) and BPDF (coded “4”).

##### 3.1.3. Other Possible Variables

In addition to institutional arrangements, other factors, such as the policies, time and spatial variation and project specificity are also considered as possible influencing factors. The specific explanations are provided in following sub-sections.

## Policy Variations

### *Relocation Method (RM)*

The two most adopted policies for relocating affected villagers: relocating them to a nearby location in the same village (hereafter referred to as in situ displacement) or relocating them to a place further away from the village. Villagers generally have a strong attachment to the land where they used to live [26], and in situ development allows affected villagers to remain fairly close to their previous neighbors, so the in situ displacement method is usually preferred by affected villagers. An approach which has the consent of villagers is usually easier to implement, leading to an efficient redevelopment process. Thus, different approaches might have different project durations.

### *Location Selection of Relocated Housing (LS)*

Because everyone prefers to live in a desirable location, on a desirable floor of relocated housing, LS is an approach used to settle the issues housing allocation. Generally, two methods are used to allocate housing units: the drawing of lots and the payment of selection fees. In some cities, policy makers link contract date with the order of drawing lots. This means that those who sign the contract earlier in the contracting stage have priority when drawing lots in the relocation stage. Therefore, the methods of LS might affect process efficiency.

### *Method of Calculating the Relocation Area (RAM)*

Each household can be allocated to a certain area of relocation housing if they choose in-kind compensation. However, in some cities, the relocation area is determined based on family size ("family size for flat arrangement"); and in other cities, it is determined based on the area of the household's original self-built house ("flat for flat arrangement"). The transaction costs associated with these two methods are different and consequently lead to different project durations.

### *Temporary Relocation Fee (TRF)*

TRF is the monthly subsidy paid to the affected households and it is intended to be used by the affected households to pay for rental accommodation during the period between moving out of their original home and into their new home. Economic subsidies are used to guarantee a smooth relocation process and to encourage households to participate in the redevelopment project. Regarding this arrangement, new institutional economists argue that the certainty can mitigate the costs of uncertainty reduction, and thus mitigate the size of transaction costs, leading to process efficiency.

### *Method of Calculating Temporary Relocation Fee (TRFM)*

TRFM is the method used to calculate the temporary relocation fee paid to the affected households. Some households may receive a greater fee, while others receive less. Thus, the perception of the fairness of the policies, the motivations to participate in the project and project duration may be influenced by the method of calculating the temporary relocation fee.

### *Award*

Awards are economic incentives, set out by local government or VCs, usually in the form of additional monetary compensation given to affected households on the condition that they sign the contract and vacate their self-built house within a given period of time. The objective of this policy is to encourage the affected villagers to cooperate with government or VCs to achieve process efficiency.

## Time and Spatial Variation

### *Initiation Year (IY)*

Government officials have accumulated experience in implementing UVRPs over the years, which might lead to process efficacy. In addition, villagers' willingness to participate in UVRPs might be enhanced in recent years for several reasons. First, the deterioration

of the physical environment of urban villages (i.e., deteriorating public facilities and dilapidation of self-built houses) has increased villagers' willingness to participate in UVRPs. Second, compensation for demolition increases along with the rising value of the urban land, which motivates some villagers to accept the offered compensation. Third, given the increasing influence of social media and stronger awareness of civil rights among citizens, the government has begun to change its strategy for implementing UVRPs. The government avoids forced evictions that could undermine the government's public image.

#### *Location of Urban Village (LUV)*

Generally, urban villages in more strategic or convenient locations are more likely to be covered in the government plans for redevelopment. Both the government and the affected villagers want to gain more benefits during the urbanization process. Villagers with houses in the preferred location always have higher bargaining power, which can be increased to an even higher level when the relocation project they are involved in is urgent to government plans. The impact of the location of urban villages on project duration is also one of the focuses in this study. Market prices of housing and land are contingent on the location of the land. Based on this relationship, this study has used the evaluation price evaluated by professional evaluation companies, which is used to compensate the affected villagers, as an indicator of location. The evaluation price is often presented as the price per square meter of relocated building and can be compared to the market.

#### *City*

Local government management style, local governmental revenue, local economic development and the habits of local villagers vary geographically [27]. All these factors interact and may jointly influence project duration in addition to regional disparity.

#### *Project Specificity*

##### *Number of Households (Households)*

The holdout problem tends to aggravate when land and housing requisition are implemented in an area with a large number of households. Different households could have diversified demands and interests. Some households may demand a very large sum of compensation while others may insist on in situ resettlement. The greater the number of households involved, the more likely it is that there will be an impasse in land acquisition due to the presence of nail households. The costs of repeated negotiation will increase when persuading the last several nail households to participate in the redevelopment. In addition, the cost of contracting for property exchange is positively related to the number of households. Therefore, a large number of households means a high probability of a long project duration.

##### *Project Attributes (PA)*

When implementing UVRPs for public interest, local authorities in China can use the power of eminent domain to acquire properties through compulsory purchase. As the definition of public interest is ambiguous in law, projects for non-public urban usage (e.g., industrial, commercial, and residential projects) can be attributed to the public interest in practice [28–30]. We call the latter case public interest with debate. Villagers generally have different responses to the project redeveloped in the public interest without debate and public interest with dispute. The different responses may impact their willingness to participate in the project, which may further increase negotiation costs and conflict resolution costs at a later stage. From the perspective of city image enhancement, although all UVRPs can be justified in the name of public interest, the impact of disputes at different levels regarding public interest have not been tested in a quantitative way. Therefore, to fill this research gap, this study classifies public interest into three different groups—public interest I, public interest II and public interest III. Public interest I refers to UVRPs for a public interest purpose which mainly relates to city image enhancement, including cases where land use rights are transferred to private developers for commercial development purposes; public interest II refers to UVRPs for public interest according to the 6 specific sit-



uations stipulated in article 3 of “Regulations for the requisition of housing on state-owned land and payment of compensation”; public interest III refers to UVRPs for public interest purpose mainly relating to economic development purposes, such as the construction of industry parks.

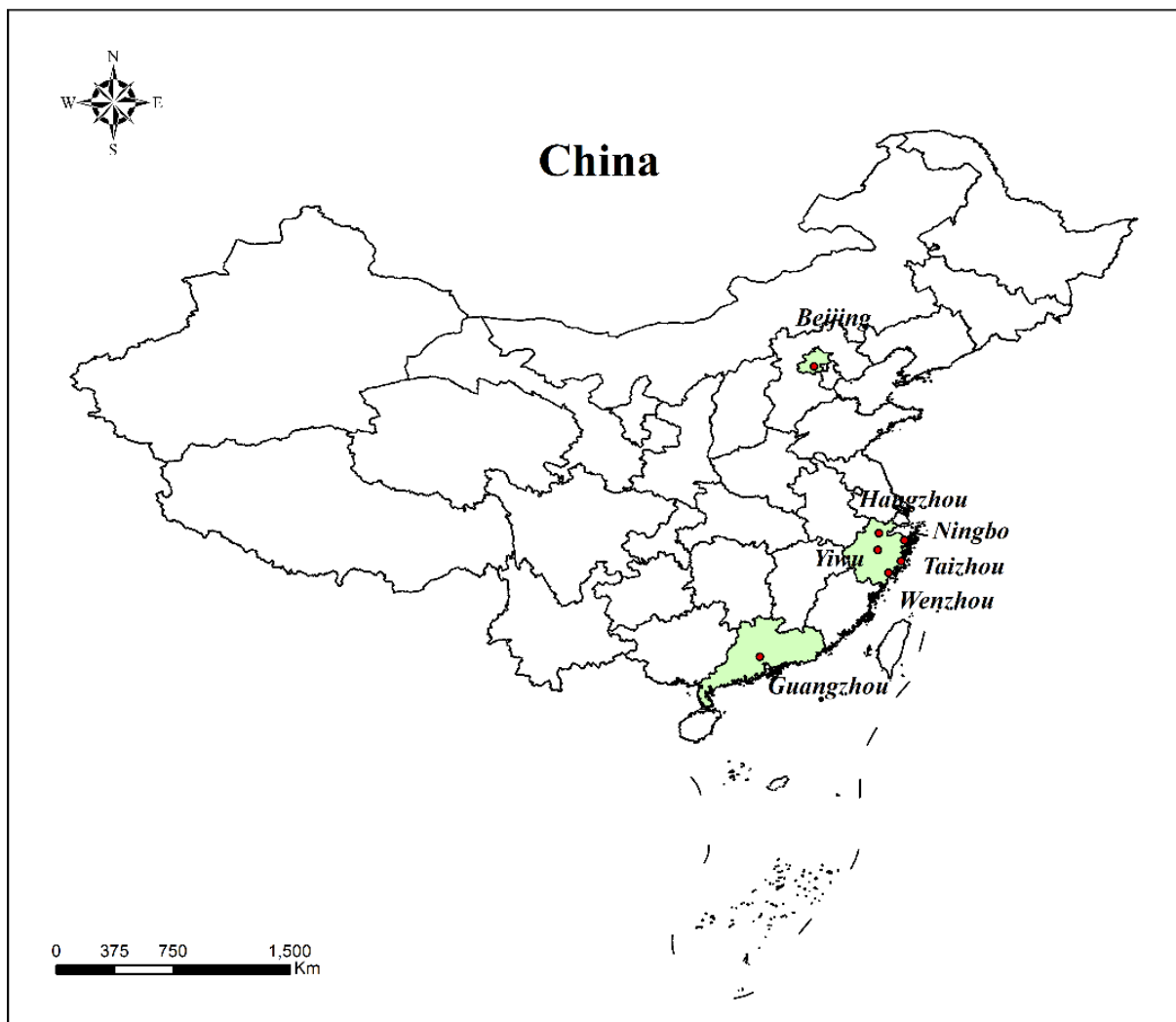
The next step is to analyze the data with the free statistical software R (R version 3.0.0, Vienna, Austria, R Foundation for Statistical Computing). Table 3 explains how the variables are measured and scaled.

**Table 3.** Measurement of variables.

Variable	Type	Measurement Unit	Value or Scale
PD	Ordinal	-	Very short = 1; Short = 2; Fairly short = 3; Normal = 4; Fairly long = 5, Long = 6; Very long = 7
DM	Categorical	-	Top-down = 1; Bottom-up = 0
SF	Categorical	-	Villagers = 1; Government = 2; Private developers = 3
DMSF	Categorical	-	TGF = 1; TVF = 2; BVF = 3; BPDF = 4
RM	Categorical	-	In situ relocation = 1; Relocation to another area = 0
LS	Categorical	-	Drawing lots with contract date irrelevant = 1; Drawing lots with contract date relevant = 2; Selection fees = 3
RAM	Categorical	-	Based on area = 1; Based on family size = 2; Based on area and family size = 3
TRF	Continuous	CNY	Subsidies for temporarily moving out
TRFM	Categorical	-	No subsidy = 1; Area-based subsidy = 2; Family size-based subsidy = 3
Award	Continuous	CNY 1000	Supplementary monetary compensation as an incentive
IY	Continuous	-	The year in which the UVRP started
LUV	Continuous	CNY 1000/m <sup>2</sup>	Monetary compensation as determined by the professional evaluation company
City	Categorical	-	Taizhou = 1; Ningbo = 2; Yiwu = 3; Wenzhou = 4; Beijing = 5; Hangzhou = 6; Guangzhou = 7
Households	Continuous	Count	The number of affected households
PA	Categorical	-	Public interest I = 1; Public interest II = 2; Public interest III = 3

### 3.2. Field Sites

The planned analysis requires a large number of observations. As this study examines the relationship between the institutional arrangements and project durations, it is important to include several cities in order to learn about this relationship in diverse contexts. Seven Chinese cities were chosen as the field sites. They are located in various eastern coastal regions from South to North, as shown in Figure 1. The specific reasons for selecting each site are presented in Appendix A. Formal fieldwork was conducted from 1 May 2017 to 1 December 2017. A total of 439 UVRPs were included in the analysis.



**Figure 1.** The location of study sites (by the first author).

### 3.3. Approaches to Data Analysis

As the dependent variable was ordinal, the method of ordered logit regression was used to analyze the data. Ordered logit regression is based on cumulative probabilities of the response variable. The dependent variable, PD, has 7 levels—very short (1), short (2), fairly short (3), normal (4), fairly long (5), long (6) and very long (7).

## 4. Results

### 4.1. Descriptions of the Data

#### 4.1.1. Descriptions of Dependent Variables

Descriptive statistics for the dependent variable are shown in Table 4. They reveal that the majority of UVRPs (over 63%) took at most one year to finish the contracting and approximately 21% of UVRPs took less than three months. In contrast, approximately 21.64% of UVRPs took more than three years to successfully persuade all affected villagers to sign the property rights exchange contract and 13.76% of UVRPs took over six years to achieve this.

**Table 4.** Descriptive statistics for the dependent variable.

PD	1	2	3	4	5	6	7
Months involved	0–3	4–6	7–12	13–24	25–36	37–72	73–
Meaning	Very short	Short	Fairly short	Normal	Fairly long	Long	Very long
Count	93	98	88	40	25	35	60
Percentage	21.18%	22.32%	20.05%	9.11%	5.69%	7.97%	13.67%

#### 4.1.2. Descriptions of Independent Variables

The large majority of UVRPs (89.75%) in contemporary China were implemented through a top-down institutional arrangement. This indicates that the local government still plays a very active role in the process of urbanization. However, only 10.25% of UVRPs were implemented through bottom-up institutional arrangements. As for the SF, 84.97% of UVRPs need the villagers to fund construction fees of the relocated high-rise buildings, while local government funding and private developer funding only account for 11.62% and 3.42%. When combining these two dimensions, the outcomes reveal that 78.13% of UVRPs were implemented through TVF. The small proportion (3.42%) indicates that BPDF is still at the experimental stage. The number of UVRPs implemented through BVF (6.83%) is twice the number implemented through BPDF.

#### 4.2. Statistical Tests

##### 4.2.1. Statistical Tests of Hypothesis 1

Table 5 presents multinomial ordered logit estimates of PD that were calculated to test hypothesis 1. Model 1 only includes the independent variable DM; Model 2 includes DM and the other influencing variables; Model 3 includes all the independent variables and other influencing variables. The negative coefficient of DM in Model 1 ( $-1.136$ ,  $p < 0.01$ ) indicates that UVRPs implemented through top-down institutional arrangements were more likely to be completed quickly if other factors are not held constant. However, the coefficient of DM was positive in Model 2 ( $1.315$ ,  $p < 0.01$ ) and Model 3 ( $1.335$ ,  $p < 0.01$ ), indicating that when other factors remain constant, UVRPs implemented through top-down institutional arrangements were more likely to take a long time ( $p < 0.01$ ) than UVRPs implemented through bottom-up institutional arrangements. Thus, the ordered logit regression indicates that Hypothesis 1 is not supported.

**Table 5.** Results of multinomial ordered logit estimates for testing Hypothesis 1.

Variable	Model 1		Model 2		Model 3	
	$\beta$	Std. Error	$\beta$	Std. Error	$\beta$	Std. Error
DM (ref. = 0) =1	$-1.136^1$	0.272	$1.315^1$	0.161	$1.335^1$	0.166
SF (ref. = 1) =2	-	-	-	-	$-0.513^3$	0.266
=3	-	-	-	-	$-100.402^1$	0.103
City (ref. = 1) =2	-	-	0.183	0.141	$100.571^1$	0.146
=3	-	-	$-0.890^1$	0.111	$-0.873^1$	0.110
=4	-	-	$-0.793^1$	0.163	$-1.119^1$	0.210
=5	-	-	$0.851^1$	0.096	$0.498^1$	0.098
=6	-	-	$-1.028^1$	0.105	$-1.308^1$	0.103
=7	-	-	$2.559^1$	0.018	$202.775^1$	0.046

Table 5. Cont.

Variable	Model 1		Model 2		Model 3	
	$\beta$	Std. Error	$\beta$	Std. Error	$\beta$	Std. Error
IY	-	-	-0.450 <sup>1</sup>	0.000	-0.452 <sup>1</sup>	0.000
Households			0.001 <sup>1</sup>	0.000	0.001 <sup>1</sup>	0.000
RM (ref. = 0)						
=1	-	-	-0.174	0.221	-0.177	0.220
LS (ref. = 1)						
=2	-	-	1.340 <sup>1</sup>	0.223	1.622 <sup>1</sup>	0.226
=3	-	-	5.281 <sup>1</sup>	0.126	5.294 <sup>1</sup>	0.130
PA (ref. = 1)						
=2	-	-	0.426 <sup>2</sup>	0.184	0.448 <sup>2</sup>	0.184
=3	-	-	-0.586 <sup>3</sup>	0.312	-0.600 <sup>3</sup>	0.313
TRFM (ref. = 1)						
=2	-	-	3.397 <sup>1</sup>	0.117	3.394 <sup>1</sup>	0.118
=3	-	-	3.889 <sup>1</sup>	0.122	3.854 <sup>1</sup>	0.123
TRF	-	-	-0.003 <sup>1</sup>	0.000	-0.003 <sup>1</sup>	0.000
Award	-	-	0.003	0.002	0.004	0.002
LUV	-	-	-0.033	0.022	-0.035	0.023
RAM (ref. = 1)						
=2	-	-	0.330 <sup>2</sup>	0.128	100.279 <sup>1</sup>	0.153
=3	-	-	0.029	0.150	99.928 <sup>1</sup>	0.135
1 2	-2.366 <sup>1</sup>	0.279	-905.660 <sup>3</sup>	0.011	-808.043 <sup>1</sup>	0.017
2 3	-1.291 <sup>1</sup>	0.265	-904.214 <sup>3</sup>	0.130	-806.595 <sup>1</sup>	0.131
3 4	-0.443 <sup>2</sup>	0.258	-902.947 <sup>3</sup>	0.165	-805.329 <sup>1</sup>	0.167
4 5	-0.003	0.256	-902.245 <sup>3</sup>	0.184	-804.626 <sup>1</sup>	0.186
5 6	0.317	0.256	-901.678 <sup>1</sup>	0.200	-804.058 <sup>1</sup>	0.202
6 7	0.886 <sup>2</sup>	0.264	-900.531 <sup>1</sup>	0.238	-802.908 <sup>1</sup>	0.238

<sup>1</sup>  $p < 0.01$ ; <sup>2</sup>  $p < 0.05$ ; <sup>3</sup>  $p < 0.1$ .

#### 4.2.2. Statistical Tests of Hypothesis 2

UVRPs were grouped into four categories: TGF (coded "1"), TVF (coded "2"), BVF (coded "3") and BPDF (coded "4"). Multinomial ordered regression with the same influencing variables as before was carried out to determine whether the combination of two-dimensions of institutional arrangement could influence project duration. These results lend support to Hypothesis 2. Table 6 reports the estimation results of Model 4 and Model 5, which were used to test Hypothesis 2, using TGF as the reference point.

Table 6. Results of multinomial ordered logit estimates for testing Hypothesis 2.

Variable	Model 4		Variable	Model 5	
	$\beta$	Std. Error		$\beta$	Std. Error
DMSF (ref. = 1)			DMSF (ref. = 1)		
=2	0.513 <sup>1</sup>	0.170	=2	0.378 <sup>2</sup>	0.167
=3	-0.823 <sup>1</sup>	0.107	-	-	-
=4	-101.225 <sup>1</sup>	0.057	-	-	-
City (ref. = 1)			City (ref. = 1)		
=2	100.571 <sup>1</sup>	0.125	=2	242.085 <sup>1</sup>	0.140
=3	-0.873 <sup>1</sup>	0.090	=3	-1.898 <sup>1</sup>	0.083
=4	-1.119 <sup>1</sup>	0.167	=4	-0.650 <sup>1</sup>	0.153

Table 6. Cont.

Variable	Model 4		Variable	Model 5	
	$\beta$	Std. Error		$\beta$	Std. Error
=5	0.497 <sup>1</sup>	0.093	=5	2.088 <sup>1</sup>	0.069
=6	−1.309 <sup>1</sup>	0.067	=6	−2.209 <sup>1</sup>	0.069
=7	202.776 <sup>1</sup>	0.023	=7	-	-
IY	−0.452 <sup>1</sup>	0.000	IY	−0.479 <sup>1</sup>	0.000
Households	0.001 <sup>1</sup>	0.000	Households	0.001 <sup>1</sup>	0.000
RM (ref. = 0)			RM (ref. = 0)		
=1	−0.177	0.211	=1	0.110	0.193
LS (ref. = 1)			LS (ref. = 1)		
=2	1.622 <sup>1</sup>	0.206	=2	1.685 <sup>1</sup>	0.234
=3	5.294 <sup>1</sup>	0.095	=3	3.425 <sup>1</sup>	0.009
PA (ref. = 1)			PA (ref. = 1)		
=2	0.448 <sup>2</sup>	0.184	=2	0.540 <sup>2</sup>	0.196
=3	−0.600 <sup>2</sup>	0.304	=3	−0.539 <sup>3</sup>	0.310
TRFM (ref. = 1)			TRFM (ref. = 1)		
=2	3.394 <sup>1</sup>	0.116	=2	1.922 <sup>1</sup>	0.110
=3	3.854 <sup>1</sup>	0.109	=3	3.298 <sup>1</sup>	0.103
TRF	−0.003 <sup>1</sup>	0.000	TRF	−0.005 <sup>1</sup>	0.000
Award	0.004 <sup>2</sup>	0.002	Award	0.004 <sup>3</sup>	0.002
LUV	−0.035	0.023	LUV	−0.028	0.026
RAM (ref. = 1)			RAM (ref. = 1)		
=2	100.279 <sup>1</sup>	0.110	=2	241.216 <sup>1</sup>	0.123
=3	99.929 <sup>1</sup>	0.114	=3	240.825 <sup>1</sup>	0.141
1 2	−808.870 <sup>1</sup>	0.009	1 2	−725.358 <sup>1</sup>	0.011
2 3	−807.422 <sup>1</sup>	0.130	2 3	−723.855 <sup>1</sup>	0.137
3 4	−806.157 <sup>1</sup>	0.166	3 4	−722.580 <sup>1</sup>	0.175
4 5	−805.453 <sup>1</sup>	0.185	4 5	−721.842 <sup>1</sup>	0.198
5 6	−804.885 <sup>1</sup>	0.201	5 6	−721.299 <sup>1</sup>	0.217
6 7	−803.736 <sup>1</sup>	0.238	6 7	−720.122 <sup>1</sup>	0.263

<sup>1</sup>  $p < 0.01$ ; <sup>2</sup>  $p < 0.05$ ; <sup>3</sup>  $p < 0.1$ .

Model 4 includes all institutional arrangements and other influencing variables. It covers all 439 observations. On the other hand, Model 5 only includes top-down institutional arrangements and other influencing variables. Only those top-down projects are included in the analysis. The coefficient of DMSF = 2 was positive in Models 4 and 5, at 0.513 ( $p < 0.01$ ) and 0.378 ( $p < 0.05$ ), respectively, indicating that UVRPs implemented through TVF were more likely to take a long time than those implemented through TGF. These results provide support for Hypothesis 2.

#### 4.2.3. Statistical Tests of Hypothesis 3

Table 7 reports the results of Models 6 and 7, which were used to test Hypothesis 3, with BVF as the reference point. Covering all 439 observations, Model 6 includes all institutional arrangements and other influencing variables. Model 7 considers bottom-up projects only. The values of the coefficient of DMSF = 4 in Models 6 and 7 were contradictory, at −100.399 ( $p < 0.01$ ) and 136.931 ( $p < 0.01$ ), respectively. The outcome in Model 6 suggests that Hypothesis 3 should be rejected, whereas the outcome in Model 7 provides support to the hypothesis. In other words, the test results for Hypothesis 3 are rather mixed.

**Table 7.** Results of multinomial ordered logit estimates for testing Hypothesis 3.

Model 6			Model 7		
Variable	$\beta$	Std. Error	Variable	$\beta$	Std. Error
DMSF (ref. = 3)			DMSF (ref. = 3)		
=1	0.823 <sup>1</sup>	0.137	-	-	-
=2	1.336 <sup>1</sup>	0.166	-	-	-
=4	-100.399 <sup>1</sup>	0.058	=4	136.931 <sup>1</sup>	0.292
City (ref. = 1)			City (ref. = 2)		
=2	100.569 <sup>1</sup>	0.118	=1	-	-
=3	-0.873 <sup>1</sup>	0.118	=3	-120.932 <sup>1</sup>	0.248
=4	-1.120 <sup>1</sup>	0.192	=4	-	-
=5	0.497 <sup>1</sup>	0.091	=5	123.515 <sup>1</sup>	0.405
=6	-1.308 <sup>1</sup>	0.082	=6	-	-
=7	202.771 <sup>1</sup>	0.021	=7	122.871 <sup>1</sup>	0.102
IY	-0.452 <sup>1</sup>	0.000	IY	-0.201 <sup>1</sup>	0.001
Households	0.001 <sup>1</sup>	0.000	Households	0.003 <sup>1</sup>	0.001
RM (ref. = 0)			RM (ref. = 0)		
=1	-0.177	0.222	=1	0.503 <sup>1</sup>	0.139
LS (ref. = 1)			LS (ref. = 1)		
=2	1.622 <sup>1</sup>	0.215	=2	1.263 <sup>2</sup>	0.597
=3	5.294 <sup>1</sup>	0.111	=3	507.386 <sup>1</sup>	0.248
PA (ref. = 1)			PA (ref. = 1)		
=2	0.448 <sup>2</sup>	0.1830	=2	-1.105	0.777
=3	-0.600 <sup>2</sup>	0.235	=3	-	-
TRFM (ref. = 1)			TRFM (ref. = 1)		
=2	3.394 <sup>1</sup>	0.125	=2	-2.875 <sup>1</sup>	0.112
=3	3.853 <sup>1</sup>	0.095	=3	-12.667 <sup>1</sup>	0.327
TRF	-0.003 <sup>1</sup>	0.000	TRF	0.002 <sup>1</sup>	0.001
Award	0.004 <sup>3</sup>	0.002	Award	0.028 <sup>1</sup>	0.007
LUV	-0.035	0.023	LUV	-0.055	0.080
RAM (ref. = 1)			RAM (ref. = 1)		
=2	100.277 <sup>1</sup>	0.122	=2	137.575 <sup>1</sup>	0.207
=3	99.927 <sup>1</sup>	0.112	=3	-120.932 <sup>1</sup>	0.248
1 2	-808.027 <sup>1</sup>	0.008	1 2	-141.842 <sup>1</sup>	0.041
2 3	-806.579 <sup>1</sup>	0.130	2 3	-140.957 <sup>1</sup>	0.492
3 4	-805.314 <sup>1</sup>	0.166	3 4	-139.386 <sup>1</sup>	0.658
4 5	-804.610 <sup>1</sup>	0.185	4 5	-138.695 <sup>1</sup>	0.694
5 6	-804.042 <sup>1</sup>	0.201	5 6	-137.897 <sup>1</sup>	0.729
6 7	-802.893 <sup>1</sup>	0.238	6 7	-136.621 <sup>1</sup>	0.800

<sup>1</sup>  $p < 0.01$ ; <sup>2</sup>  $p < 0.05$ ; <sup>3</sup>  $p < 0.1$ .

#### 4.2.4. The Results of Other Influencing Variables

The statistical result in Table 5 reveals that other influencing factors, including city, IY, households, LS, PA, TRFM, TRF and RAM, exert significant influence on project duration; the statistical result in Table 6 reveals that other influencing factors, including city, IY, households, LS, PA, TRFM, TRF, award and RAM, exert significant influence on project duration; the statistical result in Table 7 reveals that other influencing factors, influencing city, households, RM (in Model 7), LS, PA (in Model 6), TRFM, TRF, award and RAM, exert significant influence on project duration.

## 5. Discussion

### 5.1. Interpretations of Findings for Hypothesis 1

Though UVRPs implemented through top-down institutional arrangements are still dominant in contemporary China, the findings show that the counterpart institutional arrangements tend to be more efficient in terms of project duration. Statistical results in Table 5 reveal that bottom-up institutional arrangements are more likely to have shorter project durations than top-down institutional arrangements when other factors remain

constant. Apparently, the outcome of multinomial ordered logit regression indicates that Hypothesis 1 is rejected. Institutional arrangements of UVRPs are proxies of the power distribution among parties. Parties with more power can influence decision making in the process of policy formulation, and thus the way UVRPs are executed. The top-down institutional arrangement is regarded as non-villager control from the decision-making perspective because all policies relating to the interests of villagers are determined by the city or district government. In such a situation, the local government is definitely in a more advantageous position. The imbalanced bargaining power can easily lead to dissatisfaction of participating villagers. Affected villagers could be asked to be relocated to some remote locations or accept unattractive compensation. When the government uses the power of eminent domain to forcibly demolish villagers' houses in the name of public interest, the resistance from "complaint villagers" sometimes prolongs the projects. Litigations and repeated negotiations to gain the census of the residents entail higher transaction costs incurred in the process of urban village redevelopment, resulting in inefficiency.

The bottom-up institutional arrangement can enable villager's committees (VCs, *cunmin weiyuanhui*) to represent affected villagers and decide how to implement the redevelopment projects, despite their inability to break some basic principles set by local authorities. When designing compensation and relocation policies, the VCs are located at the top of the ladder of citizen participation. The delegation of decision making can empower the affected villagers, making relevant policies that are more favorable to themselves. Such empowerment can reduce friction between the affected villagers and governments and thus reduce the transaction costs of land assembly, echoing with the views of a few previous studies [31,32]. A policy grounded in villager support and involvement is assumed to be more efficiently implemented, which is likely to result in a shorter project duration. Such institutional arrangements can fulfil the "needs of rights" the state often fails to provide.

## 5.2. Interpretations of Findings for Hypothesis 2

As shown in Table 6, analysis results provide support for Hypothesis 2. However, the outcomes in Models 6 and 7 in Table 7 demonstrate contradictory results regarding Hypothesis 3. When inputting all institutional arrangements into the statistical analysis, top-down UVRPs may exert effects on outcomes, leading to different outcomes for Hypothesis 3.

TVF is the most popular approach for urban village redevelopment in contemporary China. Affected villagers can gain monetary compensation for the demolition of original housing. However, at the same time, villagers also need to pay the construction fees of the relocated high-rise buildings to the local government. Some householders, especially impoverished villagers, refuse to move out because they cannot afford the high construction fees. According to the nail householders in one urban village in Wenzhou,

*"We have no money, which is an issue. Our household contains eight family members over four generations. This is my father and this is my mother. I have two sons. The elder one has married and has his own son. I also support the urban village redevelopment project, so I can exchange the dilapidated house for a new high-rise building residence. After all, my son needs the new apartment to live in. Yet I have no money to buy the supportive area. The purchase price is CNY 5,000/m<sup>2</sup>. Our self-built house occupied a 170 m<sup>2</sup> building plot. This side has one floor and another has two floors. According to the compensation policy, the relocation area allocated to us is 510 m<sup>2</sup> [170 × 3 = 510] and the 'shared area' (gongtan mianji) is equal to 127.5 (510 × 0.25 = 127.5), with different amounts of construction fees. This means I need to provide around CNY 3 million to purchase the exchange area. Please tell me how I could afford this huge amount of money."*

In addition, the time and energy used to calculate the size of monetary compensation and construction fees are prohibitively huge. The standard for monetary compensation and construction fees varies across cities, leading to conflicts because of different standards, especially for the decoration costs of original housing. The villagers always feel dissatisfied

regarding the evaluation outcomes and require evaluators to re-evaluate again until the evaluation outcomes are in line with their preferences. According to the prospect theory, individuals have different reference points and it is difficult for the evaluation outcomes to be satisfying to all [33]. For example, the affected villagers in an urban village located in Wenzhou stated that,

*“The decorations and size of my house and my neighbours’ are almost the same, but they get much more monetary compensation for theirs because they have good social network with the evaluators. It is so unfair to us . . . ”*

However, according to several affected villagers in another urban village located in Hangzhou:

*“The monetary compensation for decorations is the same for all households, no matter how luxurious or poor the decorations are. The main differences in monetary compensation are due to family size, whether it is a large household (dahu), middle household (zhonghu) or small household (xiaohu).”*

Some villagers use this opportunity to maximize their profit and this opportunism can increase the transaction costs incurred in policy design [34]. However, the policies for compensation in a given district are often of a “one-size-fits-all” approach, and the compensation standard is based on the policies issued in previous years. Conflicts often arise when the standard favors some villagers while disfavoring others. Although the local government can use the strategy of “collective demolition” (*zhulianshi chaiqian*) to exert pressure on nail householders, the cost of information requisition for their relatives is also high.

On the other hand, in a TGF project, the affected villagers can exchange an equivalent area of new housing for original housing, but they need not submit construction costs of the relocated high-rise buildings. As mentioned previously, the local government also does not need to compensate villagers for the demolition of their original housing. Obviously, this institutional arrangement simplifies the evaluation and calculation processes. The time and energy taken to calculate compensation and construction fees can be saved and the related conflicts of interest can be avoided. In addition, the costs of information requisition for searching for an evaluation company can also be saved. Even if the evaluation company is selected through open tendering, most villagers still believe the evaluation company works for the government. Without any additional financial costs during the redevelopment process, the affected villagers can live in the relocated high-rise buildings with the improved living environment and land value. Such benefits largely enhance their motivations to participate in the project when compared with the TVF institutional arrangement.

### 5.3. Interpretations of Findings for Hypothesis 3

It is quite interesting to see contradictory results for the effects of villager funding on project duration returned from Models 6 and 7. In Model 6, in which all 439 observations were included, the estimated coefficient for BPDF was negative. However, the estimated coefficient became positive when only those bottom-up projects were analyzed in Model 7. On the one hand, BPDF is an emerging experimental model implemented in several cities in contemporary China. In this model, VCs are allowed to cooperate with private developers, and affected villagers do not need to finance the construction costs of the relocated high-rise buildings. What the villagers need to do is simply surrender one parcel of collective land to a private developer for commercial development. This may moderate the villagers’ financial risks and motivate the villagers to partake in the redevelopment. Projects run more smoothly and take a shorter period of time to complete.

On the other hand, the partnership arrangement in the BPDF model may incur higher transaction costs, similar to many other cases of regeneration projects in the West [35,36]. Since villagers and private developers want to maximize their own interests, the costs of negotiation for and drafting of a contract agreeable to both parties are high. For instance, VC in Linhe Village in Guangzhou took several years to find an appropriate developer



with whom they could cooperate. In addition, cooperation with a private developer may create opportunities for corrupt behaviors by VCs and private developers. Once corruption is perceived by ordinary villagers, it is difficult to further implement the redevelopment. For instance, Xiancun Village in Guangzhou has still not completed redevelopment since it was first initiated in 2009. The main reasons have been attributed to the misconduct of village cadres. The nail householders stated that,

*“Our village has initiated the redevelopment process seven times. Why has it still not succeeded? There must be reasons. We all support the village redevelopment, but we do not support the way we develop. The opaque redevelopment process and non-transparent management of collective assets are the main reasons that we have not agreed to exchange our property rights. Our VPB had stolen our collective assets and the previous village secretary escaped and has still not been arrested. If the village cadres could actually follow the principles of ‘fairness, openness and justice’ we would definitely sign up for the redevelopment, but the truth is that they were not . . . ”*

In a BVF project, villagers need to provide the costs of relocated housing by themselves. The relocated housing is always self-built and it is often low rise. This model tended to be implemented in earlier years and is still currently implemented in the urban fringes where the competition for urban land use is not so fierce. Since villagers have traditionally lived in detached houses (*dumen duhu*), they, especially the elderly, still prefer to live in a similar manner after redevelopment. If villagers are responsible for constructing their own houses, the certainty of quality, progress and location of relocated housing can mitigate the transaction costs incurred in the coordination and dispute resolutions regarding the design and construction of relocated housing. Therefore, when villagers can afford the construction fees, their propensity to participate in the project is relatively high.

#### 5.4. Interpretations of the Findings for Other Influencing Variables

##### 5.4.1. Policy Variations

The RM variable (ref. = relocating to another area) was not significant in Models 2 and 3, when keeping other factors constant. Although affected villagers prefer in situ relocation, this does not expedite the redevelopment process when villagers feel uncertain about relocation. According to the interviewees,

*“The government told us that the location of the relocated high-rise buildings will be constructed in there [in the village], but who knows whether the words is true or not. If our house is demolished, I am not sure whether the government will change their plan or not.”*

As for relocation to another area, construction of relocated high-rise buildings does not necessarily follow demolition. Sometimes, the government uses attractive strategies, including improved accessibility of public facilities, to persuade villagers to sign the contract. Such attractive strategies can offset the villager’s preference of in situ relocation. As a result, project duration does not significantly vary with these two different methods.

The positive coefficients of LS = 2 in Models 2 and 3 (ref. = drawing lots; contract date irrelevant) indicate that UVRPs in which new housing was allotted by means of drawing lots according to the date villagers signed the contract were more likely to take a long time to complete than those where contract date was irrelevant. Similarly, the coefficient of LS = 3 was positive in Models 2 and 3, indicating that UVRPs which allocated housing on the basis of selection fees were also more likely to take a long time than those drawing lots without taking contract date into account. Selection of relocated high-rise buildings by means of drawing lots might increase the fairness perceived by the villagers. Connecting contract date with the order of drawing lots can lead to the last several householders who have not signed the contract finding the method unfair. Regarding selection fees, the size of selection fees is uncertain for everyone before informal contracting. The higher the uncertainty, the higher the need for uncertainty reduction and the higher the transaction

costs [37]. In addition, the costs of information requisition in searching for an institution to organize the bid for the location is also high, and the time used for bidding is also long.

The positive coefficients for the relationship between PD and TRFM (ref. = no subsidy) in Models 2 and 3 are interesting, as they indicate that UVRPs involving payment of subsidies, whether based on house area or family size, were more likely to take a long time than those where villagers were not paid any subsidy during the time they spent in temporary accommodation. Regardless of whether the principle is based on the area or family size, the time used for calculation is long and some villagers are always dissatisfied with outcomes. Having no subsidy indicates that the time used for conflict resolution could be avoided. Having no subsidy also indicates that relocation is prior to demolition. According to the interviews of affected villagers, they expected to be relocated to the relocated high-rise buildings earlier so they could rent out their unused homes to make extra income. In addition, living in small rental housing is not convenient.

The negative coefficient of TRF ( $-0.003$ ,  $p < 0.01$ ) indicates that there was a negative relationship between TRF and PD, which seems to contradict the assumption that higher TRF would make projects run more smoothly if all other factors remain constant. However, the result may have been affected by expeditious UVRPs with ongoing subsidies.

The use of awards did not reach significance in Models 2 and 3, indicating that awards did not exert impact on project duration. Awards represent the use of incentives to encourage affected villagers to sign the contract and move out before a given date and it should be noted that this only works when there are no conflicts of interest. The result implies that the “nail households” would not easily be compromised with an economic incentive if their requirements have not been met.

The outcomes of RAM (ref. = based on area) were different in Models 2 and 3. In Model 3, the positive coefficient of RAM indicates that projects where allocation of new housing was based on family size or on both family size and original house area were more likely to take a long time than those where allocation was based solely on the area of the original house. In Model 2, RAM = 3 was not significant, indicating that allocation based on family size and house area did not affect project duration relative to allocation based solely on house area. Although RAM = 3 seems a better policy, the long project duration seemingly reveals that a better policy sometimes did not imply a smoother process. Projects sometimes took a long time when allocation of new housing was based on both original house area and family size.

#### 5.4.2. Time and Spatial Variation

In Models 2 and 3, the coefficient of IY was negative, indicating that IY was negatively correlated with PD ( $p < 0.01$ ). This means that more recent UVRPs tended to be completed more quickly than those started earlier. This phenomenon may be attributed to the accumulated experience of local governments. The high frequency of implementing UVRPs decreases the relevant transaction costs involved, leading to a more efficient redevelopment process. In addition, the “transparency policy” implemented in recent years can increase villagers’ fair feelings, which mitigates their concerns. High compensation in recent years for UVRPs may also contribute to the explanations for shorter project duration within recent years.

LUV did not reach significance in Models 2 and 3, indicating that the desirability of the location did not affect the duration of UVRPs. Although villagers in favorable locations generally benefit more from redevelopment than those in disadvantaged locations, the demands of villagers in favorable locations were invariably higher than those in disadvantaged locations. Repeated bargaining negotiations cannot be avoided and the chance of arousing the holdout problems can be equally the same in both locations.

In terms of the regional variable city (ref. = Taizhou), the outcomes in Models 2 and 3 were a little different. In Model 3, all city variables reached significance, where the coefficients of Ningbo, Beijing and Guangzhou were positive, indicating that UVRPs in those cities were likely to take longer than those in Taizhou. The coefficients of the

relationships between PD and the city dummies Yiwu, Wenzhou and Hangzhou were negative, indicating that UVRPs in those cities were more likely to be completed quickly than those in Taizhou. The outcomes demonstrate that production durations vary with regional alteration. As the Chinese political center, the Beijing government emphasizes more social stability, so the sub-district government is willing to take more time in repeated negotiations to persuade affected villagers to participate in the project than the Taizhou government. UVRPs implemented in Ningbo were project-led redevelopments; it took a relatively long time to complete the whole village redevelopments because the remaining houses would only be developed if there were no new urban planning projects. Guangzhou is near Hong Kong, and local villagers have easier access to Western ideas of liberalism, democracy and support of global forces, leading to a high awareness of property rights protection. Yiwu is an experimental pilot city for policy reform, and the local government also empowers the VCs to implement UVRPs without financial support. Due to the absence of cooperation with private developers, the chance of corruption is low. As a response, ordinary villagers' political trust in VCs is higher. In addition, the number of households is lower than Taizhou, so the chance of opportunism is also lower. Hangzhou's government intended to build a "world-class city" after holding the G20 Summit in 2016. Due to the negative externalities of urban villages, the local government is planning to replace dilapidated urban villages with modern high-rise buildings in an expeditious way. Similarly, the Wenzhou government is now trying to transform Wenzhou into an important city connecting the Yangtze River Delta and the Western Straits Economic Zone. In addition to the motivation of city image enhancement, the efficiency of land allocation needs to be further improved for various purposes, such as the construction of a high-technology industry park. The expeditious project outcomes in Hangzhou and Wenzhou are possibly relevant to the strong determination of governments on various levels.

#### 5.4.3. Project Specificity

The number of affected households was positively related to project duration in both Models 2 and 3 when other factors remain constant ( $0.001, p < 0.01$ ), indicating that UVRPs involving a large number of households were more likely to take a long time to complete. Due to opportunism and bounded rationality, the large number of households indicates high levels of transaction costs. The time used to negotiate with villagers to achieve consensus increases with an increasing number of households. When negotiation strategies fail, the project can be delayed as a consequence. In addition, simply considering the time used to make a contract, the time duration is longer in a village with a large number of households than villages with a small number of households.

The coefficient of the relationship between PA (ref. = public interest I) and PD was significant. The values of this coefficient in Models 2 and 3 indicate that UVRPs for public interest II were more likely to take a long time, whereas UVRPs for public interest III were more likely to be completed quickly. As shown in Figure 2, a large number of outliers of PD with respect to public interest II seemingly reveal that the power of eminent domain used by local government cannot always expedite the redevelopment process, even when UVRPs are redeveloped for public interest without social disputes. Forced evictions can easily arouse violent conflicts or resistance from "complaint villagers". As a result, the time and costs incurred for settling those conflicts will increase the transaction costs, sometimes leading to a long project duration instead. Because local governments often regard urban growth and economic development as their priorities, the speed of the land and housing requisition process thus becomes very crucial in the eyes of local governments. Despite local governments' inability to use the power of eminent domain to conduct forced evictions when UVRPs are implemented for economic development (e.g., industry park) because of the disputable definition of public interest, the local government often chooses to increase the compensation standards to expedite the process according to interviewees from the government department. In addition, urban villages redeveloped for economic development are often located in the urban fringes, while urban

villages redeveloped for public interest I are often located in the urban center. Urban villages in the urban center often have high land value, so villagers require more, leading to long and repeated negotiations.

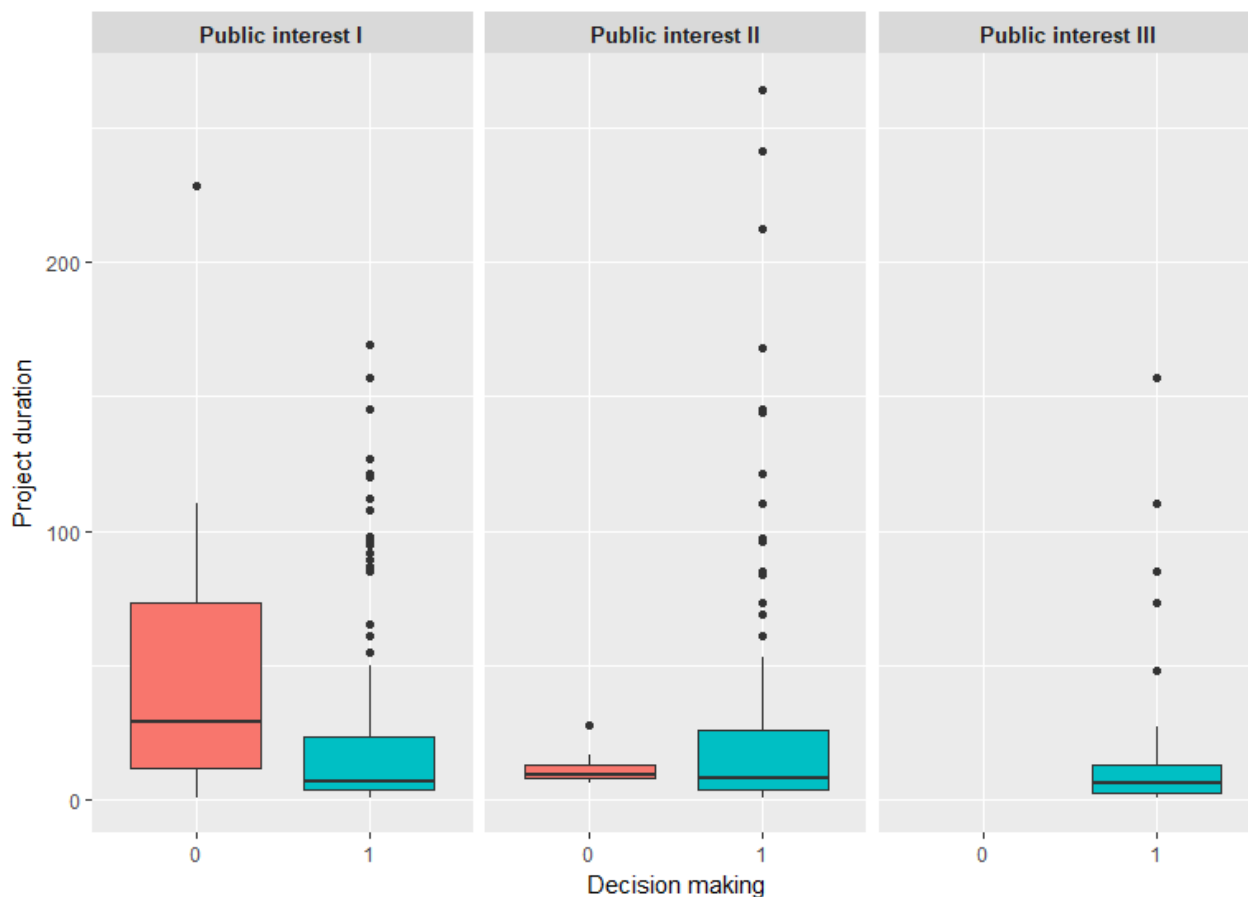


Figure 2. The interaction of variables DM and PA (by the first author).

## 6. Conclusions and Agenda for Further Studies

This study aimed to find the determinants of project outcomes mainly from a new institutional economics perspective. First, this research differentiates the institutional arrangements of UVRPs through two dimensions—decision making and funding sources. It demonstrates the power relations of main participating stakeholders and determines the structures and rules for implementing the redevelopment project. Project duration is used to demonstrate the extent of efficiency. When policy makers design an institutional arrangement, they need to consider transaction costs to increase the efficiency and sustainability of policies [38]. Based on the theory of transaction costs and behavioral economics, this study put forward three research hypotheses pertaining to the causal relationships between institutional arrangements and project outcomes. To test the hypotheses and determine to what extent institutional arrangements and other determinants influence project duration, the quantitative research method of multinomial logit regression was used to conduct the analysis based on 439 observations collected from seven cities.

Analysis results have led to the rejection of Hypothesis 1, which stated that projects implemented with a top-down approach have a shorter time duration than those with a bottom-up approach, keeping other factors constant. They reveal that the dominant and widely implemented top-down institutional arrangement is less likely to have an expeditious redevelopment process. When making policies, local governments do not always hear the voices from the bottom. If people's voices are not heard, they will not

cooperate [39]. The goal of an expeditious redevelopment process will fail, even if the project is redeveloped in terms of public interest. As mentioned previously, the outliers in Figure 2 support this argument. The local government bears high levels of transaction costs for property rights exchange, including the costs of information requisition, repeated negotiations, and policy persuasion.

Keeping other factors constant, projects implemented with TGF were found to have shorter time durations than projects with TVF. Hypothesis 2 was supported by the empirical findings. Projects implemented with the former can generally avoid the process of evaluation of decorations of original housing, so the possible associated costs for measurement, negotiations and conflict resolution can also be avoided. In addition, when local government funds the costs of relocated high-rise building construction, the project can also skip the process of counting construction fees of the relocated high-rise buildings. Opportunism may cause an increase in the size of transaction costs when projects are implemented with TVF. As mentioned previously, the last nail householder in one of the urban villages in Wenzhou used the high construction fees as a bargaining point in refusing to move out.

Nonetheless, no robust results were returned for Hypothesis 3. It is not conclusive to say that projects implemented with BVF have a shorter time duration than projects with BPDF, keeping other factors constant. When a private developer is invited to fund the project, one additional participating party will increase the transaction costs. It will take a long time to achieve a consensus about the partnership scheme. In addition, it is more likely to raise moral risk when the private developer fails to enforce the contract, or village cadres engage in corrupt behavior or rent-seeking behavior. The opportunism of the parties who try to maximize their own interests will increase the transaction costs. However, if moral risk does not occur, projects implemented with BPDF can achieve expeditious outcomes. As revealed in a previous study, the empowerment of VCs to cooperate with private developers can be implemented in a more efficient and less costly way, based on the case study of the Liede Village redevelopment in Guangzhou [9].

This study also reveals that other determinants, including city, project attributes and initiation year, number of households involved, size of temporary relocation fee, and methods of selecting relocated housing, calculating temporary relocation fee and calculating relocation area exert significant impacts on project duration. This research finding gives evidence that institutional arrangements are embedded in certain institutional environments. With alternations of other factors, the time duration of UVRPs can also be changed.

As a matter of fact, the government-funded bottom-up model has widely employed for urban or rural regeneration in the West [40–42]. Such a model could theoretically be one of the possible options for implementing UVRPs. However, this is not the case in mainland China, due to the very institutional design of the related policy in the country. Further investigation into the possibility of adopting this model in mainland China is warranted. Further, the villagers' or rural inhabitants' education levels, rootedness of community participation and self-help spirit could have significant impacts on the successful execution of bottom-up rural development programs [19,42–44]. These factors were not investigated in the current study so future studies may be dedicated to explore how these factors shape the efficiency of UVRPs in mainland China.

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## Appendix A

Table A1 details the reasons for selecting the field sites for the empirical studies.

**Table A1.** The reasons for selecting field sites.

City	Reason(s) for Selecting as a Field Site
Beijing	Beijing is the Chinese political center, being China's capital, for 850 years. Looking at UVRPs implemented under high-level political element contexts is a good strategy for exploring whether regions with a political element can influence project outcomes. Due to continued urban growth, large-scale UVRPs have been initiated in Beijing in the public interest, especially following the 2008 Olympic Games [45]. Beijing was deemed a good site for data collection because it is the political center of China and offered a large number of observations.
Hangzhou	Hangzhou is the capital of Zhejiang province. It is a prosperous tourist city, well known for its beautiful natural scenery, such as the West Lake, and has experienced rapid urban growth and urban sprawl [46]. In addition, the G20 Summit held in Hangzhou in September 2016 led to a host of deconstruction and reconstruction projects on the collectively-owned land to enhance the city's image and improve public facilities. Such UVRPs are distinct from the urban renewal projects stemming from the land-centered urbanization that the government forms a coalition with private developers to gain high land transfer fees. The variety of institutional contexts made Hangzhou an attractive city in which to collect data.
Ningbo	Ningbo is a coastal city in Zhejiang province, which is known for its booming industry and rapid growing economy [47]. Since 2005, the Ningbo government has initiated large-scale UVRPs, but the results have been disappointing. In 2010, the Ningbo government introduced an organizational reform to improve coordination among different government departments. As a result, the process of redevelopment sped up. UVRPs in the "main urban area" ( <i>zhuchengqu</i> ) had almost completed redevelopment in 2017. The data collected in Ningbo are useful for comparative analyses. In addition, UVRPs implemented in Xiangshan county, which is under the jurisdiction of Ningbo city, has adopted BPDF, a very innovative institutional arrangement. Since the bottom-up institutional arrangement is a key variable in this study, it was essential to collect data from Ningbo.

Table A1. Cont.

City	Reason(s) for Selecting as a Field Site
Yiwu	As noted above, Yiwu, a county-level city under the jurisdiction of Jinhua city, is one of the pilot cities with respect to reform and has State Council approval to implement “rural homestead system reform”. Although it is not a mega-city, Yiwu is famous for its “small accommodation wholesale market”. Continued urban growth has meant that Yiwu has experienced a series of bottom-up and top-down institutional reforms aimed at making use of urban land more efficient and improving the city’s image. UVRPs in Yiwu have been implemented through both top-down and bottom-up institutional arrangements and 2003 is a watershed time for implementation of different institutional arrangements. As institutional arrangements are one of the key variables in this study, Yiwu was an excellent fieldwork site.
Wenzhou	Wenzhou is located in the mountainous south-eastern corner of the coastal area of Zhejiang province and is an important harbour and commercial city in contemporary China. Wenzhou has faced a series of challenges to growth in recent years. For instance, local development has slowed down and there have been calls for the scaling up of regional development. In addition, the previous rapid economic development was achieved at the expense of damage to ecosystems and the overpopulation in “main urban area”. Hence, Wenzhou has experienced rapid transformation of its image and industries as well as environmental restoration efforts, provision of public facilities, etc. As a consequence, large-scale UVRPs are needed to be implemented to readjust the land use for new urban planning. The Wenzhou government planned to complete 81 UVRPs in the main urban area ( <i>zhuchengqu</i> ) by the end of 2017. The opportunity to make a large number of observations of top-down institutional arrangements made Wenzhou a desirable field site.
Taizhou	Taizhou, noted in China as a city with a rich history and culture and as a good place to live, is located in the middle of the coastline of Zhejiang province [48]. The city has been growing rapidly since 1978 and has seen unprecedented economic growth and social restructuring [49]. It has nevertheless experienced problems, such as the deterioration of ecosystems mentioned above in relation to Wenzhou city. Taizhou city plans to implement large-scale UVRPs in order to transform the city into a more sustainable urban community. There were plans to start 137 UVRPs in 2017, of which 111 involved urban villages in the “main urban area”. All UVRPs had top-down institutional arrangements, but the funding sources were various, with some being government funded and some funded by the villagers. The diversity of institutional arrangements made Taizhou a desirable field site.
Guangzhou	Guangzhou is not only located at the center of the Pearl River Delta, it is also the biggest metropolis and the economic, political and cultural center of Guangdong province in southern China [50]. Guangzhou began to implement UVRPs in 2000, but progress has been very slow. Guangzhou’s hosting of the Asian Games increased the speed of UVRPs and increased awareness of the need to protect heritage and improve housing conditions [51]. In 2009, continued urban growth and the resulting high demand for urban land prompted the provincial government to issue Ordinance No. 78, guidance aimed at increasing land use efficiency and enhancing the city’s image. Subsequently, a series of projects to redevelop the “old towns”, “old industrial buildings” and “old villages” were initiated under the heading “Redevelopment of three ‘olds’” ( <i>sanjiu gaizao</i> ). As Guangzhou is one of the pilot cities for reform, bottom-up institutional arrangements have been adopted for UVRPs, which is different from most Chinese cities. To smooth the redevelopment process, UVRPs implemented in Guangzhou have empowered affected villagers to implement their own urban village redevelopment and provided satisfactory compensation and reallocation options [52]. Guangzhou is working to redevelop 138 urban villages by 2020 [53]. UVRPs implemented with bottom-up institutional arrangements made Guangzhou an ideal field site.

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