

This is an Open Access document downloaded from ORCA, Cardiff University's institutional repository: <https://orca.cardiff.ac.uk/id/eprint/127577/>

This is the author's version of a work that was submitted to / accepted for publication.

Citation for final published version:

Hou, Jun, Gu, Dazhi, Shahab, Sina and Chan, Edwin Hon-wan 2020. Implementation analysis of transfer of development rights for conserving privately-owned built heritage in Hong Kong: A transaction costs perspective. *Growth and Change* 51 (1) , pp. 530-550. 10.1111/grow.12350

Publishers page: <http://dx.doi.org/10.1111/grow.12350>

Please note:

Changes made as a result of publishing processes such as copy-editing, formatting and page numbers may not be reflected in this version. For the definitive version of this publication, please refer to the published source. You are advised to consult the publisher's version if you wish to cite this paper.

This version is being made available in accordance with publisher policies. See <http://orca.cf.ac.uk/policies.html> for usage policies. Copyright and moral rights for publications made available in ORCA are retained by the copyright holders.



Implementation Analysis of Transfer of Development Rights for Conserving Privately-owned Built Heritage in Hong Kong: Transaction Costs Perspective

Jun Hou^{a,b}, Dazhi Gu^{a#}, Sina Shahab^c, Edwin Hon-wan Chan^b

a College of Architecture and Arts, Hefei University of Technology, Hefei, China

b Department of Building and Real Estate, The Hong Kong Polytechnic University, Kowloon, Hong Kong

c School of Geography and Planning, Cardiff University, Cardiff, UK

Corresponding Author

gdzurbanarc@hotmail.com

Abstract:

Transfer of development rights (TDR) programs are introduced as an alternative institutional innovation to the traditional regulatory instruments for land development. They meet the demand for development and conservation whilst balancing the conflicts between public and private interests with minimal use of public funds. Most TDR literature is about nature conservation and there is little focus on the complicated process and diverse stakeholders' interests of urban land use in dealing with built heritage conservation. Previous studies show that the success of TDR programs depends on various elements, especially policy design and implementation approaches. The design and implementation of TDR programs involves transaction costs that can reduce the efficiency and effectiveness of these programs. This paper aims at developing a framework for analyzing TDR programs. This proposed framework not only takes transaction costs into account, but also provides a basis for decision makers to decipher the process of informal TDR. Using Hong Kong as a case study, three TDR implementation modes are selected to examine how different informal institutional arrangements have resulted in specific transaction costs in practice and hindered TDR projects. Our findings, which are informed by transaction costs economics, provide practical insights in order to improving the efficiency and effectiveness of TDR programs, particularly in informal contexts.

Keywords: Transfer of Development Rights (TDR), Policy Analysis, Built Heritage Conservation, Transaction Costs, Institutional Design and Arrangements

1. Introduction

Private property owners often do not take account of the heritage values of properties when considering redevelopment of their properties. The tendency to maximize private benefits has resulted in demolition of built heritage around the world, especially in major urban areas, where the demand for development is higher. From a sustainable development perspective, built environment belongs not only to the past, but also the future. Therefore, there's an urgent need for protecting these historical buildings from demolition or redevelopment. Direct government

interventions in the form of using regulatory policy instruments such as zoning, land acquisition, development control, are the traditional approaches to achieve the conservation goals. However, the efficacy of these approaches to deal with the privately-owned built heritage has been criticized, due to their low effectiveness and efficiency and high transaction costs (Pogodzinski and Sass, 1990; Rydin, 1998; Shahab et al., 2018a). Thus, new governance mechanisms, such as partnerships and market-based instrument, have been increasingly proposed as alternative policy instruments for sustainable development (Visseren-Hamakers et al., 2012).

Transfer of development rights (TDR) programs, as a market-based policy instrument, have received considerable attention in both developing and developed countries and have been utilized to implement growth policies (Fang, et al., 2019; Janssen-Jansen, 2008; McConnell and Walls, 2009). They have become an attractive approach particularly because of their ability in balancing the needs for development and conservation in urban areas. In TDR programs, the unused development rights of built heritage sites can be transferred from so-called sending areas to receiving areas, in a way that the heritage sites can be conserved without impeding the proposed development (Kaplowitz et al., 2008). Previous studies have explored the success factors of TDR programs from different perspectives (Chan and Hou, 2015; Johnston and Madison, 1997; Machemer and Kaplowitz, 2002; McConnell & Walls, 2009; Pruetz & Standridge, 2009). These factors include political acceptability, TDR leadership, public participation, market factors, transaction costs, social equity, etc. Although transaction costs are identified as significant factors affecting TDR success (Bruening, 2008), few studies have carried out analyzing such costs in the TDR context. Shahab et al. (2018a, b) and Shahab et al. (2019a) explore the timing, distribution, and magnitude of transaction costs arising from the design and implementation of four TDR programs in the US state of Maryland. They found out that the transaction costs were considerable and varied across time (i.e. the lifecycle of policy instruments) and among parties involved (i.e. private and public parties). This study is mainly focused on the formal TDR mechanisms and the informalities surrounding TDR programs have remained rather unexplored. TDR programs under an informal system are dealt with case-by-case basis without specific legislation or a clearly defined transfer system. The implementation process relies on informal administrative rules to make use of existing related legislations, such as planning laws, to make TDR programs work within the existing legislative framework. The process could be ad-hoc and dependent on the personnel's willingness and ingeniousness in pushing the program ahead. Such approach is case specific and full of uncertainties that lead to higher levels of transaction costs.

This paper contributes to the TDR literature by analyzing the informal TDR implementation processes and their effects on transaction costs in the context of a dense city. We give a particular attention to the potential of TDR programs in relation to build heritage conservation. A transaction-cost framework with transaction attributes is utilized for analysis, which provides guidance from theoretical perspective to identify transaction costs in the process of TDR implementation and how such costs are generated. We first carry out a comprehensive analysis on the transaction costs during the TDR implementation process. Then we conduct detailed interview survey with experts and comparison analysis of the transaction costs about the three typical modes of TDR extracted from the real cases in Hong Kong. TDR was first introduced in Hong Kong in 1960s and has been practiced ever since though with very limited cases. In recent years, it was utilized as an economic incentive for built heritage conservation due to the increasing needs for conserving privately-owned built heritage in Hong Kong, e.g. King Yin Lei (<http://www.heritage.gov.hk/en/kyl/background.htm>), Sheng Kung Hui compound (http://www.devb.gov.hk/en/publications_and_press_releases/_press/index_id_6645_.html).

However, TDR is carried out on a case-by-case basis, some cases encountered high levels of transaction costs and face with controversies due to unclear regulative backups. Hong Kong is a typical representative of informal TDR in dense cities. Investigating the implementation of TDR programs in Hong Kong provides important insights for the jurisdictions with a considerable informal sector that are using TDR programs for built heritage conservation.

2. Analytical Framework

2.1 Factors Influencing Transaction Costs

‘Transaction costs’ is one of the main concepts and contributions of New Institutional Economics. Transaction costs are defined as the costs related to “transfer, capture and protect the rights” (Barzel, 1989); the cost of “using the price mechanism” (Coase, 1988); the costs of “exchanging ownership titles” (Demsetz, 1968); the ex-ante costs of “drafting, negotiating and safeguarding an agreement” and the ex-post costs of “haggling, contract governance, and bonding costs to secure commitment” (Williamson, 1985). Coase (1960) and North (1990) argued that the type and magnitude of transaction costs largely rely on the institutional environment. In fact, transaction costs are “costs of institutional arrangements” (Lai, 1997).

Many studies have discussed the factors influencing transaction costs in land development (Williamson, 1975, 1985, 1991; Falconer and Saunders, 2002; Ducos et al., 2009; Nilsson, 2009; Coggan et al., 2013; Shahab et al., 2018a, b, c; Shahab and Viallon, 2019). Three variables are identified to characterize a transaction by Williamson (1985): the level of transaction-specific investment (**specificity**), the number of times a transaction occurs, e.g. rare or frequent (**frequency**), the imperfect knowledge and unexpected events (**uncertainty**). Asset specificity is interdependent as a result of transaction-specific investment, which results in non-standard contracting and idiosyncratic exchanges (Williamson, 1981). Williamson (1991) differentiates four types of specificity: 1) site or location specificity, 2) physical asset specificity (e.g. specialized machinery), 3) human asset specificity (e.g. specialized human skill, knowledge and experience, and cooperative links), and 4) temporal specificity (e.g. technology that is time specific). In the context of planning, Alexander (2001) propose attributes related to interdependence, uncertainty, and timing. Other sources of transaction costs are identified which include bounded rationality and broad past experience (Libecap, 1989; Mettepenningen and Van Huylenbroeck, 2009), opportunism, complexity, information asymmetric, trust and confidence in information (Williamson, 1975; Docus and Dupraz, 2007; Ducos et al., 2009). The above identified factors help to develop attributes and sub-attributes of transaction costs in implementing TDR programs in the following, which constitute the theoretical framework of this research.

2.2 Transaction attributes framework for analyzing TDR

Market incentive is considered as the most attractive factor for the success of TDR programs (McConnell and Walls, 2009). In an effort to create market incentives for developers and landowners, lowering the level of transaction costs is one of the innovations adopted (Bruening, 2008). The conformance-based approach has been the prevalent approach in assessing TDR programs (Shahab et al., 2019a, b). This approach usually fails to take account of transaction costs and other institutional aspects when evaluating policy instruments. Exploring the institutional aspects of policy instruments is particularly important in informal contexts. This paper follows North’s (1990) approach and differentiates between formal and informal rules. Formal aspects of TDR contain the rules that constitute the political, legal, economic, and social environment and those that are formally written down in a rulebook. They imply official formal

enforcement mechanisms, whereas informal aspects of TDR are characterized by social unwritten rules or government administrative rules that do not have legal power. High transaction costs decrease policy efficiency in both formal and informal systems that are distributed unevenly among different private and public parties. However, informal mechanisms often have lower efficiency, compared to those of formal settings because they suffer from greater levels of transaction costs resulted from higher degrees of uncertainties (e.g. unwritten rules, information asymmetries) and opportunistic behaviors, etc. (Budiman et al., 2014).

The following provides a detailed analysis of transaction attributes in TDR combining the formal and informal system together to develop the theoretical framework. Most of the research concerning TDR programs are based on the practices of U.S. which has formal TDR (Bruening, 2008; Kaplowitz et al., 2008; Machemer and Kaplowitz, 2002; McConnell and Walls, 2009; Shahab et al., 2018a, b), whilst only a limited number of studies have explored informal aspects of TDR (Chu and Uebegang, 2002; Chan and Hou, 2015; Hou and Chan, 2017). The major elements generating transaction costs in formal and informal TDR systems are similar; the differences are on the degree and the specific issues under each element. The descriptions in the framework aim to give the examples for the further exploration of the degree and specific issues of transaction costs in informal TDR.

Specificity:

TDR in built heritage conservation is much more sensitive to **spatial attributes** compared to that in farmland and environmental conservation. Due to the central location of historic buildings, the owner may disagree with the receiving sites because of the traffic, orientation, view etc. Historic buildings with different historical and social value are difficult to estimate their value (Chan and Hou, 2015), and the aspiration of different owners are diverse. These make no two TDR cases the same but **idiosyncratic**. **Human resources** are the key factors to be considered during the transfer process. Implementation of TDR often involves different governmental departments. Many successful TDR programs have relatively strong political leadership and commitment in the programs' initial years (Machemer and Kaplowitz, 2002) because one good agency administering the program can avoid delays and conflicts during the approval and management through several parties (Johnston and Madison, 1997). Background studies of the site and institution of the city are central to a successful TDR program (Kaplowitz et al., 2008). In addition, the specific private owner's **opportunistic behavior** also affects transactions due to the expectation and ability to maximize its return on investments (Chu and Uebegang, 2002).

Frequency:

Time costs are identified as considerable hidden costs of TDR (Hou and Chan, 2017). Many countries/cities initiate TDR programs; however, some have suspended the implementation of these programs as a result of lack of markets for TDRs and their infrequent transactions. Many countries/cities incorporate TDR mechanism but only have several transactions implemented and there no market to generate the frequency of supply and demand. The issue of whether one successful TDR program could be repeated or implemented in large number is one major cost consideration for the TDR users, particularly under an informal system

Uncertainty:

Uncertainty is another major factor that generates transaction costs due to the existence of **information asymmetries** between government departments, TDR sellers and buyers, e.g.

real-estate speculator's superior knowledge on property's development potential (Alexander, 2001). In addition, distrust between government departments and sellers and buyers may make the transfer process complex in the form (**atmosphere**). The public may doubt the motivation behind such initiatives, suspecting collusion between the local government and developers, particularly so under a less clear informal system. It is also likely that owners and developers would object if the transfer plot ratio assigned by government to their property is not competitive. If owners and developers cannot understand the process, or it is time-consuming to understand it, they are usually unwilling to participate, particularly when TDRs are not the only way they can achieve their goals.

Based on the above review of success factors and failure features of TDR programs, the transaction attributes for analyzing TDR are summarized in Table 1:

Table 1 Transaction attributes framework

Attributes	Sub-attributes	Descriptions with reference to TDR
Specificity	idiosyncratic	e.g. Historic buildings have specific social value; case has historic factors
	spatial	e.g. different Lot location, orientation, traffic, environment, difficult to develop an evaluation system
	Human	e.g. Specialized skill and knowledge; Opportunistic behavior of participants
Time (Frequency)	Duration	Time to complete; extended period; unpredictable issues
	Frequency	repeated transactions; one-time or recurring exchange
Uncertainty	Information	Information asymmetries between gov. depts., sellers and buyers
	Atmosphere	Distrust between gov. depts., sellers and buyers, non-harmonious relationships

3. Methodology

Measuring the relative magnitudes of transaction costs

There are two approaches to measure transaction costs (Klaes, 2000). The first is an “objectivist” approach that measures transaction costs quantitatively using data from financial sectors. The second is the ‘subjectivist’ approach by adopting a comparative institutional approach which compares “transaction costs proxies” (e.g. uncertainty, asset specificity, and opportunism) to measure the “relative efficiency of alternative institutional/property rights arrangements or contractual choices” (Musole, 2009). Because of the very complex nature of TDR and limited number of successful cases providing measurable data, this research adopts the subjectivist approach, which identifies and appraises the relative magnitudes of transaction costs based on theoretical framework with transaction-costs attributes and sub-attributes.

Case study and TDR Mode abstracting

This research selected Hong Kong as the case study due to the following reasons: (a) Hong Kong is one of the most densely populated cities in the world, thus the conflicts between development and conservation are more serious. The market-based mechanism is essential to help realize the objective of urban planning. This research on how to carry out successful TDR is more urgently needed. (b) Different from that of U.S and Taiwan, TDR in Hong Kong is carried out case by case without legislation or a clearly defined transfer system, which can be

a typical representative of informal TDR system applied in dense cities. (c) Huge transaction costs are generated during the transfer process which makes TDR not that successful in Hong Kong, however, research about that is lacking. The authors have investigated the TDR cases for built heritage conservation in Hong Kong by reviewing scholarly literature, websites and government archives reported in public. Transfer modes, process and controversies are the key aspects of investigation. After that, three transfer modes generally recognized by literature are abstracted based on the actual implemented TDR cases without specific regulation backup in Hong Kong. They are used to be dissected for the comparison analysis of their transaction costs.

Interview and Questionnaire Survey

First-round: Face-to-face interviews with property development professionals are carried out in order to understand the TDR transfer process. There are not many TDR cases successfully implemented in Hong Kong and practitioners with actual experience are limited. We have sourced 15 experts with experience in TDR including 12 with industry working experience called ‘practitioner’ and three academics with TDR consultancy experience.

Second-round: After developing the transfer process, semi-structured interviews were conducted with the 15 experts to collect qualitative data. They were asked to give ratings about the transaction costs of each stage of TDR implementation process based on the transaction attributes. The three degrees of ratings are strong, semi-strong, and weak/non-existent. The respondents were also asked to state why they gave such ratings.

Third-round: After developing the three TDR modes (M1, M2 and M3), all the respondents were required to give ratings on transaction costs for each transfer stage based on the transaction attributes for each of the three modes, and to give brief reasons why they give such ratings. The three degrees of ratings include high, medium, and low. Each interview lasted from 50 to 90 minutes in all of the three rounds of interview. Audio-recorded interviews were transcribed verbatim and then analyzed and coded by NVivo 11. Profiles of the interviewees are listed in Table 2.

Table 2 The profile of interviewees

Interviewee	Field of Work	Work Experience	Qualification
1	Urban planning	10-14years	Academic Researcher/Consultancy
2	Building and real estate	15-19 years	Professor/Consultancy
3	Conservation	30 years or above	Professor/Consultancy
4	Urban planning	20-25 years	Practitioner/ Adjunct Professor
5	Conservation	30 years or above	Practitioner/ Adjunct Professor
6	Architecture and planning	20-25 years	Architect/planner
7	Architectural design	15-19 years	Senior manager
8	Land- use law	15-19 years	Attorneys
9	Conservation	25 years	CEO of an architectural company
10	Building	10-14 years	Surveyor
11	Building	20-25years	Surveyor
12	Central & Western Concern Group	20-25 years	Senior architect/Pressure group member
13	Community Alliance for Urban Planning	20-25 years	Urban planner/Pressure group member
14	Urban management	20-25 years	Practitioner
15	Urban economics	15-19 years	Practitioner

Notes: TDR in built heritage conservation refers to many fields, e.g. building, urban planning, land use, law, economic, management. In order to obtain a comprehensive idea, key stakeholders include professionals in building, town planning, architecture design, property development, heritage conservation, and concern groups. In addition, due to the complicated interview process, interviewees with economic knowledge and conservation research/work experience were selected from our previous research interviewee lists, who have interest, capability and responsibility to complete the interview process. Some academic and a few practitioners acting as adjunct professors in university can provide more comprehensive views.

Comparative Study Approach

A comparative study approach was utilized to compare the transaction costs between different TDR transfer modes, named M1, M2, and M3 based on the transaction attributes. This approach helped to show up the differences between the different modes from the perspective of transaction costs, e.g. what costs they have, how they are produced, and which also helps to eliminate the transaction costs. Through comparative studies, it can be seen clearly which mode can produce less transaction costs at different stages of the TDR process and which mode is more appropriate for practical uses.

4. Different TDR Modes Implementation Process

4.1 Three TDR Modes

TDR cases for built heritage conservation in Hong Kong can be abstracted in the following three modes.

Mode 1: Transfer to Contiguous Site of Heritage Sites (Land Exchange)

- **Description**

Sending sites and receiving sites are of equal land area. The total development rights of original heritage sites are transferred to the contiguous site of heritage sites. Owners of the built heritage hand over the heritage site and building on it to the government. The owner can carry out development activities in the new site after paying for the land premium (Figure 1).

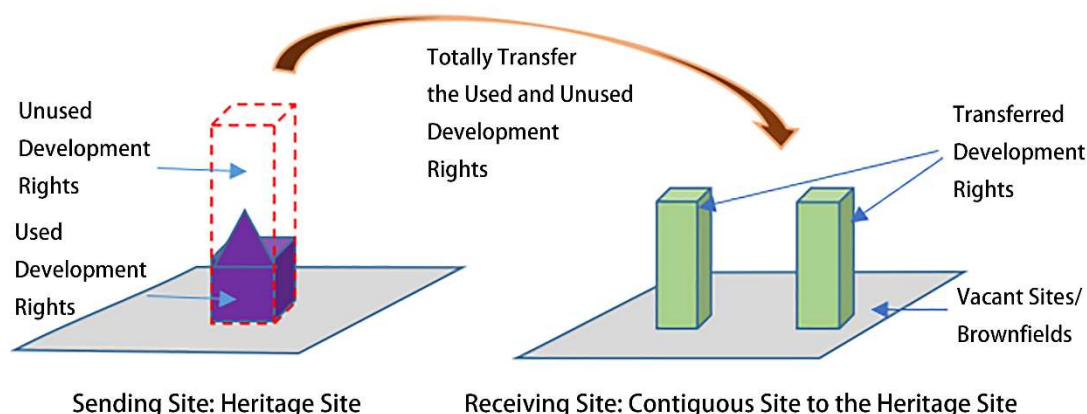


Figure 1 Transfer to contiguous site of heritage sites (Source: by authors)

Mode 2: Transfer to Non-contiguous Site but within the Same Ownership

• Description

The sending site and the receiving site are both under the same ownership. The unused development rights are wholly (Figure 2) or partly (Figure 3) transferred to the same owner's the other site. The heritage site still belongs to the owner and (s)he can use it as usual with some obligations to government. Any development within the heritage site should be reported to the government seeking for permission. The owner can carry out new development in another site.

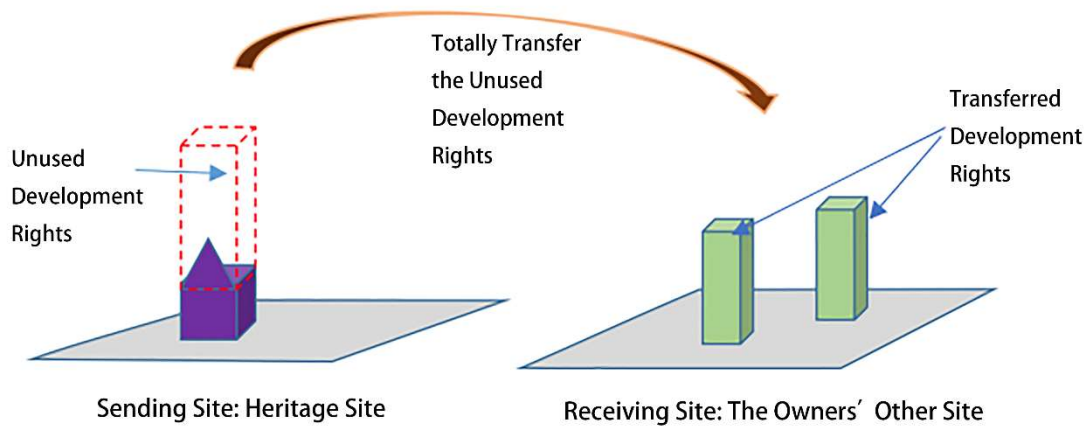


Figure 2 Transfer of all the unused development rights to new site under the same ownership (Source: by authors)

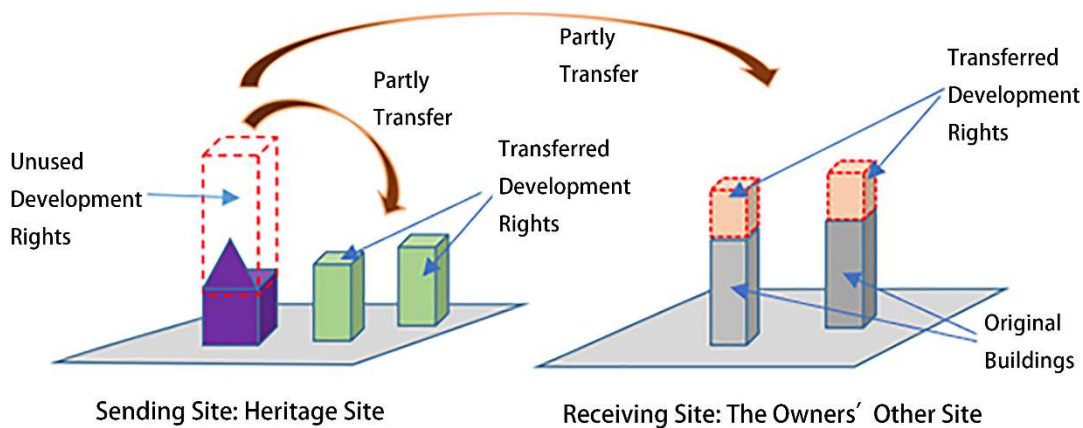


Figure 3 Transfer part of the unused development rights to new site under the same ownership (Source: by authors)

Mode 3 Transfer to Others' Site

• Description

Property owners can sell the unused development rights to developers which means the unused development rights are transferred from the heritage site to the other developer's site (Figure 4). Owners still can use the heritage building but do not have the development rights anymore which means they cannot demolish or redevelop the heritage building. Any maintenance work needs to be in line with the requirements of government. The developers should pay the owners for the development rights received. Then the developers can get additional plot ratio but the condition is that the receiving site should have the capacity to hold the additional development.

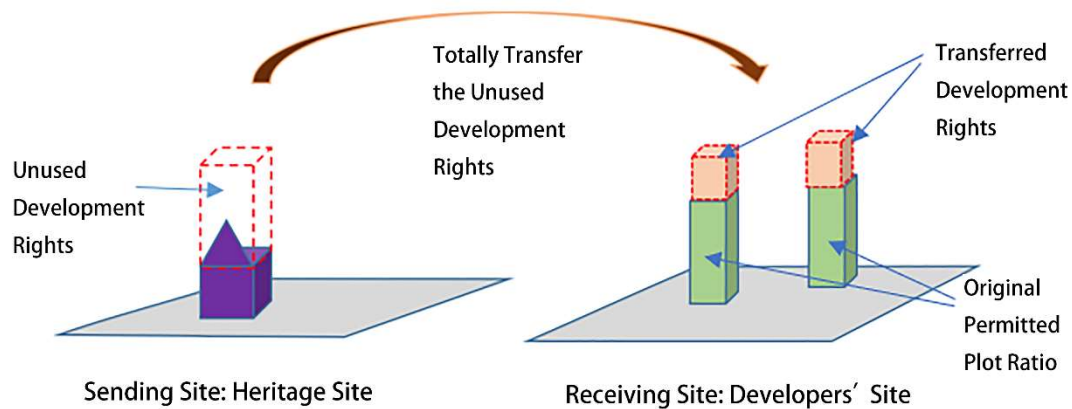


Figure 4 Transfer to developer's site (Source: by authors)

In Hong Kong, most of the privately-owned built heritages are the residence of celebrities. Of the 11 TDR cases, two cases have failed to implement TDR and the heritage buildings are demolished. Others have successfully transferred the development rights to the contiguous sites. One can observe that if the contiguous site is available to accommodate the additional density, the feasibility of TDR implementation would be greater, mainly because it is in line with the spirit of current land use zoning law. The informal TDR system in Hong Kong is very restrictive and its operation has not been able to deviate much from the framework of existing related legislation.

4.2 Implementation Process

Based on the interviews with practitioners, the informal TDR includes five major stages (Figure 5): preparation for TDR, project initiation, project execution, seeking approval, and contracting. When the government proposes to conserve a built heritage, a lot of preparation works need to be completed. For examples, they call for experts to discuss different conservation choices, evaluate the alternative solutions, and call for internal meeting to approve the potential methods. At this stage, some interest groups may get hold of some information and push for their agenda aiming to achieve their goals. When it comes to the project initiation stage, the government begins to consult with the property owner regarding conservation options. For example, using TDR, if the owner agrees to transfer, they will discuss the transfer methods. After checking the Statutory Outline Zoning Plan (OZP), appraising the land value, determining the eligible receiving sites by the government, they consult the owner about the above issues. If the owner agrees, the program comes into the execution stage. This stage consists of drawing up the terms and conditions of the sites to be granted, evaluating the effects of increased density, and consulting with the owners about the TDR terms and conditions. In addition, the programs need to be approved by the related bureau and departments, and the public consultation bodies. Generally, it is during the town planning approval stage that the public become fully aware of the details and can make objections. After that, it is the contracting stage that concludes the deal by executing relevant land grant documents.

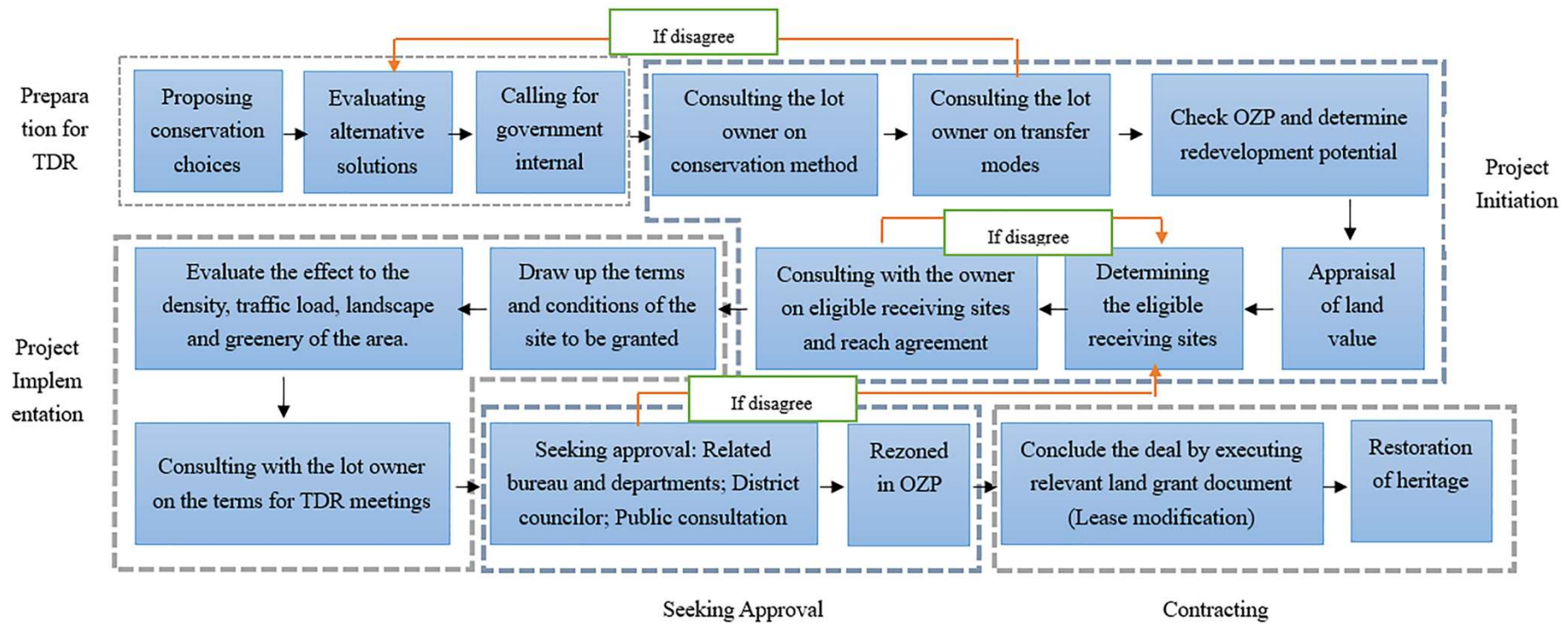


Figure 5 the outline of transaction stages of TDR process
 Source: Authors' drawing (based on the interviews with property development professionals)

5. Analysis and Findings

5.1 Transaction-cost Attributes in Each Stage of the TDR Processes

Preparation for TDR

First, preparation for TDR needs specific knowledge, and **specificity** is the principal attribute in this process. The government needs to call for internal meetings to discuss the potential cases and invite conservation experts to a forum for consulting the conservation options for the case. Each historic building has its own special social and architectural value. Therefore, the knowledge generated in each case is idiosyncratic. It is difficult to design a comprehensive and equitable evaluation mechanism to appraise the property value. Unlike farmland preservation projects, built heritage conservation can be carried out using various approaches and methods, since it is difficult to replicate one case to other cases. The government and experts should carefully consider each case. **Frequency** is another attribute that is relevant due to the idiosyncratic characteristic of built heritage conservation. Besides the need for specific knowledge, the consultation process can take a long time, as it includes on-site investigation, property appraisal, research on the possible adaptive re-use and public consultation, etc. Finally, a common consensus concerning the most appropriate conservation method should be reached to balance social, economic, and environmental aspects before consulting with the property owner. Spatial attributes not only influence the land value but also affect the re-use function, e.g. traffic conditions for large numbers of people to visit especially for very dense cities. Experts and governmental staff come from different departments and backgrounds, and the feasible conservation solutions at this stage can be very diverse. Thus, the process is affected by information asymmetries under the attributes of **uncertainty**, which generate additional transaction costs.

Project Initiation

After reaching an internal agreement within relevant government departments, the project is initiated. Consulting with the property owner regarding the conservation options (e.g. considering whether to purchase the property, purchase the development rights or transfer them, or both?), and appropriate transfer modes (e.g. a full or partial transfer? transfer within the bundles, or across blocks, districts, or cities?) can be a lengthy process requiring human resources with specific knowledge. Property owners might show some opportunistic behaviors in this stage, aiming to maximize their private profits. The owners might disagree with the plan proposed by the government. The existence of information asymmetries between the owners, developers, and the government increased the level of **uncertainties** in this stage. Land value is greatly affected by the spatial attributes and the valuation process that needs professionals' support. Information asymmetries also exist in the land valuation process. For example, the owners might expect higher values from those suggested by the government. Such situation

often leads to a conflict in which the owner might not be willing to cooperate with the government. After the land valuation, the most important task is to determine potential receiving sites. Unlike farmlands, heritage sites are often located in the city center. Selecting a receiving site that is of equal value compared to the built heritage site can be a challenging task, particularly in a dense city like Hong Kong. Importantly, the built heritage property owner needs to agree with the proposed receiving site and its evaluated value. Professional real estate surveyors are often responsible to complete this task. Completion of this stage can be associated with high level of transaction costs incurred by both private and public parties involved. These conservation cases are idiosyncratic as there are different owners with different interests and social backgrounds involved in each case. Thus, the consulting experience has low **frequency** for using the same for another case, although good relationship established during the negotiation process helps to build trust and reduce transaction costs.

Project Execution

Normally, this step is carried out based on the agreement between the government and the owner, thus, **uncertainty** attribute is not important. Lands Department draws up the terms and conditions of the site to be granted, and consults with the owners on the terms of TDR needs **specific** knowledge but the duration is not long. In addition, the government will carry out evaluation of the effect of additional density on the receiving sites and the detailed development layout, e.g. traffic load, landscape and greenery, therefore, spatial factors play a vital role in determining the transaction costs. The case-by-case valuation needed for each TDR case makes the possibility of replication low, thus, making these cases specific.

Seeking Approval

After agreement on all the terms, the promoting department should seek government departments' approval for the plan. This step incurs much time cost due to the need to seek approval from related bureau and departments, and consultation with the district councilors and the public. When the public oppose to the transfer of additional density to the receiving sites, the government will have to re-select a site and repeat the above process. This can lead to high levels of uncertainties. Information asymmetries between the different internal governmental departments and the public are the major problems in the approval stage. For example, the public without knowledge cannot participate; vague information is intended to be a show for the public. The public consultation needs huge amount of human resources with professional knowledge and communication skills. Thus, human **specificity** is also the obvious factor in this step. If good atmosphere is established between the government and the public, costs may decrease.

Contracting

After approval, it is time to conclude the deal by executing relevant land grant legal documents. One major contractual term to be entered is about how and what extent the owner should restore or maintain the conserved building according to the contract.

Summary of Transaction Attributes

With good understanding of the above analysis, the transaction attributes of each stage can be understood. Table 3 shows how the stages are affected by the transaction-cost attributes. Based on the interviews with practitioners, the rating of strong to weak attributes are assigned to the items in the framework with the aim of extracting the more significant transaction attributes for transaction costs study in the third-round interview. In the rating, “++” denotes strong attribute, “+” denotes semi-strong, and “-” denotes weak or non-existent of such a transaction attribute.

Table 3 Transaction attributes in TDR for built heritage conservation

<u>Stages</u>	<u>Main Parties involved</u>	<u>Transaction attributes</u>						
		<u>Specificity</u>			<u>Timing</u>		<u>Uncertainty</u>	
		Idiosyncratic	spatial	Human	Durati on	Freque ncy	inform ation	Atmosph ere
Preparation for TDR	Development Bureau; Planners; Experts	++	+	+	++	+	+	-
Project initiation	Property Owners/Developers/ Surveyor	++	++	++	++	+	+	+
project implementation	Planning Department; Property Owners/Developers/	-	+	+	-	+	-	-
Seek approval	Gov. related Dept. Councilor; Public	-	+	++	++	+	++	+
Contracting	Land department	-	-	-	-	-	-	-

Key: “++” denotes strong; “+” denotes semi-strong; “-” denotes weak or non-existent

Notes: This is the second round of interview. Face-to-face interviews were conducted with each interviewee to explore the transaction costs one of each stage based on **the** transaction attributes framework (Table 1). In the framework, descriptions were given as examples to illustrate the abstract concept of attributes of transaction costs, as well as to guide the interviewees to evaluate and supplement the specific issue of transaction costs under different sub-attributes. They were also required to give the reasons why they give such ratings, which help to enhance the accuracy of their ratings and contribute to discussion of findings. After interviews with all the professional experts, we pooled them together to calculate the average degree, and the result is shown as the above Table 3.

Source: Authors’ investigation (The ratings are based on interviews with 15 experts)

5.2 Transaction-cost Analysis of M1, M2, M3

From the above analysis, contracting stages generate the least transaction costs concerns, and which is closely followed by the project implementation stage. However, the major concerns for transaction attributes occur in the stages of Preparation for TDR, Project Initiation and Seeking Approval, which have much higher impact transaction costs. In order to simplify the interview process and obtain good feedback from the interviewees, the following part of this research **focuses on these three stages only**, to compare the transaction costs incurred in the three TDR modes: Transfer to Contiguous Site of the Heritage Site (M1), Transfer to Non-contiguous Site but within the Same Ownership (M2), and Transfer to Others' Site (M3).

After the second-round of interviews regarding the transaction costs of different transfer process, the third-round of face-to-face interviews were carried out with each interviewee to talk about the transaction costs incurred in each mode of M1, M2, M3, based on transaction attributes framework (Table 1). In the framework, descriptions are given as examples to illustrate the abstract concept of attributes of transaction costs, as well as to guide the interviewees to evaluate and supplement the specific issue of transaction costs under different sub-attributes. The specific data collection processes are as following: Firstly, the interview was carried out based on Table 1, which includes examples of factors need to be considered under each sub-attribute. Table 1 was shown to the interviewee and the researcher explained it to the interviewee through dialogue. For example, for the sub-attribute "spatial", we directed the interviewees to mainly consider the factor in the Table 1, e.g. lot location, orientation, traffic, environment etc. and asked the interviewees. For M1 (transfer to contiguous site), do you think in the stage of preparation is sensitive to these factors, and are there other factors should be considered for M1? It is believed that if M1 is more sensitive to these factors, transaction costs due to these factors are higher. Secondly, after the experts have considered the factors in the above step, they were required to give the ratings on the level of transaction costs incurred due to each sub-attributes, Three levels of scaling method are utilized, namely high (ticked as $\sqrt{\quad} \sqrt{\quad} \sqrt{\quad}$), medium (ticked as $\sqrt{\quad} \sqrt{\quad}$), and low (ticked as $\sqrt{\quad}$). Thirdly, they were also required to give the reasons why they give such ratings, and their replies help to check any misunderstanding and enhance the accuracy of their ratings. After 15 interviews, we put them together to calculate the average ratings of transaction costs, and their overall magnitude are presented in the following Table 4.

Table 4. Transaction costs of M1, M2, M3 rated by all the respondents

Stages	TC Sub-Attributes	Degree		
		M1	M2	M3
Preparation for TDR (Government internal discussion)	Idiosyncratic	√√√	√√√	√√√
	Spatial	√√	√√	√√√
	Human	√	√√	√√√
	Duration	√	√	√√
	Frequency	√√√	√√	√
	Information	√	√	√√√
	Atmosphere	√	√	√√√
Project initiation (Negotiate with private owners)	Idiosyncratic	√√√	√√	√
	Spatial	√√√	√	√√√
	Human	√√	√	√√√
	Duration	√√√	√√	√√√
	Frequency	√√√	√√	√√
	Information	√√	√	√√√
	Atmosphere	√√√	√	√√√
Seeking approval (Public consultation)	Idiosyncratic	√	√	√
	Spatial	√√√	√√	√√
	Human	√√	√√	√√√
	Duration	√√√	√√	√√√
	Frequency	√√√	√√	√√
	Information	√√√	√√√	√√√
	Atmosphere	√√√	√√	√√√

Key: if the interviewees supposed the transaction costs incurred due to the sub-attributes is high, they ticked "√√√"; if they supposed the transaction costs incurred due to the sub-attributes is medium, they ticked "√√"; if they supposed the transaction costs incurred due to the sub-attributes is low, they ticked "√".

Source: Authors' investigation (The ratings are summarized based on ratings given by the interviews with all the respondents)

5.3 Findings of Transaction Costs Analysis

Preparation for TDR

As presented in Table 4, the three modes of TDR have similar and high scores in idiosyncratic sub-attribute due to the specific value of heritage and historic reasons on the land property policy and land use policy. Each project has its special nature. M2 and M3 are more sensitive to spatial attributes because transferring development rights to the areas in different districts needs a long process of specifying transfer ratios, which may cost much more especially under the informal TDR mechanism. According to the interviews, they generate higher cost associated with human specificity, e.g. the feasibility studies of the transfer ratio, internal meetings with experts, as pointed out by the urban planner interviewees. M1 concerns transferring development rights to contiguous sites which have similar natures to the heritage sites. Contiguous sites are less sensitive to spatial attributes and require less human resources. When it comes to a vacant land or a brownfield site, it is easier for the government to negotiate

with owners. The frequency of M1 is low, as it needs a vacant/available site with similar land area nearby, thus transaction costs due to frequency are high. M2 requires owners to have another site that can accommodate additional density, and the frequency is also low. M3 is the most popular mode of TDR in other countries, while it is less implemented in Hong Kong. In the long run, M3 will be utilized most, as suggested by the conservation and management experts in the interview; therefore it gets low rating from the experts on frequency. Under the informal TDR mechanism, information asymmetries exist in different governmental departments and practitioners for the three modes as indicated by an urban planner and several surveyor interviewees, especially for M3. This is because it has a more complicated transfer process, which involves developers and thus specific knowledge is needed. M1 and M2 are much easier to be understood by most shareholders, as mentioned by pressure group members. M3 may cause much time costs and conflicts as it requires specification of transfer ratios, transfer prices, and looking for potential developers.

Project Initiation

After the preparation stage, the government negotiates with the owner about the transfer issues at the project initiation stage. M1 and M2 can be highly idiosyncratic. The owner might have deep personal feelings about the heritage site or might be critical to the proposed receiving site. Thus, each case will be different. M3 is not idiosyncratic in this stage because the owners get the monetary compensation whilst the developer obtain additional plot ratio that is very similar to any other land/property transactions. M1 and M3 are sensitive to spatial attribute because in M1 the owner will compare the two sites even if the land value announced from the official are similar, and in M3, the owner and developer will argue for the transfer ratio and price. However, for informal TDR, there is no existing system for establishing transfer ratio that can make people trust the policy mechanism. Thus, the costs arising from human specificity are high. This is because the human resources with special knowledge and negotiation skills are needed. For M1, the owner needs to hire real estate surveyors to evaluate the contiguous site. The potential opportunistic behavior of the owner might push the government to look for better receiving sites. Such process might take a long time as argued by the surveyors and lawyer interviewees. The frequency of such cases is low for M1 because it is difficult to look for vacant areas in a dense city like Hong Kong. For M3, it takes time to search for buyers, because the developer has other alternatives to get additional plot ratios, and the TDR duration may be a little bit longer. In addition, there may not be enough TDR applicants, which add the frequency cost though at a moderate level. Information asymmetries between the government, the owners and developers create a higher level of costs in M3 compared to the other two modes. This is because of the speculative behavior of developers and owners. The level of confidence in information provided and processes to follow can greatly influence transaction costs of M1 and M3.

Seeking Approval

Idiosyncratic is not obvious in this stage. Different from the preparation stage, M1 is closely related to spatial factors because the receiving site usually is a public land and the public has stronger power to support/oppose the plan. If the site is a brownfield, it is much easier for the public to accept. If the site is a green site, it may cause great social conflicts, as argued by the pressure group members in the interview. The relationship of the potential receiving site with the surrounding sites determine the possibility of approval, e.g. the additional density bringing traffic congestion or damaging the view corridor will be opposed. Thus, human specificity creates transaction costs to communicate with the public. If public oppose to it, the receiving site will have to be re-considered. The duration of this may be very long and frequency is low because different districts have different physical conditions and the public reacts differently. M2 and M3 are less sensitive to spatial attributes because M2 transfers development rights to the same owner, and M3 transfers to developers' sites, which may not be strongly opposed by the public. Information asymmetries might generate considerable level of costs in public consultation stage. Under the informal TDR mechanism, the public do not know much about administrative and professional practice processes involved in M3, and different governmental departments and stakeholders will have different understanding and idea about TDR. As pointed out by the pressure group members and architect interviewees, many problems could be raised during the process. Distrust among stakeholders may become the major cause of problems and thus harmonious atmosphere cannot be established.

Summary of Transaction Costs at key stages

The aim of this paper is to explore how transaction costs are generated in each stage of the TDR implementation process and provide an overall picture of which sub-attribute is more sensitive in each stage. This study does not intend to develop exact calculation formula of how transaction costs can be calculated. Therefore, weightings of different attributes and sub-attributes in transaction costs are not used and we assume that each attribute and sub-attribute have equal weighting. We hypothesises that different modes of TDR are more sensitive to some of the sub-attributes, which means transaction costs incurred due to those sub-attributes are higher. In totality, by qualitatively considering the ratings of transaction costs incurred due to these sub-attributes, as shown in Table 4, the authors form a general impression of the magnitude of the transaction costs involved in the three key stages for each of the three TDR modes. For preparation stage, M3 has the highest transaction costs with M2 being medium, and M1 is low comparing to M2 and M3. For the stage of project initiation, M1 has high transaction costs with M2 being low, whilst M3 is considered as medium. For the stage of seeking approval, M1 has high transaction costs with M2 being medium, and M3 can be

considered as medium. This qualitative summary of the magnitude of transaction costs during the different stages in the three TDR modes are to read with above limitations in mind.

6. Discussions and Recommendations

Contribution of the Transaction Attributes Framework

Economic efficiency is often taken as an important factor in evaluating the feasibility of methods adopted for built heritage conservation. Transaction costs are shown as one of the influencing factors to evaluate the economic efficiency from the perspective of New Institutional Economics. High transaction costs negatively affect the success of TDR programs. High transaction costs associated with TDR programs might discourage people from participating in the policy resulting in limited policy effectiveness. This paper applies the transaction attributes framework to analyze the five major stages of TDR implementation process and compare three typical TDR transfer modes within the Hong Kong's informal institutional context. It contributes to the literature by showing that transaction costs of TDR programs can be analyzed and appreciated; and the relative magnitudes of transaction costs at the different implementation stages of different TDR modes can be compared systematically through a transaction attributes framework. The findings reveal what transaction costs involved in each process; how they are produced and who bears these costs. The results help policymakers to realize the problems of informal TDR from the perspective of transaction-cost economics and promote them to design a more efficient policy instrument. It also sheds light on cities worldwide, especially dense cities with informal TDR programs implemented for built heritage conservation.

Transaction Costs Consideration in the Key Stages of TDR Implementation Process

Informal TDR programs involves five stages of activities that generate transaction costs, including the preparation stage, project initiation, project execution, seeking for approval, and contracting. This study shows that most of the transaction costs are generated in the key stages of “preparation”, “project initiation”, and “seeking approval”.

- In the preparation stage, unique characteristics of built heritage make the sub-attributes of idiosyncratic and incur a long duration which greatly influences transaction costs. This contrasts sharply with the cases of nature or farmland preservation projects.
- In the project initiation stage, much consultation work to agree on transfer methods and receiving sites with private owners needs much time and human resources with specific knowledge creating much transaction costs mainly in the form of time cost, human resource cost, and uncertainty. Idiosyncratic built heritage sensitive to spatial attributes makes the case experience have low frequency to be copied to another case, which also increase the transaction costs. To spread out the transaction costs among cases, government could

publicize as much as permissible case experience for sharing in industry and such promotion may also increase TDR demand and create a market for it.

- The seeking for approval stage takes much time cost and human resources. Information asymmetries between government departments and the public cause much transaction costs. This aspect could be improved by government through close dialogue and providing a practice supporting platform to the practitioners, e.g. via dissemination of guidelines for TDR process.

Transaction Costs Magnitude in Different Stages of Various TDR Transfer Modes

This study has succinctly abstracted three typical transfer modes including Transfer to Contiguous Site of the Heritage Site (M1), Transfer to Non-contiguous Site but within the Same Ownership (M2), and Transfer to others' Site (M3). We summarize that the transaction costs allocation in the key stages of TDR implementation for each of the transfer modes. Table 4 helps us to appreciate, for each TDR mode, which stage accounts for more transaction costs, so that appropriate institutional arrangements could be designed/adjusted to address the exact stage of TDR process to get the most effective transaction costs avoidance result.

- For M1: Transaction costs are low in the preparation stage, because transfer to the contiguous site is much simpler than M2 and M3. However, the associated transaction costs are high in the project initiation and approval stages due to private owners' critical requirements for the receiving sites and public oppose to the potential receiving sites, which generates much time cost. As the existing planning laws allow the transfer of development rights to contiguous site, to cut down the transaction costs in the latter two stages, government could formalize as much as possible some of the transfer requirements and approval procedures to closely resemble to normal town planning application.
- For M2: Transaction costs are at a medium level in the preparation stage. The process is easily understood by stakeholders but determining transfer ratios needs feasibility studies. However, the associated transaction costs in the project initiation and approval stages are low and medium respectively. Compared to M1 and M3, transfer within the same ownership saves much time and human resources to negotiate with the owner. Our study of Hong Kong TDR cases shows if the owners have other sites that can accommodate more development, they are more willing to participate in TDR programs. To reduce the hurdle of agreeing the transfer ratio, formula could be established for calculating land exchange premium between the two pieces of land owned by the same owner taking part in TDR that contribute to public interests and better environment.
- For M3: Transaction costs are high in the preparation stage because M3 is sensitive to spatial attributes and transfer process is the most complicated among the three modes, which causes much time cost and human resources, and it is easy to cause conflicts. M3 should be an attractive transfer method for developers to explore beyond their owned land,

under the informal institutional situation without specific TDR regulation backup. However, problems with not enough TDR participants or buyer and information asymmetries between the government, the owner, the developer and the public, etc. lead to transaction costs increase. To make it work better, much effort is required from the government and industry to establish an open market system to make TDR an attractive alternative to gain extra development rights from outside their own landownership. Such venture could include exploring the TDR bank approach to make the full use of the market forces.

Reducing Transaction Costs with Less Institutional Barriers to TDR

Transaction costs of informal TDR programs are mainly resulted from the institutional barriers of policy design and implementation. These barriers include unclear rules or lack of guideline for ascertaining the valuation of property and transfer ratios, lack of nominated TDR agency responsible for transfer issues and coordinating departmental work, and lack of pre-determined methods to designate potential receiving areas. These barriers are all within the control of government to improve if there is an obvious policy for implementing TDR. This study also proposes some implications and identifies the specific stages and process that can be addressed to reduce transaction costs under the informal system for TDR.

- Firstly, without going full steam for establishing a formal system with legislation for TDR, we could make TDR more formalized and thus less likely to be challenged. For example, developing TDR guidelines and designating potential sending and receiving areas, within the existing statutory zonings mechanism. This can save much time cost and decrease uncertainties.
- Secondly, establishing a TDR agency that can coordinate between different government departments, supervise the transfer process, and facilitate searching for potential sellers and buyers of development rights. This can help the transfer process to be conducted more smoothly, resulting in decreased levels of transaction costs due to tackling information asymmetries or inharmonious atmosphere, whilst increasing the frequency of experience for other cases.
- Thirdly, public education through websites, brochures and community activities are significant ways to make citizens have good knowledge and abundant available information. With the understanding and cooperation of the public, it can effectively decrease the transfer duration and uncertainty.
- Additionally, idiosyncratic and spatial sensitive are the characteristics of built heritage conservation programs, which is different from farmland conservation. Therefore, decrease of the transaction costs from the perspective of idiosyncratic and spatial attributes need long-term studies to explore more systematic rules and approach to conservation and to recognize the characteristics local conservation cases. This should line up with government setting clear conservation goals, developing implementation mechanism and designating

conservation area and location of receiving area which will help decrease the idiosyncratic and spatial sensitive impact.

Conclusions

This paper has developed a theoretical framework to analyze transaction costs in details in TDR implementation process based on the theory of transaction costs and of TDR approaches. It takes Hong Kong as case study and abstracts three TDR modes from practical cases to investigate the allocation of specific transaction costs at the different stage under the 3 transfer modes. The results provide guidance for policy makers in developing institutional arrangement for TDR. This study, analyzing the TDR implementation and associated transaction costs under the informal TDR system in Hong Kong, could provide useful reference to cities with similar planning and land use system exploring for informal basis for TDR. It can also provide theoretical foundation for the further study on the differences in transaction costs under formal and informal TDR systems.

7. Reference

- Alexander, E. R. (2001). A transaction-cost theory of land use planning and development control: towards the institutional analysis of public planning. *The Town Planning Review*, 72(1), 45-75.
- Barzel, Y (1989) Economic analysis of property rights. Cambridge University Press, Cambridge
- Bruening, A. D. (2008). TDR Siren Song: The Problems with Transferable Development Rights Programs and How to Fix Them, *The. J. Land Use & Envtl. L.*, 23, 423.
- Budiman, Yustika, A. E., Multifiah, & Noor, I. (2014). Comparative analysis of transaction costs of seaweed farmers. *Journal of Economics & Sustainable Development*
- Chan, E. H., & Hou, J. (2015). Developing a framework to appraise the critical success factors of transfer development rights (TDRs) for built heritage conservation. *Habitat International*, 46, 35-43.
- Chu and Uebegang, (2002). Saving Hong Kong's cultural heritage, civic exchange.
- Coase, R. H. (1960). Problem of social cost, the. *Journal of Law & Economics*, 3(4), 1-44.
- Coase, R. H. . (1988). 1. the nature of the firm: origin. *Journal of Law Economics and Organization*, 4(1), 3-17.
- Coggan, A., Buitelaar, E., Whitten, S. & Bennett, J. (2013). Factors That Influence Transaction Costs in Development Offsets: Who Bears What and Why? *Ecological Economics*, 88, 222-231
- Demsetz, H. (1968). The cost of transacting. *Quarterly Journal of Economics*, 82(1), 33-53.
- Ducos, G. & Dupraz, P. (2007) The asset specificity issue in the private provision of environmental services: Evidence from agri-environmental contracts. 8th International Meeting of the Association for Public Economic Theory, Vanderbilt University, Nashville.
- Ducos, G., Dupraz, P. & Bonnieux, F. (2009). Agri-Environment Contract Adoption Under Fixed and

- Variable Compliance Costs. *Journal of Environmental Planning and Management*, 52, 669-687.
- Falconer, K. & Saunders, C. 2002. Transaction Costs for SSSIs and Policy Design. *Land Use Policy*, 19, 157-166.
- Fang, L, Howland, M, Kim, J, Peng, Q, Wu, J. (2019) Can transfer of development rights programs save farmland in metropolitan counties? *Growth and Change*. 00: 1– 21
- Hou, J., & Chan, E. H. W. (2017). Policy approaches for sustainable conservation of built heritage using transfer of development rights: international comparison. *Sustainable Development*, 25.
- Janssen-Jansen, L. B. (2008). Space for space, a transferable development rights initiative for changing the dutch landscape. *Landscape & Urban Planning*, 87(3), 192-200.
- Johnston, R., and Madison, M. (1997). From landmarks to landscapes: a review of current practices in the transfer of development rights. *Journal of the American Planning Association* 63:365–78.
- Kaplowitz, M., Machemer, P., and Pruetz, R. (2008). Planners' experiences in managing growth using transferable development rights (TDR) in the United States. *Land Use Policy*, 25 (3), 378–387.
- Klaes, M. (2000). The birth of the concept of transaction costs: Issues and controversies. *Industrial and Corporate Change*, 9(4), 567–593. Online: <<http://icc.oxfordjournals.org/cgi/reprint/9/4/567.pdf>> Accessed December 2018.
- Lai, L. W. C. (1997). Property rights justifications for planning and a theory of zoning. *Progress in Planning*, 48(3), 161–245.
- Libecap, G. D. (1989). Distributional issues in contracting for property rights. *Journal of Institutional & Theoretical Economics*, 145(1), 6-24.
- Machemer, P. L., and Kaplowitz, M. D. (2002). A Framework for Evaluating Transferable Development Rights Programmes. *Journal of Environmental Planning and Management*, 45(6), 773-795.
- McConnell, V., & Walls, M. (2009). Policy monitor U.S. experience with transferable development rights. *Review of Environmental Economics & Policy*, 3(2), 288-303.
- Mettepenningen, E., Verspecht, A., & Huylenbroeck, G. V. (2009). Measuring private transaction costs of european agri-environmental schemes. *Journal of Environmental Planning & Management*, 52(5), 649-667.
- Musole, M. (2009). Property rights, transaction costs and institutional change: Conceptual framework and literature review. *Progress in Planning*, 71(2), 43-85.
- Nilsson, F. O. L. (2009). Transaction Costs and Agri-Environmental Policy Measures: Are Preferences Influencing Policy Implementation? *Journal of Environmental Planning and Management*, 52, 757-775.
- North, D. C. (1990). *Institutions, Institutional Change and Economic Performance*, Cambridge, Cambridge University Press.
- Pogodzinski, J. M., & Sass, T. R. (1990). The economic theory of zoning: a critical review. *Land Economics*, 66(3), 294-314.
- Pruetz, R., and Standridge, N. (2009). What Makes transfer of development rights work? Success Factors from research and practice. *Journal of the American Planning Association* 75:78–87.

- Rydin, Y. (1998). Land use planning and environmental capacity: reassessing the use of regulatory policy tools to achieve sustainable development. *Journal of Environmental Planning & Management*, 41(6), 749-765.
- Shahab, S., Clinch, J. P. & O'Neill, E. (2018a). Timing and Distributional Aspects of Transaction Costs in Transferable Development Rights Programs. *Habitat International*, 75, 131-138.
- Shahab, S., Clinch, J. P. & O'Neill, E. (2018b). Estimates of Transaction Costs in Transferable Development Rights Programs. *Journal of the American Planning Association*, 84(1), 61-75.
- Shahab, S., Clinch, J. P. & O'Neill, E. (2018c). Accounting for Transaction Costs in Planning Policy Evaluation. *Land Use Policy*, 70, 263–272.
- Shahab, S., Clinch, J. P. & O'Neill, E. (2019a). An Analysis of the Factors Influencing Transaction Costs in Transferable Development Rights Programmes. *Ecological Economics*, 156, 409-419.
- Shahab, S., Clinch, J. P. & O'Neill, E. (2019b). Impact-based planning evaluation: Advancing normative criteria for policy analysis. *Environment and Planning B: Urban Analytics and City Science*, 46, 534-550.
- Shahab, S. and Viallon, F.X. (2019). A transaction-cost analysis of Swiss land improvement syndicates. *Town Planning Review*, 90, 545-565.
- Visseren-Hamakers, I. J., Leroy, P., & Glasbergen, P. (2012). Conservation partnerships and biodiversity governance: fulfilling governance functions through interaction. *Sustainable Development*, 20(4), 264-275.
- Williamson, O. E. 1975. *Markets and Hierarchies, Analysis and Antitrust Implications: A Study in the Economics of Internal Organization*, New York, The Free Press.
- Williamson, O. E. 1981. The Economics of Organization: The Transaction Cost Approach. *American Journal of Sociology*, 548-577.
- Williamson, O. E. 1985. *The Economic Institutions of Capitalism*, New York, Free Press.
- Williamson, O. E. (1991). Comparative economic organization: the analysis of discrete structural alternatives. *Administrative Science Quarterly*, 36(2), 269-296.