# The New Institutional Economic Approach to Land Development Game: Integrating Transaction Cost and Efficient Institutional Framework in Synergic Urban Land Use-Transport Development Model

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## Abstract

Land and property development process include a series of multifaceted activities ranging from purchasing to converting it for development purposes and everything in between. The process itself encompasses multiple stakeholders, drivers, and contributions from diversified public and private actors and transaction cost arises out of their complex interaction. Transaction costs incurred during any kind of human interactions (i.e. transactions). Every actor involved in the process wishes to maximize his achievement under various constraints and hence institutional arrangement (i.e. set of humanly devised rules to administer the constraints) is necessary for efficient management of the development process. Therefore, to devise an optimum outcome out of economic and social transactions in the property development process, cooperative and competitive relationships between individuals should be understood from a broader socio-political and governance structure. In this research, it is critically argued that land and property development process should implicate a multifaceted set of formal and informal rules or institutional arrangement to govern the intrinsic interaction, action and thereby reducing the

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related transaction cost. The argument is further reproachfully evaluated and implicated in the urban development process through the myopic lens of Transit-oriented development (TOD) pathway. A vigilant combination of descriptive and explanatory research approach is adopted to analyze the connection between theory and practice.

**Keywords:** *Transit-oriented development (TOD), Transaction cost, Property development process, Institutional Arrangement, Land Value Capture.*

## Introduction

Land always plays a very perilous role in the socio-economic, politico-cultural, environmental sector for nurturing the development of people and states. For ensuring convenience and welfare of urban dwellers, land use planning has widely recognized the integration of land use-transportation synergic relationship as a precondition for inclusive and efficient transformation of the urban built environment. In practice, it may take different forms to offer relief from the array of torment concerns arising out of growing ribbon pattern of development and overarching motorized private transport dependency in many western countries. As a comprehensive measure in land-use planning, Transit-Oriented Development (TOD) promotes a "people-centric" approach in stimulating inclusive and integrated development for all through improved mobility and access. TOD is a mixed-use, compact and desirable built form in contemporary cities for land use planning integrating the comprehensive mass transit ridership. It eventually stimulates tremendous social and economic benefits contributing toward sustainable growth of a city and thereby the idea has attracted increasing popularity in many western cities. The improved transport accessibility consequently upsurges the land value and the captured value can be utilized to finance the urban mass transport infrastructure system and to sustain its operational viability (Tang *et al.*, 2005; Yiu, 2014; Suzuki *et al.*, 2015; Tang, 2018).

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But obtaining the synergy effect efficiently in an urban context is not an easy task. The land development process most often results in power and identity-related crisis followed by consequent conflicts arising out of the involvement and interaction among a wide range of diversified actors and stakeholders (Fisher, 2005; UNDP, 2014). It necessitates numerous interdepend decisions, actions and interaction between different stakeholders, exchange of information, assets of economic values, which may not be easily divisible. The concept of Transaction cost furthermore contributes to the theory of property development as a complex process. Every player involved in the process of property development wishes to achieve some objectives determined individually or collectively. Additionally, non-compliance and opportunism arising out of manmade arrangement among different players eventually tend to engender transaction costs (i.e. negotiation, enforcement costs under divisible constraints of the process). As higher transaction costs are positively correlated with the inefficiency of the system, efficient development process requires a considerable reduction in the cost of transaction (North, 1981; 1990; Buitelaar, 2016; Tang, 2018).

Hence, the land and property development should be addressed and governed through a comprehensive human interaction management approach with due focus on the associated constraints in a local socio-economic and political context. Formulating, interpreting, and enforcing formal and informal rules or efficient institutional arrangement is indispensable in finding an efficient governance structure as well as dominant rules to govern the action and interaction of different players involved in the land development process. The effective rule structure or institutional framework correspondingly assists in identifying an effective coordinated action among numerous players and curtailing the associated transaction costs toward accomplishing a desirable and efficient outcome in transforming the urban built environment (Alexander, 2001a; 2001b; Tang, 2018).

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Therefore, this particular study has tried to empirically respond to the two research questions: (1) How do the formulation, interpretation and enforcing the Rules or institutional arrangement can govern the interaction and action of various players in the land development process? (2) What are the dominant rules for efficient management of the development process concerning the Transit-oriented development (TOD) pathway in practice? In essence, this paper applies the extensive theoretical insights of new institutional economics and transaction cost framework in investigating the research argument that whether the efficient rule structure or institutional arrangement can bring anticipated development outcome through governing the interaction and action of various players involved in the process of land and property development.

**Review of Relevant Literature: Theoretical Understanding of the Concept**

Today, due to growing concern on broader sustainability and environmental issues, urban planners, policymakers are more apprehensive about the drawbacks of auto-oriented cities. Several studies have acknowledged that high- density mixed-use development would generate a larger number of mass rapid transit ridership (Bemick and Cervero, 1997; Tang *et al.*, 2005). Cervero and Kockelman (1997) have identified three critical land-use components i.e. Compact high density built environment, diversity of land uses and pedestrian responsive urban design can encourage non-motorized travel reducing the vehicular trips. Therefore, to address the negative externalities arising out of rapid urbanization, a renaissance transit-oriented development (i.e. mixed-use, higher-density urban development along major transport routes and nodes) has ascertained worldwide as one of the most efficient means of urban form in the contemporary cities (Suzuki *et al.*, 2015).

Given the highly expensive transit infrastructure to build, maintain and operate, it is quite difficult to promote and prioritize TOD in cities with low resource base. To overcome this

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challenge and associated financial obstacle, a wide arrays of literature have supported the use of development based land value capture (LVC) mechanism to capture the increased property values arising out of improvement in the transit infrastructures. The generated revenue can be utilized in turn to finance and maintain the transit infrastructure as well as providing different support service to the low-income and needy groups. In general occasions, Government can sell or lease the appreciated land or development rights due to transit investment to the land developers, private authorities and transit agencies as well as can mediate partnership among them for the transaction of property, financing, building, maintaining the transportation infrastructures and developed properties. In this process of creating and sharing values, the developers or transit agencies can invest for transportation infrastructure development (i.e. transportation links and fixed facilities as Stations) which will eventually attract more people to do business and live there due to increased accessibility with a consequential land value increase to recover the cost of the investor as well as making handsome profits. In a more complex setup like land consolidation, readjustment and urban redevelopment, the individual landowner can make small groups and consolidate their land to join a partnership with private developers in multi-purpose projects as a shareholder to make an extra profit rather than only selling land to them (Suzuki *et al.*, 2015).

Apart from land value capture, Tang *et al.* (2005) have identified multifaceted benefits (i.e. improved accessibility, compactness of urban development, diversified socio-economic benefit) arising out of the transport-land use synergy integrating urban mass transit railway and high-density property development near at the station areas. The Synergic relationship of integrated Railway and Property Development Model (R+P model) is exhibited in Figure 01. Intensification of property around the transport nodes can support more residents through enhanced floor space as well as the sophisticated intensity of urban activities with improved accessibility. It will, in turn, improve the mass transit ridership, more economic return and

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hence releases the government's burden for subsidizing the operational viability and improved efficiency of the mass rapid transit (MRT) (i.e. Railway) and human activities.

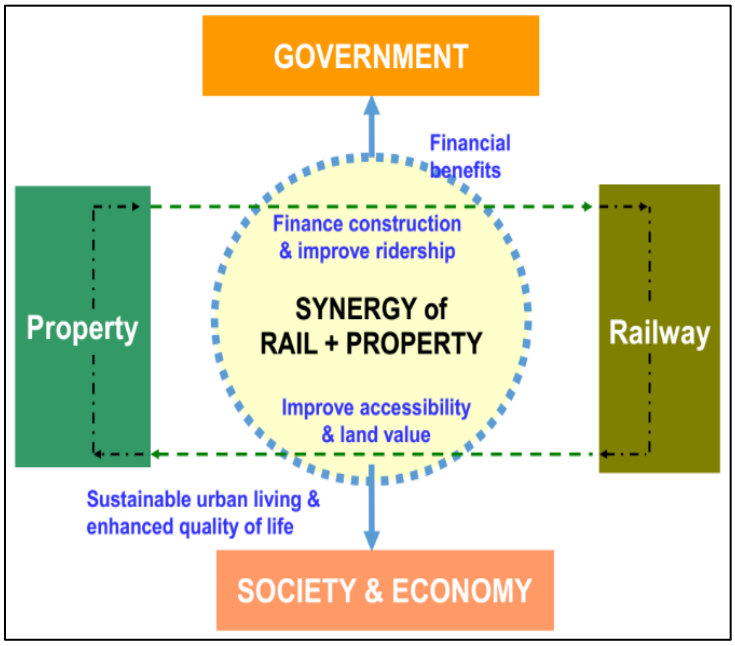


**Figure 01:** R+P model: A win-win situation for Transport-Land use Synergy

(Source: Adapted from Tang *et al.*, 2005 and Yiu, 2020)

Despite being comparatively a new concept, the US successfully applied "integrated rail-property development model (R+P model)" and value capture over a century ago to finance urban streetcar networks. Currently, in US Washington Metrorail's joint development program collectively produce a very insignificant percentage the system's annual revenues through air-rights leases and station connection fees. Further major International applications of are R+P model includes but not limited to Rail-Integrated Projects in London (i.e. King's Cross Station, Euston Station), Redevelopment of Hudson Yards in New York, High-Speed Rail From Sydney to Melbourne, metro in Hyderabad, India and so on. Hong Kong still practices the model as an efficient mean in the public transport industry as a functional instrument in guiding urban development as demonstrated in Figure 02 and hence established a unique success story with blazing international recognition of the R+ P model's application throughout the world

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(Bemick and Cervero, 1997; Cervero *et al.*, 2004, Tang *et al.*, 2005; Cervero and Murakami, 2009).

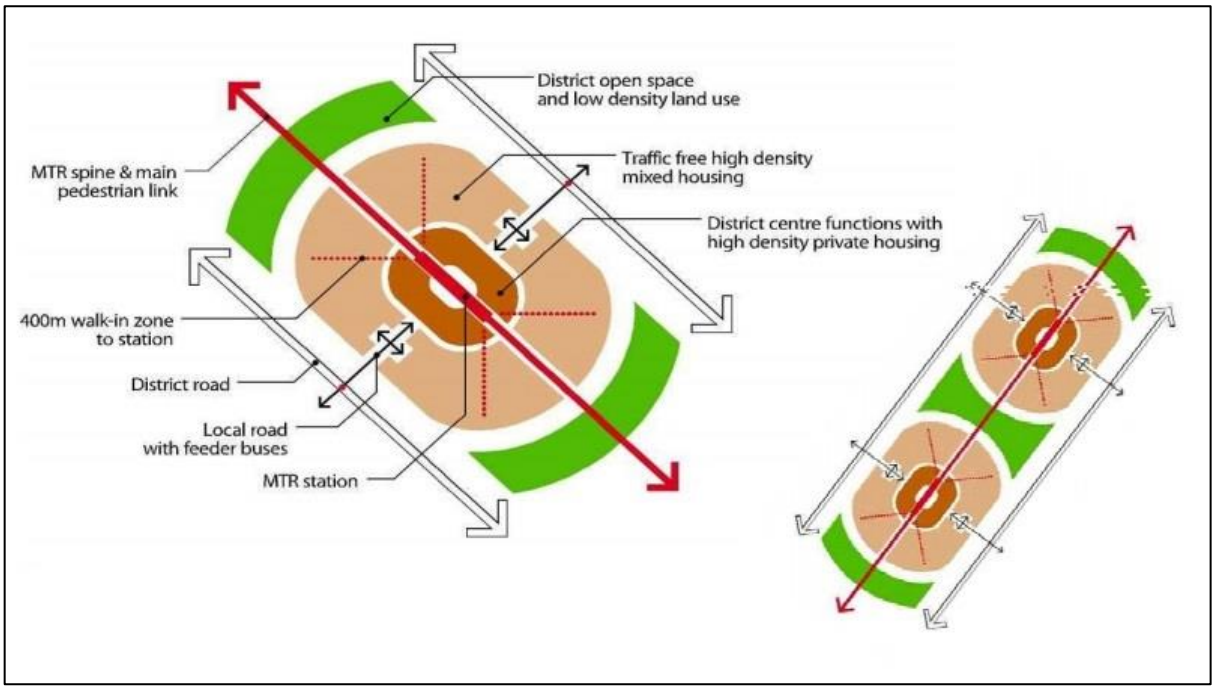


**Figure 02:** R+P supporting Transit-Oriented Development (TOD) in Hong Kong

(Source: Yiu, 2014)

Rather than simply juxta-positioning railway and property development as well as using the generated real estate income for financing the development process, the R+P model embodies a unique approach i.e. institutional framework for handling and coordinating numerous players' actively involved in the complex transit-oriented urban development process to achieve an efficient outcome out of land use-transport interaction (Tang *et al.*, 2004, Tang 2018). It serves the broader purpose of town-planning objectives e.g. promoting transit-oriented development (TOD) alongside acting as a financial model (Cervero and Murakami, 2009).

Depending upon specific circumstances, different institutional forms or models as "cooperative exchanges" or "exploitative appropriation" can govern the efficient production of the urban built environment (Alexander, 2001a; 2001b; Hirshleifer, 2001). An institutional setup like

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co-operative exchanges focuses on the enhanced economic efficiency or benefits of the stakeholders while welfare reduction other contracting parties through exploitative appropriation. The collective outcome of these strategic interactions, in the long run, can strengthen or transform the prevailing institutional setup governing the land development process (Aoki 2000; Campbell, 2004; Tang, 2018).

The underlying institutions in connection with the property rights system determine whether a sensible use and development of the land resources can generate and capture expected benefit. The new institutional economic (NIE) perspective recognizes “institutions” as the "rules of the game" for land development process covering formal rules, informal norms, and their enforcement characteristics (North, 1981; 1990). The institutional setup structures the pattern of social interaction providing the systems of incentives and constraints which impact behavioral aspect. Moreover, this NIE approach referring to the use of neoclassical economic theories in explaining economic and social institutions has identified that market transactions and their enforcement arising out of privatization of valuable land resources and its voluntary trading with others will impose “transaction cost” (New School University, 2002; Tang, 2018).

There are several key players involved in the land Game (e.g. Land Owner, Developer, government, private Transit Company and so on). Each player has some specific objective which he wants to optimize. The landowners seek to make money from the land transaction. The land Developers sole objective is to make a handsome profit from the development process. Governments are both the planning and land authorities with multiple objectives. As the planning authority, the government is responsible for preparing the statutory plans, policy objective and regulatory measures (i.e. formulating statutory plans, approve demolition and development, selling Government lands) to govern the actions of the players involved in the development process. Transaction costs are exerted out of the player’s interaction and actions under certain constrained and opportunistic contextual situation (Tang, 2020). The key actions

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of different players and the resulting cash flow out of a monetary transaction in the process are exhibited through an empirical illustration as shown in Figure 03.

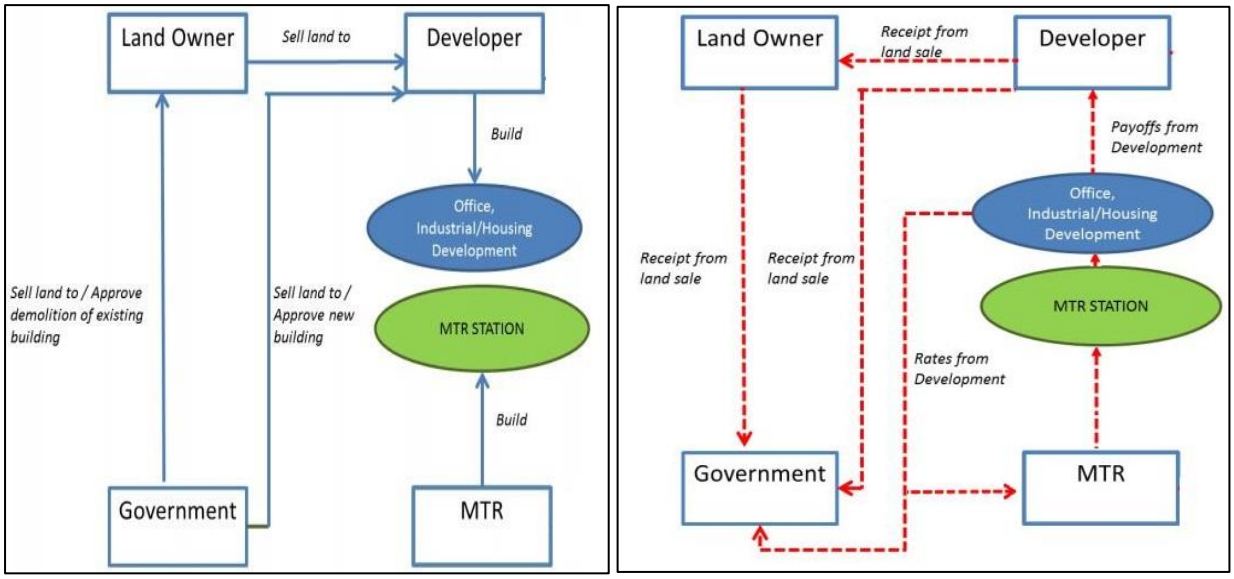


**Figure 03:** Key actions of different players (Left) and the resulting cash flow (Right) in the Land Development Game

(Source: Adapted from Tang, 2020)

In general, "Transaction costs" refer to all costs which emerge due to assumed imperfect rationality and incomplete information in many neo-classical models (Lai, 1994; Lai *et al.*, 2003; Buitelaar, 2016). The concept of Transaction cost was first devised in Coase's work (1960) fundamentally departing from neoclassical economics with a focus on the costs of market transactions and the efficient allocation of property rights (Williamson, 2000). In the new institutional economics, a transaction is assumed as the basic unit of its analysis. Dixit (1996) defined it as the interchange of resources, assets of economic values, or reciprocal promises and action between the contracting parties in society. It does not contribute directly to the output of a development process i.e. production costs. From a cost-efficiency perspective, it can be seen as deadweight losses or frictions affecting effective resource allocation and hence be minimized for more smooth and efficient development process through devising an

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appropriate institutional arrangement towards plummeting the transaction cost itself (Webster, 1998; Tang, 2018).

**Institutional Arrangement in Land Development Process: Empirical Findings and Discussions**

Land Development process as integrated railway and property development involves numerous exchanges of information and actions between many players engendering numerous ex-ante (i.e. costs involved in searching for the best deal, negotiation costs and so on) and ex-post (i.e. costs incurred after securing a contract as costs of enforcement, monitoring etc.) transaction costs. In a general setup, complying with planning regulations ( e.g. hiring consultants, and extensive negotiating with the government), opaque legislative requirements, strategic choices of transacting parties, uncertainty and opportunism in the real world, bounded rationality incurs transaction costs of the development process. Efficiency rules involve a combination of institutional arrangement as assigning rights to the most capable decision agents taking complete responsibility of benefits and costs subsidiarity, the apposite orientation of incentives and constraints and internalization of effective governance of contractual relations (Staley, 1997; Allmendinger and Ball 2006; Wong *et al.*, 2011).

Transaction costs framework can govern the comparison among different institutional arrangements as an effective device for coordinating the development process (Buitelaar, 2016). The issue of property right is obvious when the concept of new institutional economics and transaction cost are applied to the land development process. The success of efficient market transaction of property right highly depend on the institutional arrangement of the land and property development process. "Coase Theorem" and "New institutional economics" have suggested that privatization, market negotiations and transaction between individual parties in an open market and market transactions for these scarce land resources will lead to an optimum

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solution curtailing the associated conflicts and the high transaction cost as well (Hong, 1998; Alexander, 2001a; 2001b; Lai and Lorne, 2003; Seabrooke *et al.*, 2004; Tang *et al.*, 2005).

To govern the actions and behaviour of the parties involved in the transaction, different models for the institutional arrangement or a combination of them may prove successful. Tang *et al.* (2005) have proposed two distinguished models of the institutional form of land use to serve these purposes. The first model has focused on the statutory framework to regulate third-parties actions (i.e. diminution, and restrictions of private individual property rights in and near transit stations) and governance of public-sector decision making in broader planning issues. Given this model, widespread government regulation and policy measures, statutory provision of town plans, land use restrictions like zoning, land lease are proposed to widely practice for ensuring coordination among key players involved in the land development process. The transit company under private ownership will act partially as a developer of the transit links and fixed facilities only. The nature of interaction among key market players as well as their compliance with the rule structure apportioned by the government policy regulations will largely determine the accomplishment of project implementation.

On the contrary, unlike over-emphasis on the government policy restriction in the first model, the central thesis of the second model is to put special prominence on the existence and key performance of a liberal private transit company at the centre of planning and organizing overall development process. The transit company with exclusive development right of the transit station is proposed to govern all negotiation and conflict resolution among inter-governmental departments, land developers and other key actors to internalize all possible external benefits out of the TOD projects. The central thesis of the new institutional economics is to ascertain the appropriate institutional form of governance for the transformation of the urban built environment through minimizing transaction costs from an array of institutional arrangement options like adopting public sector emphasis as demonstrated in model A or

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through integrated private sector performance in land use planning as proposed in model B. Therefore, International best practices and overarching case studies approach can be administered to find out empirical evidence of efficient institutional framework for successful rail-transit integration and urban development. Furthermore, it will provide support for the mutilated theoretical explanation to property development as well as examining the dominant role of interaction among different players involved in the process (Ball *et al.*, 1998; Tang *et al.*, 2005; Fisher, 2005).

**Practical Explanations: Unique Case of Hong Kong**

Hong Kong demonstrates an exceptional example of a highly profitable public transport system without government subsidies. Hong Kong showcases a wide variety of R+P projects primarily focusing on housing and commercial development. In a high-density complex urban setup, several agglomeration benefits have resulted due to successful implementation of R+P model by the MTR Corporation (MTRC). It is a privately owned city's largest company which operates worldwide most successful build–operate–maintain (BOM) transport systems applying the 'transit value capture' principle of R+P model to finance railway investments. Under this institutional setup, a public-private partnership is apprehended where the government sets major policies and creates a favourable incentive and restriction regarding the joint development of transit nodes and nearby properties. The other core market players (i.e. land developers) take an active part in project implementation as per the set rules of the joint agreement while pursuing their self-interest. The MTRC acts as a mediator in between the key market players and government for coordinating the joint venture project implementation balancing possible conflicts between public and private interests. It also helps to reduce the complex transaction costs emerged over the long project duration by diminishing the intermediaries within the institutional setup in the whole development process (Tang *et al.*, 2005; Cervero and Murakami, 2009).

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As an organized institutional setup, for building and operating railway MTRC does not receive any direct cash subsidy from the government of HKSAR (Hong Kong Special Administrative Region) rather receiving a land grant in form of exclusive development rights for the land on and adjacent to the station. Both parties benefited from the transactions. The government has not to pay extra subsidies for transport infrastructure development and receives extra benefits for additional floor space generated through R+P models to contribute toward the growing housing demand in Hong Kong. The MTRC uses the value captured through transit development utilizing the real estate development potentials of its stations. Moreover, receiving the land grant from the HKSAR government relieves MTRC from buying precious land in Hong Kong from the private property market at a sky mounting price. At present, MTRC generates the lion's share of its income from the captured value from property development in R+P projects. Timing is also a critical factor for capturing the values. MTRC receives a 'front end' payment for land and a 'back end' share of revenues through purchasing the development rights from HKSAR government at a 'before rail' price and sells these rights the developers at an 'after rail' price. Thus the captured value is efficiently used for recovering transport infrastructure investment as well as making considerable profits. Eventually, a virtuous cycle of viable operation of the railway is ensured in Hong Kong along with a TOD through employing an efficient institutional framework discussed overhead into the integrated Rail and property development curtailing the significant amount of transaction cost arising out of the process (Cervero and Murakami, 2009).

The central thesis of the R+P model lies in the fact that it embodies an institutional and regulatory framework comprising a supportive government land use and transport strategy for the high quality urban built environment despite the simple use of captured land value to subsidize transit development (Tang, *et al.*, 2004). But every model has its constraints and not a single one is perfect. While theoretical explanation, as well as practical experience form some

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cases (i.e. Hong Kong), demonstrates the remarkable success story of the model, it also encountered some contemporary complications (i.e. privatization of urban space, social and economic exclusion) which necessities resolving toward moving forward taking it as a collective model for urban development. To safeguard broader urban sustainability, the institutional setup of the land development models (e.g. integrated land use-transport model) should carefully consider the complexity of multiple functions in urban society and the development of spatially integrated inclusive public space securing the wider public interest (Tang, 2018).

**Concluding Remark: Lessons and Extensions**

Responding to the key research questions addressed, based upon the Transaction cost framework, new institutional economics and empirical examples this study concludes that land development process involves formulating, interpreting, and enforcing the formal and informal rules or institutional arrangement in governing the interaction and action of various players in the very process. However, before mimicking the efficiency rules into a local context, planning, managing and financing the land development process should be understood within an explicit governance structure and the socio-political context of a place. To progress forward toward integrated transport-land use development models, the importance of this synergy should be elevated and understood from a broader comprehensive framework.

Integrated planning approach in Hong Kong like the MTRC adopted R+P model relies deeply on a growing urban economy, a healthy real estate market and the availability of government land allocation. With the growing demand for precious urban land with strict regulatory measures (i.e. environmental control issues), it will be difficult in a dense urban built-up area in finding new land for future development and the opportunity to expand the R+P model. Moreover, despite providing a better institutional mechanism for governing effective property

development process in countries like Hong Kong, escalating demand for subsidized and affordable housing units leads to the criticism for the privatization of urban space as well as allocating development sites to the MTRC at prime locations for private property development (Tang and Wong, 2008). Despite contributing to urban efficiency, privatization of urban space cannot be a total solution. Social inequality and exclusion, fragmentation of urban space may occur due to agglomeration of geographical advantages for transit-oriented development (Harvey, 1973; 1996; Graham and Marvin, 2001). To sum up, when articulating, and enforcing the efficiency rules for governing key players interactions and actions, all these contraventions should be given due attention for an optimum outcome arising out of the development process.

## Data Availability

Some or all data, models, or code generated or used during the study are available in a repository online in accordance with funder data retention policies. Some or all data, models, or code that support the findings of this study are available from the corresponding author upon reasonable request. All data, models, and code generated or used during the study appear in the submitted article.

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