Financing Transit-Oriented Development with Land Values

-Adapting Land Value Capture in Developing Countries-
Outline

- Introduction: TOD, Urban Sustainability and Finance
- Concept and Theory of Land Value Capture and Its Instruments
- Hong Kong R(Rail)+P (Property) Program
- Tokyo Inclusive Multiple Integration Model
- Conclusion
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Sustainable Urban Development & Triple Bottom Line

- Economic
- Social
- Environmental

https://openknowledge.worldbank.org/handle/10986/2453
TOD Promoting Urban Sustainability

Source: GIZ/World Bank

https://openknowledge.worldbank.org/handle/10986/12233
TOD & Triple Bottom Line

**Economical**
- Time Saving
- Energy Saving
- Space Efficiency
- Infrastructure Cost Saving
- Functionality
- Agglomeration Economy
- Synergy & Creativity

**Accessibility & Mobility**
- Access to Jobs and Services
- Affordable Housing

**Social**

**Environmental**
- Air Pollution Reduction
- CO2 Reduction
- Land & Green Preservation
- Biodiversity
How to Finance High Transit Construction Cost?

Tokyo Metro Construction Costs

Metro in Developing Countries

<table>
<thead>
<tr>
<th>Cities</th>
<th>Cost Billion</th>
<th>Length Km</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nanchang Line 2</td>
<td>$2.6</td>
<td>24Km</td>
</tr>
<tr>
<td>Hyderabad</td>
<td>$2.6</td>
<td>72 Km</td>
</tr>
<tr>
<td>Delhi</td>
<td>$11.7</td>
<td>120Km</td>
</tr>
<tr>
<td>Sao Paulo</td>
<td>$30.0</td>
<td>100Km</td>
</tr>
</tbody>
</table>

Source: World Bank LVC Case Studies

Fig. 7. Construction cost of underground railways in Tokyo (nominal values).
Source: Hitoshi Ieda
Fare-box Recovery Ratio

Fare Revenues/Operation Expenses (%) – 60 Global Cities

Cross-subsidies

Source: Murakami, Jin. 2012. Transit Value Capture
Focus of the WB’s New Book

✓ Focusing on Development based Land Value Capture (DBLVC) practices in HKSAR and Tokyo as global best cases

✓ Seeing DBLVC as a strategic model of both urban finance and planning

✓ Discussing how to adapt DBLVC in cities of the developing world

Source: Suzuki, Murakami, Hong and Tamayose, 2014
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Intrinsic land value

Increases in land value due to landowner's investments

Increases in land value due to public investment in infrastructure and changes in land use regulations

Increases in land value due to population growth and economic development

The government, on behalf of the general public, should keep this portion of the land value

Public service providers should capture this portion of the increment to cover the costs of public infrastructure and local service provision

Private land owners should profit from this portion of the increment

Land buyers (or lessees) pay sellers (lessors) to obtain the property rights of land.

Source: Adapted from Hong and Brubaker 2010.
## Categories of LVC Instruments

**“Tax or Fee based” LVC & “Development-based”**

<table>
<thead>
<tr>
<th>Instrument</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Tax- &amp; Fee-Based</strong></td>
</tr>
<tr>
<td>Property and Land Tax</td>
</tr>
<tr>
<td>Betterment Levies and Special</td>
</tr>
<tr>
<td>Assessments</td>
</tr>
<tr>
<td>Tax Increment Financing (TIF)</td>
</tr>
<tr>
<td><strong>Development-Based</strong></td>
</tr>
<tr>
<td>Land Sale or Land Lease</td>
</tr>
<tr>
<td>Air Right Sale</td>
</tr>
<tr>
<td>Land Readjustment</td>
</tr>
<tr>
<td>Urban Redevelopment Financing</td>
</tr>
</tbody>
</table>

Source: Suzuki, Murakami, Hong and Tamayose, 2014
Underlying Principle of DBLVC

開発利益還元

Development Profit  Return

VS

Land Value Capture
How to Maximize Revenues from Transit-Oriented Development (TOD)?

Business As Usual  Vertical & Horizontal TOD

Value Capture (VC1)
Original Value (OV)

Tools
- FAR Increase
- Transfer of Development Right
- Land Adjustment
- Urban Re-development, etc.

Tools
- Transit Feeder
- Bus Terminal
- Bicycle Lanes, etc.
GROW HIGH: Increasing Densities
EXPANDING: Rail & Bus
Catchment Area

Toyama LRT & Bus Catchment Area

Rail enjoys Economies of Scale

Bus enjoys Economies of Scope

Source: Toyama City
How to Create Land Value Increments in TOD Areas?
Quality Matters.

Quality Urban Design Enhancing TOD

Efficient

Transit

Pleasant

Functional

Vibrant

VC3

Quality

VC2

Quantity

VC1

B as Usual

OV

Original V
Land Value Premiums of TOD in U.S.

- TOD: High Quality Pedestrian-Friendly Design
- TOD: Low Quality Non Pedestrian-Friendly Design

Source: R. Cervero
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Hong Kong

- **Total Land Area**: 1,104 sq. km
- **Urban Area**: 261 sq. km (23.6%)
- **Population**: 7 million
- **Urban Density**: 26,700 people/sq. km
- **Private Vehicles**: 60/1,000 residents

MTR is a “backbone” of Hong Kong’s urban development. Hong Kong’s “urban density” supports MTR’s ridership.
HKSAR: R+P Program (1)

a. Usual government land leasing program

Hong Kong SAR, China, government  Development right (full market price)  Developers

b. Rail Plus Property (R+P) program

Hong Kong SAR, China, government  MTR Corporation  Developers

Development right ("before-rail" market price)  Co-development ("after-rail" market price)

“Profit sharing”
- Profits in agreed proportions
- Assets in-kind
- Up-front payments

Sources: Based on Cervero and Murakami 2009.
Note: MTR = mass transit railway.
HKSAR: R+P Mechanism (2)

Source: Based on Hong Kong SAR, China, Mass Transit Railway (MTR) route maps and other maps.
Note: R+P = Rail Plus Property.
MTR Corporation

MTR Corporation, 2001-2010

Source: Murakami, Jin. 2012. Transit Value Capture

1 HKD = 0.27 BRL
Early Generation

Tin Hau Station (1989)

- Site Area... **0.58** ha
- Residential... **61,000** sqm (72.9%)
- Commercial... **3,700** sqm (4.4%)
- Others... **19,000** sqm (22.7%)
- Parking... **650** lots
- F.A.R... **14.43**

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Integrated Development Package

Kowloon Station (1998-2010): 13.5 ha

Source: AL Stephan (2013)
Recent Generation

**Tung Chung Station (1998)**

- Site Area: 21.7 ha
- Residential: 935,910 sqm (90.8%)
- Office: 14,999 sqm (1.5%)
- Commercial: 55,862 sqm (5.4%)
- Hotel: 22,000 sqm (2.1%)
- Others: 2,063 sqm (0.2%)
- Parking: 3,869 lots
- F.A.R.: 4.76

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Tokyo: Multiplicity

- Population: 36.93 million
- Land Area: 13,368 sq. km
- About 3,500 km
- About 2,000 stations
- 48 Operators (Mostly Private Agencies)

Source: Based on data from National Land Information, Ministry of Infrastructure, Land, and Transport (MILT), Japan.
Example 1: Tokyu Corporation (1)

Tokyu Corporation, 2001-2009

![Graph showing net operating income for Tokyu Corporation from FY1998 to FY2009, categorized by transportation, real estate, retail, leisure and services, and construction and other.]

1 JPY = 0.021 BRL

Source: Murakami, Jin. 2012. Transit Value Capture
Example 1: Tokyu Corporation (2)

Privately Develop & Operate
Total 105 km Rail Network

Garden City

Shibuya

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Example 1: Tokyu Corporation (3)

Garden City Line & New Town Development 2,983 ha (1960-1980s)
Example 1: Tokyu Corporation (4)

Futagotamagawa Station Redevelopment 11.2 ha (2000-2015)
Example 1: Tokyu Corporation (5)

Corporate Ownership & Stewardship Model

High percentage of the key station areas are owned by Tokyu Corporation

Very High Ridership

Land Readjustment/Redevelopment

Tokyu’s Property Business

Tokyu’s Railway Business

Group’s Intergenerational Resource Allocation

Tokyu’s Core Businesses

Tokyu’s Property Business

Tokyu’s Railway Business

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Example 2: H-R Integration (1)

Tsukuba Express (1998-2006)

- 58 km
- 20 Stations

Rail Construction Costs
US$ 9.4 billion

Integrated Housing-Rail Development Act of 1989
Land Readjustment Projects

- 19 Districts
- Total 2,908 ha

Source: Chiba Prefecture 2012
Example 2: H-R Integration (2)
How To Increase Land Value in Suburban Areas?

Land Readjustment Scheme

Sources: Murakami, 2010; Suzuki, Murakami, Hong and Tamayose, 2014
Application of Land Readjustment to Transit Project

Sources: Murakami, 2010; Suzuki, Murakami, Hong and Tamayose, 2014
Example 2: H-R Integration (2)

Integrated H-R Land Readjustment: Mechanism

<Local Governments, Housing Agencies, Land Owners>
Example 3: Depot Redevelopment (1)

Source: JNR Settlement Corporation 2008

Urban Regeneration

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- New HSR Station
- Railway Extension
- HSR Network
- Y Loop
- Railway Network
- SDA

JD Total GFA [sq m]
- 1,171,657 - 2,823,702
- 1,322 - 47,094
Example 3: Depot Redevelopment (2)

JNR Yard: National Land Sales

Shinagawa Station 16.2 ha (1992-2008)

Source: JNR Settlement Corporation 2008
Example 3: Depot Redevelopment (3)

Civic Space Provision & FAR Bonus (e.g., Case of Shinagawa Station Area)

FAR Assessment

<table>
<thead>
<tr>
<th></th>
<th>Before (Industrial Site)</th>
<th>After (Office Site)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Green Space, Underground Access Road &amp; Pedestrian Network</td>
<td>18,167 sq.m.</td>
<td>7.0</td>
</tr>
<tr>
<td>Civic Open Space</td>
<td>12,480 sq.m</td>
<td>+1.9</td>
</tr>
<tr>
<td>Joint Housing Provision</td>
<td>35,433 sq.m</td>
<td>+0.6</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>4.0</strong></td>
<td><strong>9.5</strong></td>
</tr>
</tbody>
</table>

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Example 4: Tokyu Shibuya Station District Redevelopment (1)

Consecutive Urban Redevelopments Through Restructuring Station-related Infrastructure

HIKARIE Data

[Completion of construction] 2012
[Owner] Tokyu Corporation and others
[Total floor area] 144,000㎡ approx.
[Number of lines] 8 lines, 6 stations
[Number of passengers] 3,000,000 persons per day approx.

Source: Nikken Sekkei Corp.
Example 4: Tokyu Shibuya Station District Redevelopment (2)
Tokyo: Strategic Inclusive Urban Redevelopment in Built-Up Areas

Sources: Adapted from Ministry of Land, Infrastructure, Transport, and Tourism 2013
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Conclusion

- TOD which creates articulated densities around transit hubs by locating amenities, employment, retail, and housing in close proximity—is one of the most effective ways to achieve sustainable urban development.
- Collaborative efforts of municipalities, transit agencies, developers, landowners, and communities can maximize LVC premium. In this joint value-creating and sharing exercise, municipalities and transit agencies can contribute significantly to value creation either through zoning changes (FARs and land use) or through transit investment.
- The rapid population increase and robust economic growth in rapidly growing cities in developing countries, particularly in middle-income countries, are certainly favorable for development-based LVC.
THANKS

New Book

TOD

LVC

Sustainable Urban Development

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https://openknowledge.worldbank.org/handle/10986/12233
https://openknowledge.worldbank.org/handle/10986/2453
Spare Slides

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- Key Findings and Enabling Factors for Adapting DBLVC in Developing Countries
Key Findings

- **Inclusive Value Creation**
  The rationale behind development-based LVC is creating and sharing incremental value among the governments, transit agencies, developers, businesses, and residents in and around stations.

- **Public Land Ownership Is Important but not Absolutely Necessary**
  Development-based LVC is a value creation exercise rather than a simple sale of public land or lease of land use rights.

- **Sound Planning Principles**
  DB LVC should be based on sound planning principles that increase the benefit of society as a whole.
Enabling Factors (1)

- **Macro Fundamentals**
  Demographic and economic fundamentals are paramount when applying development-based LVC. But even under slow economic growth, municipalities and transit agencies can adapt it to maximize accessibility and agglomeration premiums around selected station areas where the economic potential has not yet been fully realized due to inadequate land uses and outdated zoning codes.

- **Visionary Master Plans**
  Policymakers must emphasize transit infrastructure as the spine of spatial development strategies in their visionary plans, helping guide planning, funding, construction, and operations in a way that supports transit.

- **Flexible Zoning**
  Development-based LVC facilitates negotiations among planning authorities, transit companies, developers, landowners, and local stakeholders for mutual interests and benefits. So zoning codes and site design parameters around stations should be flexible enough to meet changing market demands and diverse local needs.
Enabling Factors (2)

- **Multiple Funding Sources Needed**
  Development-based LVC should not be regarded as a single funding source to fill any funding gaps.

- **Intergovernmental Collaboration**
  Development-based LVC requires multiple government entities to work together to deliver innovative transit-related projects and programs, and that is one of the biggest challenges in many cities of developing countries. A single local government body—which includes transit agencies—could coordinate planning, design, land acquisition, construction, operation, and asset management to sustain collaborative relationships and actions.

- **Entrepreneurship**
  Transit agencies need to become entrepreneurial as they manage development-based LVC’s evolving process from a simple tool of short-term corporate or project finance to a strategic model of long-term urban finance and development—mainstreaming property development and asset management around stations as a part of their businesses.

- **Clear, Fair, and Transparent Rules**
  The underlying principle of development-based LVC is the joint creation and sharing of land value increment. Creating development opportunities among voluntary public-private contributors in a collaborative effort can generate additional values and greater synergies. Thus, it is essential to establish clear and fair rules for sharing costs, benefits, and risks among stakeholders.
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