Co-benefits for the financing of railway systems with transit-oriented development and land value capture
Lessons from Hong Kong

May 25th 2022
Franco Jauregui Fung
Relation between urban structure and mobility

Cities for cars

Cities for people

Figure by Author.
The urban fabrics and horizontal growth

Source: Newman, Kosonen & Kenworthy (2016). Figure by Author.
The integration of land-use and transit planning

We have been doing this

Instead of this

Figure by Author.
One strategy: transit-oriented development (TOD)

Source: Suzuki et al. (2013).
One strategy: transit-oriented development (TOD)

1. Opportunities for revitalisation of old developments and neighbourhoods
2. Value enhancement arising from high-density and compact development
3. Creation of more street activity and buzz around the location of transit station
4. Reduce dependency on cars
5. Encourage community activities with creation of urban parks, F&B, entertainment and recreational spots

Source: Chew (2018).
A positive loop in which value is created, realised, captured and reinvested

Hong Kong model as an innovative example

Usual government land leasing model

Government

Development right (full market price)

Property Developers

Hong Hong's Rail+Property model

Hong Kong Government

Development right (“before-rail” market price)

MTR Corporation

Hong’s Rail+Property model

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

Co-development (“after-rail” market price)

Property Developers

Source: Cervero & Murakami (2009). Figure by Author.
R+P model in a nutshell

Grants service concession and capital (if necessary) → Land development rights “before rail” market price → Railway construction/operation/management → Land premium “after rail” market price → Return from share issue privatisation (market capitalisation, shareholder cash dividends and equity capital)

Tendering process → Profit sharing “after rail” market price, development cost → Development opportunity → Sharing agreements on a case-by-base basis

Government

 Developers

Source: Li & Love, 2022; MTR Corporation Limited, 2017; Suzuki et al., 2015; Tang et al., 2004. Figure adapted by author.
### MTRC portfolio

<table>
<thead>
<tr>
<th>(i) Recurrent businesses</th>
<th>(ii) Property development businesses</th>
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<tbody>
<tr>
<td>Hong Kong transport operations (HKTO)</td>
<td>In Hong Kong and Mainland China</td>
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<tr>
<td>Hong Kong station commercial businesses (HKSC) (includes advertising, telecommunication and retail)</td>
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<tr>
<td>Hong Kong property rental and management businesses (HKPR&amp;M)</td>
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<td>Mainland of China and international business</td>
<td></td>
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<tr>
<td>Other businesses (project management for government, miscellaneous businesses, consultancy businesses and the Ngong Ping 360 gondola lift on Lantau Island)</td>
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Total economic value generated between 2012 and 2021 (in million UKD)

- **Total economic value generated between 2012 and 2021 (in million UKD)**

2012: 35,739
2013: 38,707
2014: 49,156
2015: 41,701
2016: 45,189
2017: 55,440
2018: 53,930
2019: 54,504
2020*: 42,541
2021: 47,202

- **Source:** MTR Corporation Limited, 2017b, 2022e, 2022h. Figure by Author.

- *Without considering the economic value retained from prior years and reinvested in 2020 (3,923 million UKD)
- **Includes railway, property rental and management subsidiaries

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Total EBIT between 2012 and 2021 (in million UKD)

Source: MTR Corporation Limited, 2017a, 2022a, 2022e. Figure by Author.

*Includes property rental and management businesses and station commercial businesses
**In Hong Kong and Mainland China
Rec. business vs. property development EBIT between 2012 and 2021 (%)

Source: MTR Corporation Limited, 2017a, 2022a, 2022e. Figure by Author.

*In Hong Kong and Mainland China
**Includes activities in Hong Kong and Mainland China
PD profit from surplus share & interest in unsold properties (million HKD)

Source: MTR Corporation Limited, 2017b, 2022h. Figure by Author.
Total commercial revenue per operating cost (MTR and COMET cities)

*Due to the larger number of metro cities included in 2020, performance may not be fully comparable with previous years

Source: MTR Corporation Limited, 2016, 2018c, 2022h. Figure by Author.
### Additional policies for transit and property development

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<th>Policy: Land development</th>
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<td>Grant of exclusive property development rights of the station areas to MTRC in exchange for its commitment to provide and improve MTR as an essential transport mode</td>
<td>Incentive-based approach to encourage the corporation to plan and develop sites in a financially viable manner by internalising benefits from R+P development; Eliminates land banking and acquisition associated costs</td>
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<td>Established MTRC as an independent corporation with government as a major shareholder to strengthen the role of the PTA as the single entity to serve as the master planner, property developer and manager, and generate revenues to sustain the transit service</td>
<td>Government’s commitment to remain as the majority shareholder of the MTRCL after the privatisation for at least 20 years and own no less than 50% of shares and votes of the MTRCL; Lower transaction costs with single entity as opposed to multiple agencies</td>
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<td>Permit JVs in real estate development with private sector investment in TODs</td>
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<td>Use of TDR combined with commitment to encourage redevelopment of existing areas rather than allowing for suburban development</td>
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Source: Ollivier et al., 2021; Tang et al., 2004.
### Additional policies for TOD implementation

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Co-benefits of the R+P model

• Self-sufficient business model
• One single transit agency with multiple functions, different roles and coordination with multiple stakeholders
• Increase of ridership (compact development > more people living closer to stations > more transit users)
• Reduction of car ownership > reduction of CO2 emissions
• Co-benefits on the urban environment (mixed-use, diverse, pedestrian friendly streets)
The Hong Kong model, a unique case?

- High density > high ridership levels
- Limited available land > compact development
- Specific institutional arrangements > framework for the MTRC autonomy
- Government owns 99% of the land > MTRC receives land at “pre-rail” prices
- Existing integrated land-use and transit planning policies > TOD policies
Conclusions and policy recommendations
Local air pollution

- Emissions of nitrogen oxides, particulate matters and carbon monoxide exceed the guidelines of the World Health Organization by far
- Nugroho et al. (2011, 667): BRT usage decreases PM10 concentration but increases ozone in the morning and evening
- Ernst (2005, 25): NOx reduced by BRT from 232 to 20 kg/day, PM from 31 to 1.1 kg/day (for shift from private transport to BRT)

Reduction of GHG emissions

- Transport sector: 45% of total greenhouse gas emissions in Jakarta
- From 2000 to 2008 the co² emissions from road transport grew by 24%
- BRT led to an annual reduction of 0.15 tons co² per daily BRT passenger in 2012 (TransMilenio: 0.28; Metrobus Mexico City: 0.2)