

# Case Study

## Hong Kong Mass Transit Rail Corporation<sup>220</sup>

### 1 Introduction

The Mass Transit Rail (MTR) Corporation was established in 1975 as a government-owned enterprise to build, operate, and maintain a mass transit railway system for Hong Kong's public transport needs. In 2000, about 23 percent of its shares were offered to private investors on the Hong Kong Stock Exchange.

Just like many other metro projects, MTR line construction in the 1970s and 1980s was capital intensive and required substantial funding. With several lines under construction/planning, MTR Corporation had accumulated substantial debt by 1985 (HK\$18.7 billion, or US\$2.4 billion<sup>221</sup>). It was important for the government to cover and even cut some of the company's project costs without raising fares by arranging government land grants for rail and property development.

Since it became publically traded, MTR Corporation has also needed to ensure it undertakes only financially viable projects, as a profit oriented organization undertaking non-government projects. The Rail + Property (R+P) program helps MTR Corporation meet this objective.

This case study is relevant to railway companies and cities looking to generate cash flow by developing land around rail stations.

### 2 MTR Corporation and the R+P Program

The portfolio of MTR Corporation is divided into four parts: 1) Hong Kong Transport Operations; 2) Hong Kong Station Commercial Businesses; 3) Hong Kong Property and other Businesses; and 4) Mainland of China and International Business.

For Hong Kong Transport Operations, the merged 218.2-kilometer rail network consists of nine railway lines with 84 stations serving Hong Kong Island, Kowloon, and the New Territories, as well as a Light Rail network with 68 stops serving the local communities of Tuen Mun and Yuen Long in the New Territories. The Corporation also operates the Airport Express, a dedicated high-speed link connecting

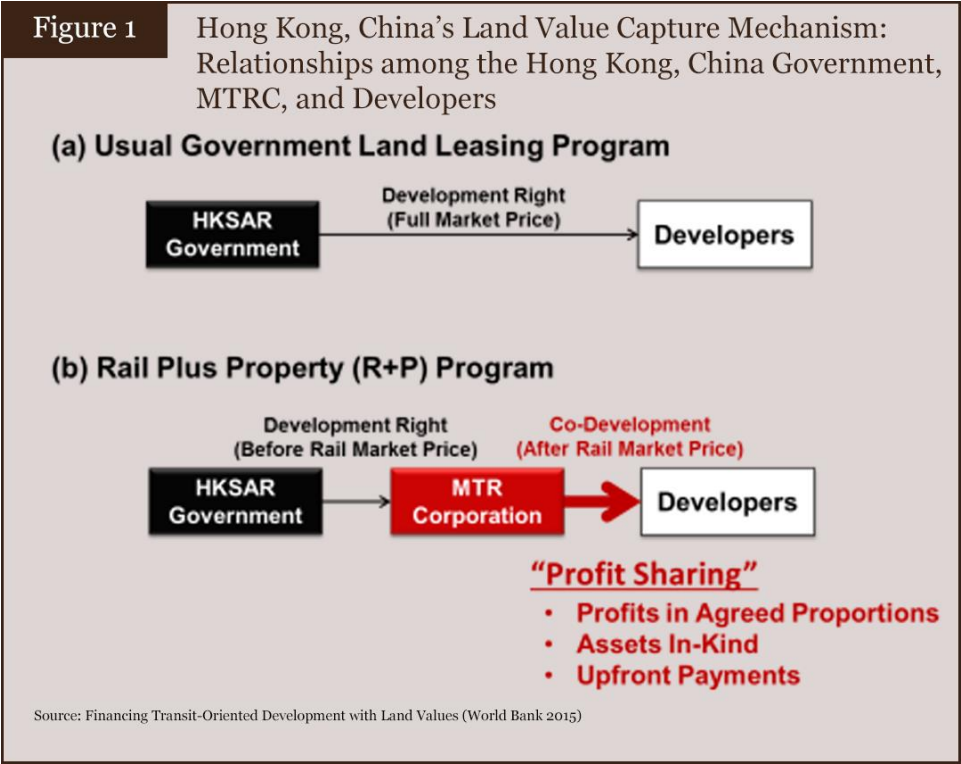
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<sup>220</sup> This case study is largely based on Lawrence, Martha; Ollivier, Gerald. 2015. *Attracting Capital for Railway Development in China*. World Bank, Washington, DC. © World Bank. <https://openknowledge.worldbank.org/handle/10986/23800> License: CC BY 3.0 IGO. URI: <http://hdl.handle.net/10986/23800>

<sup>221</sup> When USD equivalent is shown for HK\$ values, they are all converted by using the exchange rate of 1USD=7.75HK\$ (as of 2015).

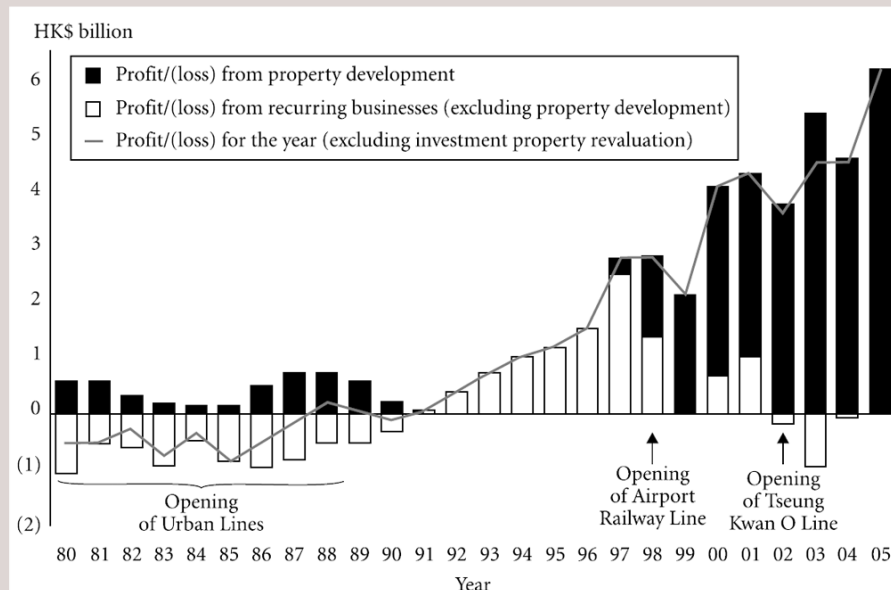
Hong Kong International Airport and the city's major exhibition and conference center, AsiaWorld-Expo. The rail system has an average weekday patronage of nearly 5.3 million passengers.

With the R+P approach, MTR Corporation has been able to fund a large part of its transport system development by: (i) creating land value through integrated urban and transport planning; and (ii) capturing such value by receiving land development rights from the government at “before rail” market prices and co-developing such land with private developers at “after-rail” market prices (Figure 1).



The R+P approach went through different phases. Over the period of 1980 to 2005, property development contributed substantially to expansions of the rail lines, in particular during 1998 to 2005 (Figure 2).

**Figure 2** Rail + Property Evolution



Source: Murakami and Cervero (2009)

By end-2015, MTR Corporation completed developments at 33 MTR stations, generating some 100,000 housing units and more than 2 million square meters of commercial space. The corporation is one of the largest property managers in Hong Kong, managing over 96,000 units of residential flats, 13 shopping malls, and five office buildings (764,003 square meters of commercial and office space)<sup>222</sup>.

### 3 MTR Corporation's R+P Approach

The R+P program has been implemented through public-private partnerships (PPPs) and transactions. The following describes the approach to the R+P program undertaken by the MTR Corporation.

#### *Procedures of the R+P Program*

The R+P program is considered on a line by line basis, considering market conditions, financing gap for the line construction and future operation and government requirements.

The Transport and Housing Bureau issues and updates on a regular basis a railway development strategy, with the practical advice of MTR Corporation, and of the Town Planning Board.

The Chief Executive in the Executive Council of the Hong Kong Special Administrative Region (HKSAR) then requests MTR Corporation to proceed with the preliminary planning and design of the line. This includes negotiations on the detailed scope, cost and implementation program for the line, and the identification of sites

<sup>222</sup> MTR Corporation, *Business Overview 2015*. [https://www.mtr.com.hk/archive/corporate/en/publications/images/business\\_overview\\_e.pdf](https://www.mtr.com.hk/archive/corporate/en/publications/images/business_overview_e.pdf)

to be reserved for development, subject to rezoning approval. MTR Corporation determines the financing gap for the line, and this gap is reviewed independently.

Once a decision is made to move forward with a specific line and R+P proposal, and once all parties are in agreement, the government of Hong Kong grants MTR Corporation exclusive development rights for specific sites, defining tower locations, permissible uses, and plot-ratio densities (i.e., floor space divided by land area). This includes land above and around new stations and depots transferred at the “before-rail” market price.

The Town Planning Department initially prepares a rough land use pattern associated with the land grant. MTR Corporation then prepares a master layout of the project, including the siting and massing of buildings, block designs, standards for building quality, and locations of vehicle access points. It also obtains necessary statutory planning approvals for the proposed development.

Next, MTR Corporation issues a tender among potential developers and selects a partner based on the attractiveness of competing financial offers, experience, management capabilities, and other factors. Developers are given some flexibility to recommend and negotiate site modifications to the R+P proposals. MTR Corporation uses its development rights to partner with developers (selected from a list of qualified bidders) based on the “after-rail” market price. MTR Corporation does not sell development rights to other private developers, but instead partners with property developers. It remains in full control of the land and sells/leases the completed units.

### *Financial sustainability approach*

As a profit-oriented organization, MTR Corporation needs to ensure that a suitable rate of return can be achieved, prior to undertaking any investment.

Financial viability is estimated based on the 50-year net present value (NPV) for the new construction, discounted with a weighted average cost of capital of MTR plus 1 to 3 percent<sup>223</sup>, depending on the risk level.

The government discusses the appropriateness of providing capital grants or property development rights to MTR Corporation based on the expected funding gap<sup>224</sup> of new rail construction (in the case of natural extensions) that could not be recovered through future operating revenues. Such a gap is estimated by MTR Corporation and external assessors. Those assessors include consultants for independent

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<sup>223</sup> Cervero and Jin (2008) indicated that MTR Corporation aims to set returns for its investments based on the WACC - the weighted average cost of capital - set at 9.5% (reflecting the expected return in equity and interest from borrowing) plus a rent premium of between 1.5% and 3% for equity shareholders, yielding a 11% to 12.5% return. The WACC fluctuates based on loan rates charged by commercial banks. For riskier projects, the WACC might be set at 10% plus a 3% premium, yielding a 13% net return. MTR Corporation will invest in railway projects if these net rates of return (11% to 13%, depending on risks) are attained. This “WACC + premium” formula is used to guide not only railway investment but also MTRC’s own real-estate investment, including shopping malls attached to stations.

<sup>224</sup> When a new rail project with property development rights is financially nonviable, the government considers providing capital grants.

checking, who review the cost and revenue of the proposed rail line, and surveying firms which review property valuation for land development, based on Valuation Standards on Properties published the Hong Kong Institute of Surveyors.<sup>225</sup>

To safeguard the public interest from granting too much land, any excessive capital grant will be reimbursed to the government with interest (claw-back mechanism)<sup>226</sup>.

### *Market-driven approach*

In the R+P model, MTR Corporation is the “master planner and designer” to align the interests of multiple stakeholders in different project phases. It prepares a development layout plan, resolves all interfaces with rail stations, takes care of tendering land parcels, acts as a liaison between the government and developers, monitors development quality and the sale or lease of completed properties, and manages properties after completion.

Within MTR Corporation, managers weigh factors like the value of land, density potential, and project size and scale in deciding whether to advance a specific R+P proposal. The assembly of land to be developed around the station is largely determined by market demand, constrained by zoning regulations. Commercial property development has occurred mostly at and near central city MTR stations while residential projects have been built mainly in outlying areas and at terminal stations.

While many properties are high-rise towers above MTR station podiums, the R+P model is not a “cookie-cutter” approach to making the cityscape transit supportive. Indeed, the development parameters of R+P (such as area size, building densities, floor uses, and site designs) vary from place to place, essentially depending on the city’s urban planning and market demands. Floor Area Ratios (FARs) of at least 4.0 (as observed in recent MTR Corporation projects) are generally viewed as necessary if R+P is to be financially viable; however, MTR Corporation’s actual site coordination remains flexible by covering large R+P sites with the CDA zone.

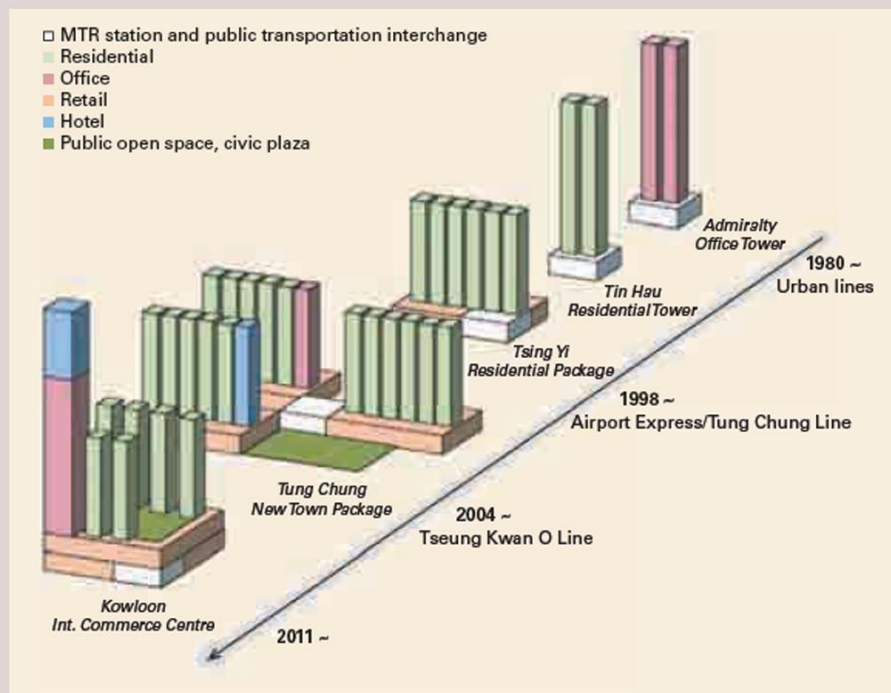
The design principles of R+P have evolved over the past 35 years (Figure 3). Since the late 1990s, development has integrated transit-oriented development design concepts—high-density, mixed-use, and pedestrian-friendly—in a more physically comprehensive manner than seen in the 1980s.

<sup>225</sup> <http://www.hkis.org.hk/en/>

<sup>226</sup> HKSAR legislative Council 2009.

Figure 3

### Physical Typology and Evolution of Rail Plus Property Practices Since the 1980s



Source: Based on Cervero and Murakami 2009.

### Risk management approach

MTR Corporation's approach to property development is based on minimizing direct risks in property development projects, reducing the company's exposure to the real estate market and its related risks. For their part, developers must cover all development costs (such as Government land premiums based on post rail value, construction and enabling work costs, marketing and sales expenses, professional fees, finance charges, and others) and cope with all project risks. MTR Corporation negotiates with developers to derive benefits from the property developments through sharing profits in agreed proportions from the sale or lease of the properties (after deducting development costs), sharing assets in kind, or receiving up-front payments from the developers, taken case by case<sup>227</sup>. The selection of one of those three mechanisms is directly related to the evaluation of market conditions and the considerations regarding the long-term value of a given development. For private developers, the rules of the game are very clear at the outset, which eases uncertainties.

One of the effective mechanisms MTR Corporation has used to both manage risks and address diverse market needs is to engage several developers to each station area (11 to 13 developers in recent cases).

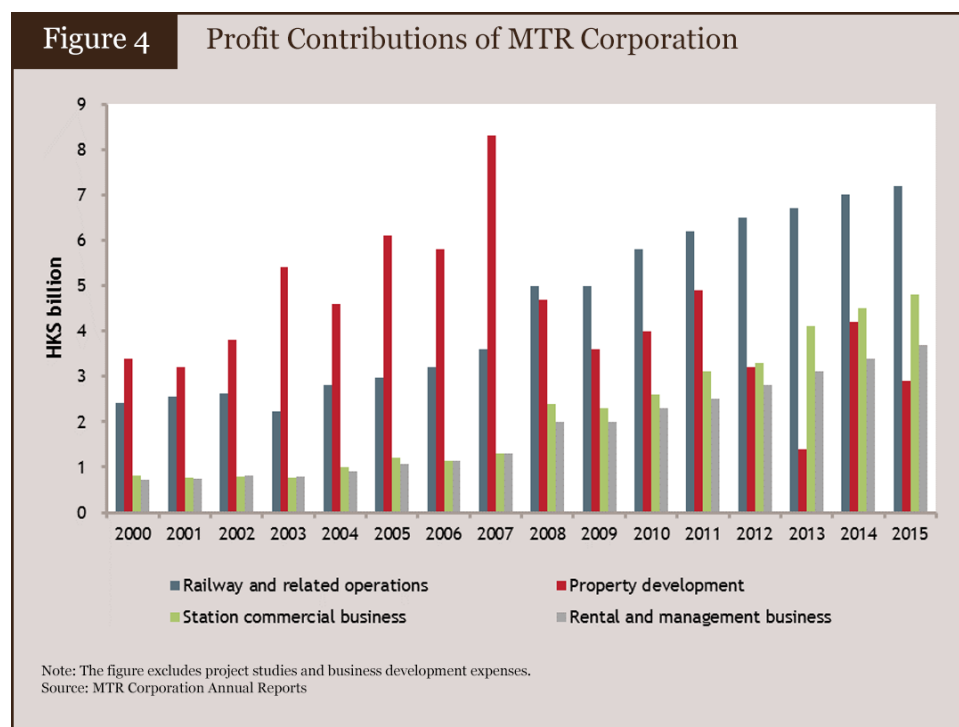
<sup>227</sup> Studies show that R+P approach yields significant price premiums relative to fairly comparable non-R+P housing projects, especially by reaping the accessibility gains through the rail transit, which spur the developers to get involved. In Hong Kong, the best locations for development near stations are usually made available through the R+P program creating an incentive for developers to pay a premium.

## 4 Results

The R+P approach has yielded financial and ridership benefits for MTR, as well as contributed to sustainable community development.

### *Financial impact*

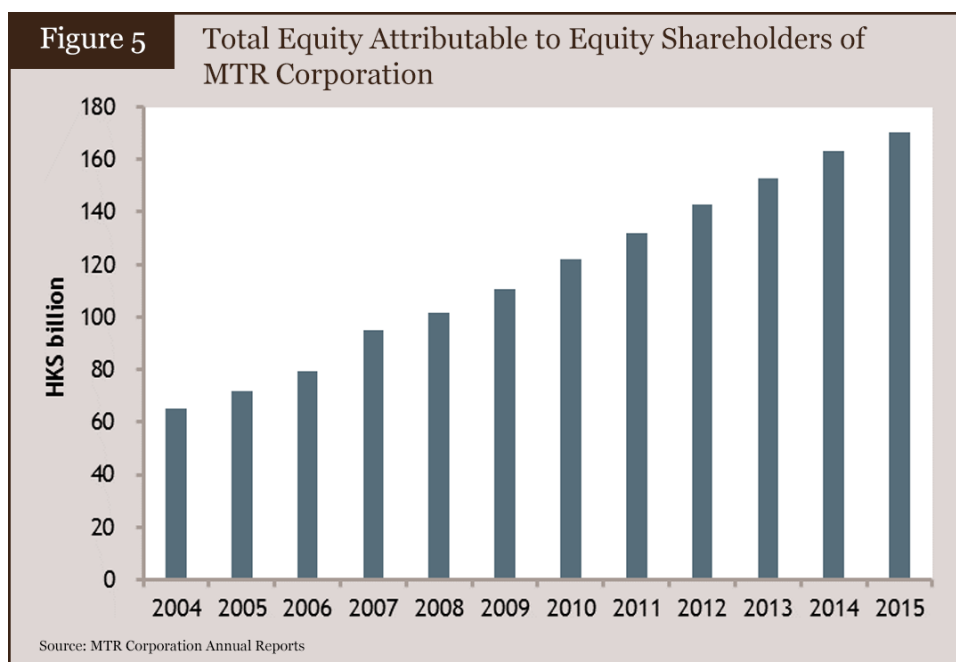
Profits from property development and related business of MTR Corporation, including HK station commercial business and HK property rental and management business, have accounted for more than 50 percent of MTRC's total profit between 2000 and 2015<sup>228</sup>. Profits from rail operations have also seen a fast increase due to expanding the rail network with funding support from property development and ridership increases brought by community development around the stations. The profit contributions for MTR Corporation are shown in Figure 4.



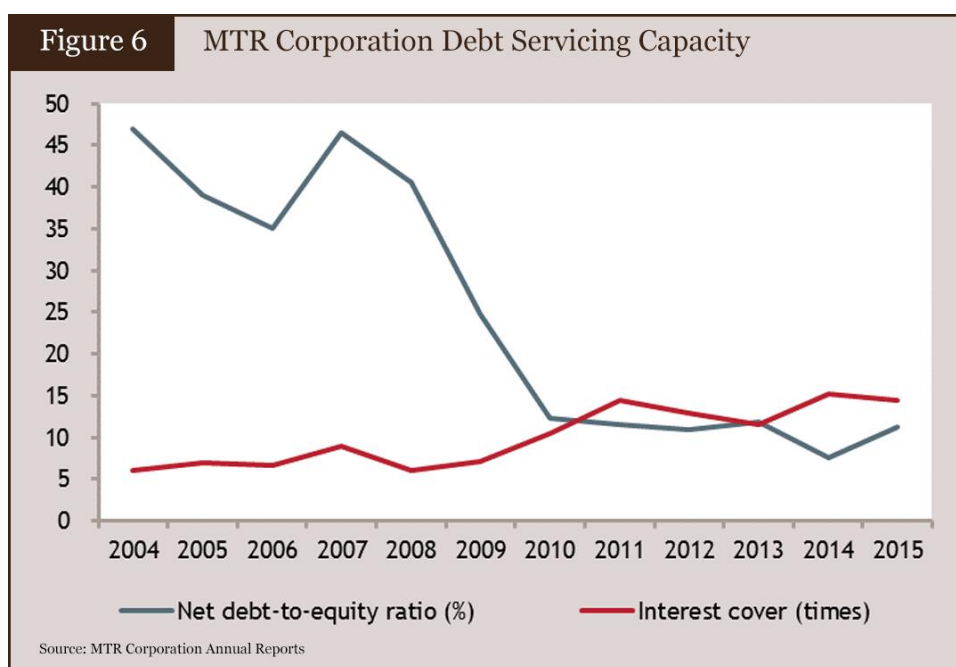
The accumulated earnings and value brought by R+P model have increased MTR Corporation's return for shareholders, and the balance sheet value of equity attributable to shareholders has been steadily increased during the last decade (2004-2015) (Figure 5).

<sup>228</sup> We summarized the financial data about profit contributions from 2000 when MTR Corporation got partially privatized on Hong Kong Stock Exchange.





In addition, the corporation's debt servicing capability has also been improved with reduced debt ratio (Figure 6) over the same period.

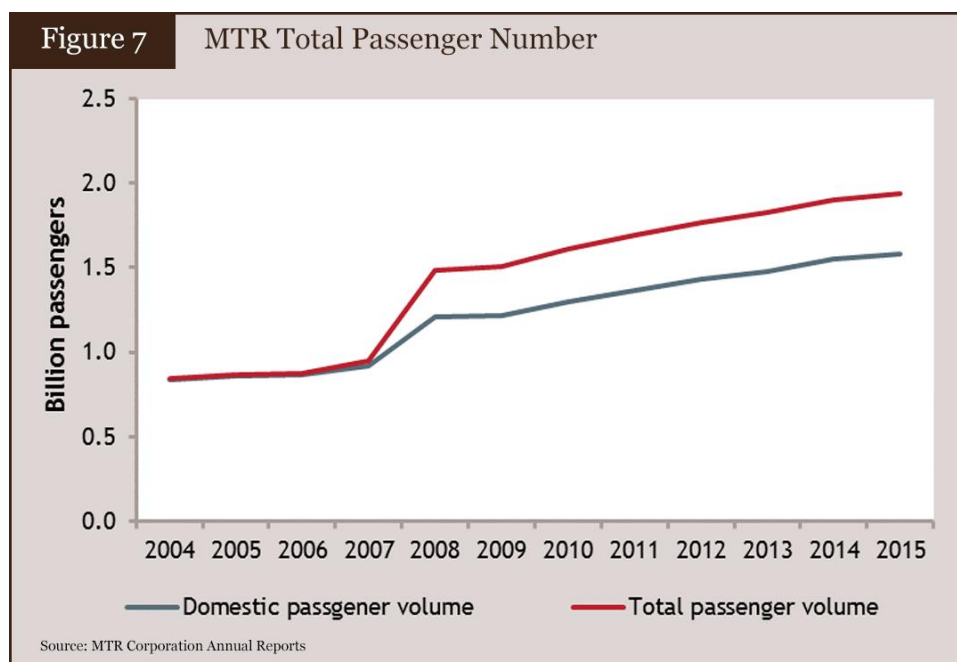


### Increased ridership

MTR Corporation has also seen higher passenger volume as a result of the high-quality communities developed around the stations through the R+P program. Growth of the total passenger number for the last decade (2004-2015) is shown in Figure 7.<sup>229</sup>

<sup>229</sup> The sharp increase of passenger number in 2008 is due to the rail merger in December 2007.





### Stakeholder impacts

**The Government of Hong Kong:** The R+P model enabled the government of Hong Kong to build a modern railway network with limited cash subsidy. Besides, the financial benefits of R+P Program are distributed to the government through dividends and appreciation of the value of its shareholding. From 1980 to 2005, the government received an estimated HK\$140 billion (US\$ 18 billion) in net financial returns (nominal value). This is based on the difference between earned income (HK\$171.8 billion, or about US\$22 billion, from land premiums, market capitalization, shareholder cash dividends, and initial public offer proceeds) and the value of injected equity capital (HK\$32.2 billion, or US\$4.2 billion).

**Local communities:** MTR Corporation also contributes to sustainable urban development and economic development by providing efficient transit services with affordable fares, high quality modern property development and quality retail business and facilities close to the housing area.

## 5 Conclusion

The R+P program applied by the MTR Corporation in Hong Kong has been central to the success of Hong Kong in developing its rail system. The R+P program enabled MTR Corporation to capture real estate income to finance part of the capital and running costs of new railway lines, and to increase transit patronage by facilitating the creation of high-quality, dense and walkable catchment areas around stations.

The following three key concepts applied in the R+P program are essential to the program success and can be adopted by other railways taking the transit-oriented development mechanisms to help finance new rail lines:

- **Financial sustainability approach:** The value for a rail company to only undertake those rail investments that can achieve a targeted rate of return (after factoring government support, in the form of land rights provided at before-rail price, used in a R+P program, or cash subsidies) to be financially sustainable.
- **Market-driven approach:** The need to plan development along each rail line comprehensively, with multiple stakeholders and partners, and to define the scale and timing of such developments based on market demand, location characteristics and institutional capacity.
- **Risk management approach:** The value for a railway company to bring in relevant expertise and transfer a large part of commercial risks to private developers through PPPs and transactions with external partnerships.

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