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Coordinating Relationships Between Railway Passenger Terminal and Urban Development

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Abstract: Facing the new urbanization strategy and the vigorous development of high-speed railway and inter-city railway in China, it is necessary to enhance the coordinated and interactive development between the rail transit terminals and urban development considering passengers' expectation on the complex functions of railway terminal and the need for changes in city growth model from the existing crude development pattern. Based on the interaction between railway terminal and urban land-use, this paper summarizes three models of the coordinated development of railway terminal and a city with the best practices in the world, namely the modes of urban renewal, center-oriented growth and new town oriented growth. The paper analyzes the major factors that restrict the coordinated development of railway terminal and a city in three aspects: management system, land supply and utilization system, and investment and financing system. Finally, aiming at these three rail terminal development models, the paper proposes the much needed breakthrough in the system structure and policies for the coordinated development of railway terminal and a city. **DOI:** 10.13813/j.cn11-5141/u.2018.0404-en

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A railway passenger terminal is an important element connecting the external and internal traffic of a city. It plays an important role in enhancing a city's external communication and promoting the integration of regional transportation. In recent years, the construction and development of railway passenger terminals are constrained by factors such as development concepts, management systems and policy systems. There is a lack of coordination and interaction of its sole traffic function with the functional layout and economic development of a city. With the rapid development of China's high-speed railways, inter-city railways and other regional rail transit, the spatial and temporal distances among cities have been greatly reduced. Railway passenger terminals, especially high-speed rail stations, have shown features such as increased business and leisured travelers, more frequent trips, and higher requirement on effectiveness and comfort, which objectively requires functional integrations around the terminal area. At the same time, it is necessary to rethink a series of issues such as traffic congestion and environmental pollution caused by the disorderly space spread in China's large cities and over-reliance on cars in the process of rapid urbanization. It is also necessary to re-examine the coordination relationship between transportation and cities, and to guide the transformation of a city to an intensive and green development mode through the

integration of passenger terminals and urban functions.

1 Interaction between railway passenger terminals and land use

With the advent of the high-speed rail era, the construction and development of railway passenger terminals have changed systematically. Due to the further improvement of regional accessibility and the significant changes in passenger characteristics, the radiation and driving effects of railway passenger terminals are becoming more obvious. The most significant effect is to increase the value of land around the terminal and trigger the transformation of urban land use functions and spatial patterns. On the contrary, the transformation of urban functions and spatial patterns demand higher transportation capacity of the terminal. Therefore, there is an interaction and mutual coordination relationship between a railway passenger terminal and the urban land use, which is embodied in the two aspects as follows.

On the one hand, high-speed rail passengers are characterized as business and high-end, which have strengthened the gathering and development of a city's service industry and related functions around the terminal. From the perspective of the trips being served, the high-speed rail mainly

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serves the middle- and long-distance business trips among provincial capitals and regional cities; and the inter-city railway mainly serves the business trips among cities (towns) within the city cluster, which are more likely to return on the same day and are more frequent in a certain period of time. Although the two have different functional positioning, they both show the characteristics of business travel and high-end service, so they will further strengthen the gathering and development of high-end service industry and related functions, and drive the development and construction of certain types of land uses, such as business offices, business services, conference and exhibition, entertainment as well as leisure and residence.

On the other hand, the urban function aggregation and the intensity of land development require the railway passenger terminal to have a matching transportation distribution model. Urban land use is the root of transportation demand, and different land use patterns require different modes of transportation. While driving the development of surrounding land and promoting the integration of hub functions and urban functions, railway passenger terminals will further attract more passenger flows. Therefore, a railway passenger terminal shall strengthen the convenient and efficient connection with the urban internal transportation modes, and improve the urban transportation accessibility and capacity of the terminal area. And the larger the passenger flow of the terminal and the higher the surrounding land development intensity indicate that it more need for an intensive, efficient and green transportation mode to distribute passenger flow (rail transit can be used for the underground transportation, and buses or trams, bicycles, and walking, etc. can be used for the ground transportation). Such a transportation mode can reduce the dependence of urban residents' daily life and economic activities on cars, improve the attractiveness of green transportation, lead to a compact urban land development model, and ultimately realize the dual optimization of urban transportation structure and spatial structure.

2 Modes of coordinated development of railway passenger terminals and cities

Based on the development history and practical experience of railway passenger terminals in the world, the coordinated development of terminals and cities is not achieved overnight, but improved continuously along with the re-development and renewal of a city. According to the relationship between the spatial location of the terminal and the functional layout of the city, railway passenger terminals can be classified into three development modes.

1) Urban Renewal Mode: transforming and rebuilding existing railway passenger terminals in urban central areas to create urban functional centers

This mode is characterized as using the opportunity of urban renewal and redevelopment to comprehensively

develop and integrate the existing railway passenger terminal and surrounding areas in the central area of a city, and enhances the role of the terminal as the core space of the city. Since the 21st century, the renewal and transformation of transportation hubs (such as railway stations) in Japanese cities represented by Tokyo and European cities represented by London are examples of this mode. In order to solve the urban economic downturn and the decline of vitality in the central area caused by the bursting of the economic bubble since the 1980s, Tokyo has vigorously promoted urban redevelopment. It launched the "Urban Renewal" program in 2001, and several large railway passenger terminals on the Yamate ring line (Tokyo Station, Shinjuku Station, Shibuya Station, Ikebukuro Station, Osaki Station, etc.) were designated as urban renewal areas^[1]. Through the function enhancement and multiple rounds of development of the land around terminals, these train stations were eventually transformed from stations with sole transportation functions to urban centers or subcenters (see Figure 1), and played a pivotal role in driving the urban economic development.

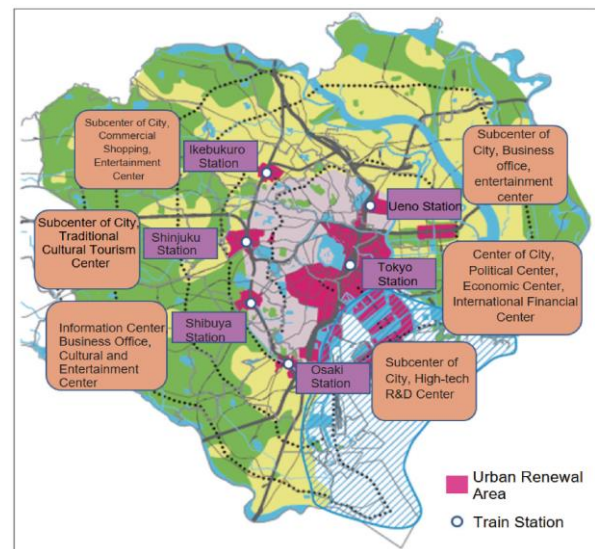


Figure 1 Designated urban renewal area around railway station in Tokyo

Source: *Report on Renovation, Development and Protection Policy for the Urban Planning Area of Tokyo.*

With the opportunity of urban renewal, London implemented comprehensive land development and integrated development of urban functions in the surrounding areas of the old railway stations (Paddington, King's Cross and St. Pancras International Station) in the city center, so terminals' functions as urban cores were enhanced. For example, the King's Cross Railway Station, which has a history of more than 150 years, was originally a dilapidated area full of industrial atmosphere. After renovation, it became a new community integrating business, residence, living and leisure (see Figure 2), and effectively stimulated the development of the region. At the same time, it has become an important gateway area in London^[2].



a Before renovation



b After renovation

Figure 2 Comparison of King's Cross Station before and the after renovation

Source: <http://www.urcities.com/topic/20160705/22715.html>



Figure 3 Location of New Fulton Station in Lower Manhattan

Source: Reference [3].

2) Center Oriented Growth: introducing railway stations or lines into existing urban function centers

This mode is characterized as introducing regional rail transit lines such as high-speed rails and intercity railways into urban central areas and building new transportation hubs. It will thereby enhance the transportation accessibility and node value of the central area and effectively stimulate the development vitality of the area. It is very difficult to introduce new rail transit lines or new stations in urban

built-up areas, especially in urban centers. The interests that need to be coordinated are also very complicated. But from the experience of international big cities such as New York, London, Paris and other cities, even in the face of huge costs, these cities are still working hard. For example, New York introduced a new transportation hub in Lower Manhattan—the Fulton Hub (see Figure 3). It integrated the original Fulton Street station, the World Trade Center station, and the Cortland Street/World Trade Center station, which was closed due to the September 11 Incident. The main purpose is to revitalize Lower Manhattan and make the Fulton Hub a more vibrant symbol of New York.

The Futian Terminal in the center of Shenzhen, China, also belongs to this mode. Shenzhen introduced the stations on the Guangzhou–Shenzhen–Hong Kong Passenger Line into the central area of Futian, forming a central railway passenger terminal integrating railways, subways, buses, trams, taxis and other modes of transportation. The Futian Terminal connects the city's functional areas such as hotels, business centers, convention and exhibition buildings and shopping plazas to achieve a seamless integration of business, office and leisure. It not only effectively improves the development vitality of the region, but also strengthens the city's radiation power and promotes the rapid development of the regional economy of the entire Pearl River Delta city cluster since the high-speed rail lines connected by this terminal can quickly reach Guangzhou and Hong Kong.

3) New Town Oriented Growth: guiding and driving the development of a new city (or a new district) by building a new railway passenger terminal

Throughout the formation and development of cities in the world, transportation often becomes the decisive factor of their ability to grow and develop. Especially when urbanization develops to a certain stage, the function of the urban central area begins to shift to the suburbs and surrounding areas. The construction of a new city becomes an important ground to accommodate the population and functions shifted from the central area, and using new transportation terminals to guide and drive the development of new cities has become an important mode to promote the development of new cities (new districts) in the world. For example, the new city of Cergy Pontoise in Paris and the Tama new town in Tokyo are typical examples of building a new city center around a railway terminal. They enhanced the transportation accessibility of the new city by establishing efficient and convenient transportation links with the city center, thereby driving the economic development of the new city and expanding the radiation effect of the area.

Compared with the urban renewal mode and the center oriented growth mode, the new town oriented growth mode is a suboptimal choice to realize the coordinated development of railway passenger terminals and urban functions under the dual objectives of comprehensively considering construction costs and driving the development of new cities. In China, high-speed rail construction is restricted by many

factors (such as high urban demolition costs and difficult engineering). Therefore, high-speed rail stations are often located in new cities (new districts) away from the main urban areas, and the development of the new cities (new districts) is driven by the construction of terminals. At present, most of China's new high-speed rail cities belong to this mode.

3 Constraints on coordinated development of railway passenger terminals and cities

The construction and rapid development of multi-level rail transit systems in China, including high-speed railways and inter-city railways etc., and the release of relevant policies such as the *Opinions of the General Office of the State Council on Supporting the Implementation of Comprehensive Land Development in Railway Construction* (GBF [2014] No.37) have created a good opportunity for the coordinated development of railway passenger terminals and cities. However, the current situation is that the comprehensive development of land around the railway passenger terminal is not ideal. The hub function is simplified, and the coordinated development relationship with the city has not yet been established. The fundamental reason is that there are some constraints on the system and mechanism.

1) Decentralized management, individual planning, and lack of overall system and mechanism coordination

First, under the management system of the transportation industry, the components of railway passenger terminals (such as railway stations, subway stations, bus stops, etc.) are subject to different administrations. Taking Beijing West Railway Station as an example, the current management system has two dividing lines. The first dividing line is mainly reflected between the railway department and the Beijing Municipal Government. The management solution for the Beijing West Railway Station is that the above-ground part, which mainly consists of the railway station buildings and the station arrival system, is managed by the Beijing Railway Administration; and the entire West Station area, which mainly consists of the departure system, belongs to the Beijing Municipal Government and is managed by the West Station Area Management Committee. Another dividing line is within the Beijing Municipal Government itself. The West Station covers an area of 1.3 km², spanning three districts: Fengtai, Haidian and Xicheng. In the West Station area, the system is highly fragmented and segmentary, and each party is administrating in its own way. One issue could be managed by multiple parties, and this area is lack of authoritative and comprehensive coordination. This situation makes the management departments of various components of the West Station area pay more attention to their own management responsibilities, lacking the motivation and overall consideration of the comprehensive development of the entire hub area.

Secondly, from the perspective of the planning and management system, different aspects of urban transportation planning are subordinate to different departments, such as the planning of railway stations and other comprehensive transportation hubs, planning of urban functional layout, land use planning, and the planning of subways, buses and trams in the hub area. Different departments have their own systems and considerations in the preparation and approval of their plans, and lack effective communication platforms and coordination mechanisms. Under this circumstance, it is difficult to systematically plan the various components of the integrated transportation hub. There is no effective integration and close interaction among the hub site plan, the urban master plan and the land use plan, resulting in the separation of terminals and cities. It is difficult to coordinate the development of terminals, urban functions and the land use.

2) Lack of differentiated and flexible land supply methods and utilization systems.

In terms of land supply, according to the relevant provisions of the *Land Administration Law of the People's Republic of China (2004 Revision)* and the *Land Allocation Catalogue* issued by the Ministry of Resources of the People's Republic of China, the land used for transportation hubs belongs to the category of allocated land. In accordance with the provisions of the *Beijing Municipal State-owned Construction Land Supply Measures (Trial)*, "the right holders of allocated land shall not develop and construct the allocated land on their own. If the current land use needs to be changed, the government may recover the allocated land use rights, or transfer the rights to others for development and construction after approved by the municipal people's government, and the land transfer fee shall be paid according to the market price. For land used for commercial purposes such as business, tourism, entertainment and commercial housing, the transfer of land use rights shall be conducted in an open land transaction market by means of bidding, auction and listing." These provisions indicate that the transportation hub land acquired through allocation can only be used for transportation infrastructure construction, and the commercial development purposes other than transportation are prohibited. If the land around the railway passenger terminal needs to be comprehensively developed, the land must be acquired with the market supply method of "bidding, auction and listing". Therefore, the construction mainstay of the hub must compete with social developers, and it is difficult to ensure the integration and coordination between the mainstay of transportation construction and the mainstay of comprehensive development, which brings greater risks to the comprehensive development.

In terms of land use, there are no clear regulations for decentralized management of the ground, underground and above ground. If the space above and around the transportation station is to be comprehensively developed, the nature and ownership of the land cannot be determined. In terms of

land development, according to the existing urban planning specifications, the floor area ratio of transportation terminals such as railway stations is generally low (less than 3.0). This means that the construction development intensity of transportation terminals cannot be too large, which restricts the comprehensive development of the terminal land to a large extent.

3) Unsustainability of the government-led investment and financing mode.

The construction and operation of a railway passenger terminal requires a large amount of funds, while the traditional railway station construction and operation funds are led by the government, and the mainstay and the mode of investment and financing are relatively simple. With the regional integration and the rapid development of a city, the construction, operation and maintenance funding needs of the railway passenger terminal are increasing. This government-led debt-based investment and financing mode is difficult to sustain. In October 2014, the State Council issued the *Opinions on Strengthening Local Government Debt Management* (GF [2014] No.43) to implement scale control on local government debt. The standardized local government debt financing mechanism is limited to: government borrowing, government and social capital cooperation (PPP), and regulated contingent liabilities. This means that the traditional financing channels (loans, trusts and bonds) of local governments are completely limited, and it is urgent to explore more diversified investment and financing channels to solve the financing problem. At present, the government has issued a series of guiding opinions on the promotion of PPP and “railway + land comprehensive development”, which has created a good environment for the reform of investment and financing system and mechanism. But there are still no supporting measures and implementation rules in policy and regulation support, incentive and restraint mechanisms, risk and benefits sharing, and dispute settlement mechanisms, which makes it difficult to implement related projects. In terms of comprehensive land development, although the *Opinions on Implementing Comprehensive Land Development to Support Railway Construction* (GBF [2014] No.37) is issued, there are still no corresponding implementation rules and supporting measures. This causes the separation of railway construction and surrounding land development, and they are not coordinating with each other.

4 Countermeasures for coordinated development of railway passenger terminals and cities

Realizing the coordinated development of railway passenger terminals and cities is a complex system project, which involves multiple departments such as urban planning, traffic management and railway, as well as multiple

links such as planning, design, operation and management. It is urgent to break through the existing constraints, strengthen system and mechanism innovation and fortify policy support. The followings are some countermeasures and suggestions for the three modes of coordinated development of railway passenger terminals and cities.

4.1 Urban renewal mode

From the experience of foreign development, the urban renewal development mode is a redevelopment process that is inevitably experienced after a city develops to a certain stage. It is an important driving force to promote the deep integration of transportation and urban areas, and to form a new urban economic growth engine based on the transportation terminal. In this mode, since the surrounding area of the railway passenger terminal is already a mature urban built-up area, the comprehensive development and renovation is often more expensive and more complicated. Moreover, the renovation and transformation of the railway passenger terminal involves many relevant departments. Their interests and focuses are different, and the coordination is more difficult. Therefore, the key for this mode is to achieve breakthroughs in two aspects.

1) To establish a platform and mechanism that can fully coordinate the interests of all parties

On the one hand, international experience can be adopted to establish a comprehensive development project committee for railway passenger terminals. The committee is composed of representatives from the municipal government, district government, railway operation, urban planning and other organizations. It is responsible for project organization and coordination, and the joint discussion and development of specific plans for urban functional layout and comprehensive land development in the terminal area. Meanwhile, it is responsible for providing dynamic planning guidelines to continuously promote and track the progress of the project and the subsequent updates and improvements. Taking Tokyo, Japan as an example, the Redevelopment Project Advisory Committee of Otemachi–Marunouchi–Yurakucho District (OMY District) was established to promote the integrated development of the Tokyo Station area. It is responsible for organization and coordination, program development, project advancement and improvement (see Figure 4), so that all parties can work together to transform the Tokyo Station area into a charming, attractive, lively and bustling financial and business district. Since September 1996, the advisory committee has held a meeting every year and a half to communicate and discuss the development intentions and recommendations of all parties, and to develop the *Redevelopment Planning Guideline for Otemachi–Marunouchi–Yurakucho Area, Tokyo*^[4], which clarifies the basic direction, rules and development plans for the future development of this area. The guideline was first developed in 2000 and revised in 2005, 2008 and 2012 to accommodate project development needs and urban development

trends in Tokyo.

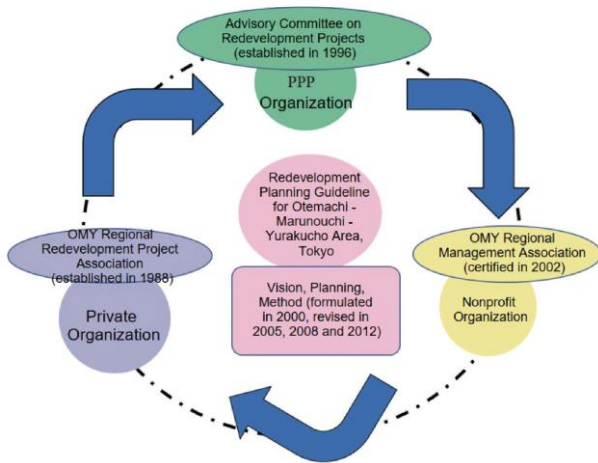


Figure 4 Framework of coordination organizations of Tokyo Station redevelopment project

Source: Reference [4].

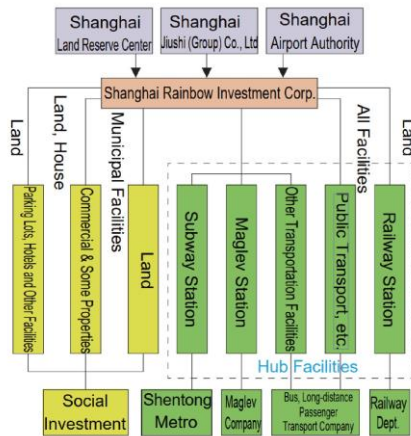


Figure 5 Investment and development structure for Shanghai Hongqiao comprehensive transport terminal

Source: Reference [5].

On the other hand, the experience of the comprehensive development of Shanghai Hongqiao Hub can be adopted to establish a hub investment and development company (see Figure 5), which achieves the unification of the investment, construction and operation of the integrated development of the hub area. In order to effectively promote the development and construction of the Hongqiao Hub, Shanghai has established Hongqiao Integrated Transportation Hub Project Headquarters and established Shanghai Rainbow Investment Corp. (hereinafter referred to as “Rainbow Company”). Rainbow Company and Hongqiao Integrated Transportation Hub Project Headquarters use two names but one team. They undertake the daily work of the headquarters office and are responsible for overall coordination, including convening headquarters meetings and daily promotion meetings, coordinating the progress of the plan, and coordinating various conflicts. Rainbow Company has three major

shareholders: Shanghai Land Reserve Center, Shanghai Jiushi (Group) Co., Ltd and Shanghai Airport Authority. It is not only the construction company of Hongqiao Comprehensive Transportation Hub, but also the investor and developer of the development and construction of Hongqiao Business District. It realizes the unification of planning and construction, coordination and command, investment and development, and operation and management [5], which is the representative of the construction and operation of China’s urban comprehensive transportation hubs.

2) To break through the constraint of the floor area ratio on urban land development, and implement a differentiated, multi-level floor area ratio system.

According to the location and traffic conditions of the railway passenger terminal, combined with the layout of urban functions, the planned floor area ratio of the transportation terminal should be increased in accordance with legal procedures to ensure the feasibility of comprehensive development in the terminal area. Tokyo’s practice in this regard is worth learning. In 2002, Tokyo issued the *Urban Renewal Special Measures Act*, which established a specific street block system and a system to determine regions applicable for special floor area ratios. It designated important transportation hub nodes such as railway stations as areas applicable for special floor area ratios, and promoted the comprehensive high-intensity development of hub areas by implementing special standards. The OMY area where Tokyo Station was located was identified as the area where the special floor area ratio system could be applied in 2002. The floor area ratio was increased from 10 to 13, and the floor area ratios of different land plots were allowed to be transferred [6]. For example, in order to protect the buildings in Tokyo Station, the floor area ratio was transferred to the surrounding building blocks (see Figure 6), which protected the historical features of Tokyo Station while achieving high-intensity development of the surrounding buildings. At present, the surrounding area of Tokyo Station has gathered the world’s top companies in the fields of finance, service, and manufacturing, which is the most important strategic area in the Tokyo metropolitan area.

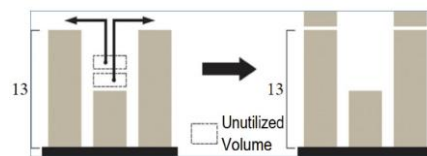


Figure 6 Floor area ratio transfer of Tokyo Station area

Source: Reference [6].

4.2 Center oriented growth mode

The center-oriented development mode needs to introduce new stations (high-speed rail stations or inter-city railway stations) in a mature urban center. The engineering technical requirements and investment costs are relatively high. In addition, the new station areas are often important

urban functional areas (such as the CBD area) with intensive economic activities that are also the main attractions of the city, so they have higher requirements on the travel accessibility and carrying capacity.



Figure 7 Passages distribution around Shenzhen Futian railway hub

Source: Drawn according to Baidu Map.

On the one hand, it is necessary to strengthen the integration of the introduced station and the surrounding urban buildings to create a comfortable, safe and convenient pedestrian network, so that passengers can easily walk to their destinations. The pedestrian network should be directly connected to destinations. Underground passages should be constructed to extend the entrances and exits of the station to surrounding buildings. These passages can effectively expand the radiation and service area of the transportation hub, and can distribute the passenger flow in and out of the hub in a relatively balanced manner, which avoids excessive concentration of passengers and increases the efficiency of gathering and distribution. For example, there are 32 entrances and exits in the Futian hub area of Shenzhen (see Figure 7). Passengers can walk to the Futian Station, the Convention and Exhibition Center Station, the Civic Center Station and the Shopping Park Station through these entrances and exits. They can also reach many high-rise and super high-rise buildings, such as Shangri-La Hotel, Rongchao Business Center, HKCTS Building, Times Financial Center, Duty Free Business Building, and Fengli Building. These passages effectively connect shopping centers such as Yijing Center City and COCO Park, greatly improve

the convenience for passengers heading to these destinations, and enhance the popularity and development vitality of the Futian hub area.

On the other hand, the introduction of railway passenger terminals into urban central areas will inevitably attract more passengers, which requires higher efficiency in gathering and distributing passenger flow and higher traffic carrying capacity in the terminal areas. Therefore, it is necessary to build a high-capacity transportation system that is suitable for the functional positioning and development intensity of the terminal. Taking Tokyo as an example, the development intensity of the main railway passenger terminals on the Yamanote ring line is relatively high. For example, the building floor area ratios of Tokyo Station and Shinjuku Station are more than 10, and the areas around these stations have become the most dynamic areas with the highest commercial values in Tokyo. An efficient and high-capacity rail transit system (see Table 1) has also been built in these areas to be compatible with the development intensity, which effectively supports the high-intensity development of these areas.

Table 1 Floor area ratio of Tokyo major railway hub and the number of linked rail lines

Station name	Development volumn ratio	Number of rail transit lines (including JR, private rail and subway) / line
Tokyo Station	10-17	18
Shinjuku Station	10-15	10
Shibuya Station	9.5-12.0	8
Ikebukuro Station	10.5-12.0	7
Ueno Station	8-10	7
Osaki Station	8-10	5

Source: collected based on Wikipedia data.

4.3 New Town oriented growth mode

From the view of the construction of new high-speed railway cities in China, railway stations are usually located in the suburbs far away from the main urban areas or in small- and medium-sized cities that are relatively underdeveloped, in which the necessary foundation for urban development (such as population, industry, and infrastructure) is relatively weak. In fact, the opening of a high-speed rail is a double-edged sword, which can not only guide and promote the coordinated development of the city, but also possibly aggravate the siphoning phenomenon in the region, leading to wider development gap between different areas. Therefore, how to develop from a single station to a fully functional new city is the key to the new town oriented growth mode.

On the one hand, the integrated development of station-city-industry should be realized. The advantages of high-speed rail in accelerating the flow of production factors and promoting information exchange should be fully utilized, and a mainstay industry that can highlight the characteristics of the new city should be developed. That is,

in addition to a “station”, there must be a “city” and there must also be an “industry” in the “city”. Only in this way, the high-speed rail can truly exploit its advantage in promoting and driving the local economy, avoid the excessive dependence of the new city on the development of the old city, and prevent the siphon effect caused by the difference in regional economic development level. To achieve this, the functional layout of the new city and the planning of land use must be considered and coordinated at the site selection stage of the railway station. It is recommended that the local government should take the lead and railway authorities should participate in. Taking the “all plans merging into one plan” as an opportunity, the planning and construction of transportation hubs such as railway stations should be incorporated into the master plan of the city and the land use plan for overall consideration. The site shall be selected based on urban functional divisions and land use layout, and land should be reserved for the comprehensive development and related supporting facilities in the hub area. In terms of the functional layout of the land, the new city center should be built based on the station. In addition to commercial centers and residential buildings, it is necessary to build schools, hospitals, markets and other supporting facilities to develop a hub-type community with complete functions and with the hub as the core. In addition, from the view of the transportation advantages, it is more convenient to build the high-speed railway station in the urban center than in the suburbs. However, this does not mean that the high-speed railway station cannot be built in the suburbs. The key issue is the transportation connection. To realize the driving effect and influence of high-speed railway stations on the development of new cities, it is far from enough to rely solely on the construction of railway stations. In order to attract more enterprises and institutions to settle in and improve the popularity of the new city, it is necessary to realize all-round communication between the new city and the outside world, especially to strengthen the convenient and fast transportation connection between the new city and the city center. The large-capacity rail transit is the top choice to connect with high-speed railway stations. For example, the station area where the new city of Cergy Pontoise in Paris is located has four rail transit lines (three railway lines and one RER line) connected to the downtown of Paris, which greatly enhances the accessibility of the new city and attracts more and more international headquarters, manufacturing companies, R & D centers and logistics platforms.

On the other hand, it is suggested to innovate investment and financing policies and establish a stable and diversified investment and financing channel for railway passenger terminals. The issue of a series of policy documents such as *Opinions of the State Council on Reforming Railway Investment and Financing System to Accelerate Railway Construction* (GF [2013] No.33) and *Guiding Opinions of the State Council on Encouraging Non-Governmental*

Investment to Innovate Investment and Financing Mechanisms in Key Areas (GF [2014] No.60), has given favorable signals for the reform of the investment and financing system in public services such as transportation. On the basis of giving full play to the guiding role of government investment, the construction and development of integrated transportation terminals can explore investment and financing methods with enterprises as the mainstay and capital as the link. Non-governmental capital should be encouraged to participate in the construction and operation of integrated transportation terminals to form a diversified investment and financing mode and to establish a stable investment and financing channel for integrated transportation terminals. For example, some international cities such as Tokyo and Hong Kong have adopted a government-society capital cooperation mode (PPP mode) in the construction and operation of railway passenger terminals and have achieved good results. The success of the PPP mode requires multi-faceted supports, including completing and improving the PPP system framework and legal system, establishing excellent credit constraints and risk sharing mechanisms, improving market access and exit mechanisms, and accelerating institutional and talent team building.

5 Conclusions

Based on the development practice in the world, the coordination and interaction between railway passenger terminals and urban functions can be realized through the coupling development of the two, no matter in a highly mature urban central area, or in a new city or new district that disperses functions of the urban central area. The coordinated development of railway passenger terminals and urban functions cannot be accomplished overnight. The key is to take advantage of the opportunity provided by the vigorous development of high-speed railways and inter-city railways to combine the construction or renovation of railway passenger terminals with the optimization of urban spatial structure and functional layout. It is also important to promote the establishment of the platform and coordination mechanism that can coordinate the interests of multiple parties, and to make breakthroughs and innovations in urban planning, land use, investment and financing system mechanisms and policies, so as to promote the deep integration of transportation and cities and guide the urban transportation development mode to be intensive and green.

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