Strategy for Urban Redevelopment of Taichung City in the Era of High Speed Rail

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Abstract

The impact made by Taiwan High Speed Rail (HSR) upon Taichung City (Taiwan) since early 2007 is as extensive as what Taiwan Railway brought to Taichung a century ago. In the era of HSR, Taichung City faces another historical moment of urban development. The global competitiveness of the city relies upon the co-development and interaction of the new district in the west part of the city and the old town in the east.

The commercial possibilities rolling out of HSR since early 2007 have reassured the eastward development of Taichung City. Since 2004, the rapid growth of Central Taiwan Science Park (CTSP) has made the east side of Tadu Plateau known as "Taichung Tech Corridor". As a gate to the corridor, the HSR station in Wurih further fuels the momentum of the area between CTSP and the HSR Station, where is very likely to become the growth engine of Taichung Metropolis.

The spatial structure of Taiwan will be reconstructed by HSR, and Taichung City should endeavor to play a decisive role because of her location and population. The study will analyze spatial planning issues derived from HSR, and some suggestions will be brought up for public and private sectors.

Keywords: era of High Speed Rail, urban redevelopment, urban re-generation

1 Introduction

Taiwan is an island around 394 kilometers in length, with 23 million inhabitants—95% living in Western Corridor. In the past 50 years and beyond, the land transportation in Western Corridor went through 4 major changes. In 1954, Provincial Highway No. 1 of Taiwan was completed and opened for transportation, followed by National Freeway No. 1 of Taiwan (ZhongShan Highway) in 1978. National Freeway No. 3 (Formosa Freeway) was completed by stage construction during the period between 1993 and 2003. In 2007, Taiwan High Speed Rail (THSR) started operating. In general, the spatial structure and the rank of urban systems in Western Corridor changed along with the first three major transportation developments.

Therefore, it is expected that THSR will trigger the restructuring of spatial structure in Western Corridor, and will also lead to new integrations and competitions of space when cities and metropolises develop. Most importantly, THSR will transform Western Corridor into a jumbo metropolitan area within a one-day living circle.

Different from the changes brought by the first three highway constructions, in addition to the advent of the one-day living circle, THSR will also be able to redistribute population and living space through designated areas and through the development of outskirts of cities to release the over-concentrated population in the centers of the cities. The convenience of logistics and transportation brought by THSR will accelerate the clustering of and changes in the tertiary and service sectors. The utility efficiency of social and economic resources, and the interaction between urban and rural space development will be improved. Because of the complexity of these changes, the public do not have a comprehensive understanding on the social and economic effects brought by THSR, and it requires longer observation time to adequately assess the impacts. Relevant analytic researches have shown that the acceleration of transportation improvement and land development brought by THSR had positive impact on demographic distribution, and even had greater impact on industries (Lin 2005). The opportunity for space restructuring brought by THSR is considered to be the last chance to elevate the ranking of an urban system within a century. Taichung city is a strong player for her advantages of being in a good location and having Mid-Taiwan metropolis with six million residents as hinterland. This paper analyzes space planning strategies of Taichung City in response to changes brought by THSR, and serves as a good reference for public and private sectors in making investment or other decisions.

2 Effects and Features of Spatial Development Oriented by High-Speed Rail (HSR) in Foreign Countries

HSR is ranked highest in public transportation tools in terms of capacity and speed. If public or private investment projects were made within the service area of HSR, they could achieve nationwide influences even just based on a regional-scale capital (K.-L. Chang 2006). As the mass rapid transit (MRT) system in Taichung metropolis will be in service in the future, the combination of the two systems can fortify the connection in intra-urban areas, and Taichung will incline to adopt the “transportation oriented development” (TOD) model for urban development. This model, based on its sustainable development principle, formulates clear strategies and mechanisms that can lower the external cost of transportation and promote smart growth (Chang and Kuo 2006). Generally, the effects that public transportation can bring to a city mainly include:

a. Causal effect: the construction of stations will attract retailing, service and business sectors, or even the development of a highly-populated residential community. Therefore, the region will become highly dependent on public transportation.

b. Catalysis effect: Expectations for rapid development pull capitals into neighboring areas, along come enterprises and people. Development of neighboring areas is accelerated by large-scale investment in construction.

c. Accessibility effect: High speed public transportation elevates mobility, and increases the number of trips made for working, shopping, entertaining and studying purposes.

d. Rolling effect: Both the inter-city HSR and intra-city MRT are helpful in increasing dynamics, economic clustering and investment, which are important factors for promoting a city's competitiveness in the global arena.

The research of spatial development triggered by HSR in Western countries began with a French scholar named Leboeuf (1989), whose research on industry distribution related to TGV (HSR in France) in 1981 and 1982 found that among all business trips made with TGV, the number of service-related transactions were much higher than that of product-related transactions. 72% of companies in the tertiary sector often traveled between Paris and Lyon via TGV, but only 49% of companies in the secondary sector did the same. The most beneficial activities included research, consulting and technology management services. Reed (1991) reviewed the development history of HSR in Western countries, and found that HSR did not only trigger the clustering of many businesses around stations, but also affected big cities, satellite cities, airports, business centers and cargo transportation industry. Therefore, the impact of HSR on industries cannot be ignored when analyzing its effects on transportation accessibility. Blum et al. (1997) confirmed that HSR was able to connect various important living circles, and formed a pearl-necklace-shaped "functional region" with cities and pivotal business areas strung as pearls. It has played a positive role in national integration and in shortening the development gap among different regions. However, based on the experience of HSR development in Europe, Vickerman (1997) argued that stations were only located in a few important metropolises, which might lead to certain development gaps among regions with and without a HSR station.

On the other hand, the research on the effects of HSR in Japan showed that its operation brought spillover effects of increasing time and resource distribution efficiency, operating income of the railway, environmental protection and various spatial developments. The "spillover effects" also showed on other factors (including population distribution in various industries, financial information, land use activities and popular cultures), but it required a longer period of time for them to become explicit. Nakamura & Ueda (1989) conducted the analysis and comparison of the effects on industries brought by Tohoku Shinkansen and Joetsu Shinkansen before and after the operation. They found that the most noticeable impact HSR brought to its service area was the clustering and expansion of "business development." Information Exchange Industry was the one that benefited the most, followed by the tertiary sectors such as retailing, financial and public services. It showed no explicit impact on industries related to large-sized products or cargos. In terms of population growth, its impacts were the most noticeable in areas that had more residents working in information industry, more opportunities for higher education, and rapid transmission networks. Sasaki et al. (1997) constructed models to measure the impacts of Japanese Shinkansen on local developments. They found that HSR could only play a catalysis role in local

development, which was still dominated by development strategies in the past. Only when backed by government with a comprehensive development plan, could HSR help to narrow the development gap among regions. At the local level, because HSR stations were only established in a few important metropolises, it may widen the gap between urban and rural areas. Nakamura & Ueda (1997) analyzed the population change in areas with and without Shinkansen or within and not within the service areas of highway systems. They found that regions showing a substantial population growth after the HSR was completed included: (1) regional centers where prefecture or district administration offices were located, (2) cities with railway stations, and (3) cities within the service areas of highway systems. The above-mentioned cities share common traits such as higher employment rate, more opportunities for higher education, and rapid transit systems connecting HSR stations.

From the perspective of spatial development, the effects brought by HSR included (Chiou 2000):

a. the polarization of major metropolises, leading to higher land prices in good business areas.

b. the expansion of a living circle, which stimulates the competition and clustering of business, tourism and service industries.

c. speeding growth of small families and commuters, and the dilution of relationships with neighboring communities.

d. enhancement in competitiveness for some urban enterprises.

e. expansion of scale and growth of population invovled in business in certain important business areas.

f. growth of asset value of cities where stations are located and that of their neighboring areas.

g. increase of opportunities to revive urban tourism.

3 Current Progress of Central and Local Construction and Spatial Planning

Bureau of High Speed Rail, Ministry of Transportation and Communications (MOTC) is responsible for drafting the development plan of 5 major stations of THSR. Local industries are incorporated in these plans. Industrial Districts in Taichung and Taoyuan are prioritized in the development plan as they have been singled out by Executive Yuan. The core district of Taichung THSR Station, covering 59 hectares, will be developed based on a high-density pattern. It is positioned as a “mega-mall” that provides a “sustainable lifestyle of health,” and will introduce strategic activities and designate them as the transfer zone, entertaining zone, industrial R&D zone, retailing business zone, and waterside recreational zone. In addition, a project is established to assess the introduction of international casinos. The total development cost is estimated to be 51.5 billion NTD (excluding procurement of lands), which will be shared in installments by private investors, and the output value will be around 18 billion NTD per year. The project can generate 13,460 job opportunities, and will pay 3.15 billion NTD as tax per year.

According to statistics in 2006, the proportion of Taichung city population works in the tertiary sector is 71.37%, much higher than the 50.97% in Mid-Taiwan area and 58.27% nationwide. It shows that Taichung city has championed Taiwan in the scale of commercial activities, service

industry and consuming potential. The accommodation, consumption and real estate developments resulted from such industry have been driving Taichung city to expand. Therefore, Taichung city hall has adopted a spatial planning policy catering to market needs, and started framing the "Draft of Detailed Plan of Taichung Urban Planning (Zhe-Nan Leisure District) (Chart 1)." Based on the idea of building a "fashionable and recreational waterside city" providing "commercial urban entertainment," the city hall has planned to launch a development project that incorporates hotels, shopping streets, food and beverage services, gyms, entertainment facilities, casinos, commercial housing, and cultural and educational infrastructure. The principle of the project is to make use of the extension of present geographical scenery (e.g. transportation hubs close to HSR stations or expressway, Fazih River and waterside areas, and edges of agricultural lands) and build an inner city that offers international-scaled entertainment. The city will preserve the hydrological pattern, shift NIMBY(Not In My Back Yard) cores, and incorporate pop culture. Moreover, it will link various circulations, and form a unique image of new urban scenery that attracts more people. From the policy, it is discerned that the project intends to rely on location advantages such as being close to the HSR station or expressway, to elevate the economic competitiveness of the city. At the same time, it also aims at expanding the real estate development to boost the house market and land prices, and achieve the effect of "growth coalitions." The close collaboration of private and public sectors during the process of urban and regional growth can attract a large amount of domestic capital and boost developments, which is a realization of urban entrepreneurism.

In addition, in order to respond to the transfer demand between THSR Taichung Station and MRT system in the city, MRT Green line—connecting Wuri, Wenxin and Beitun—will be constructed first among the five MRT lines (Blue, Green, Red, Yellow, and Orange). The line is 16.5 kilometers in length, and 12.63 kilometers is within Taichung city, while 3.87 kilometers in Taichung county. The construction has adopted the medium-capacity transport system, and most parts of the line are elevated. Bureau of HSR has announced that the most optimistic estimation of when the system can start operating is 2011 (the open time is not yet certain). In the future, the line will be extended to Changhua city, and MOTC is also planning to extend the light rail system to Lukan.

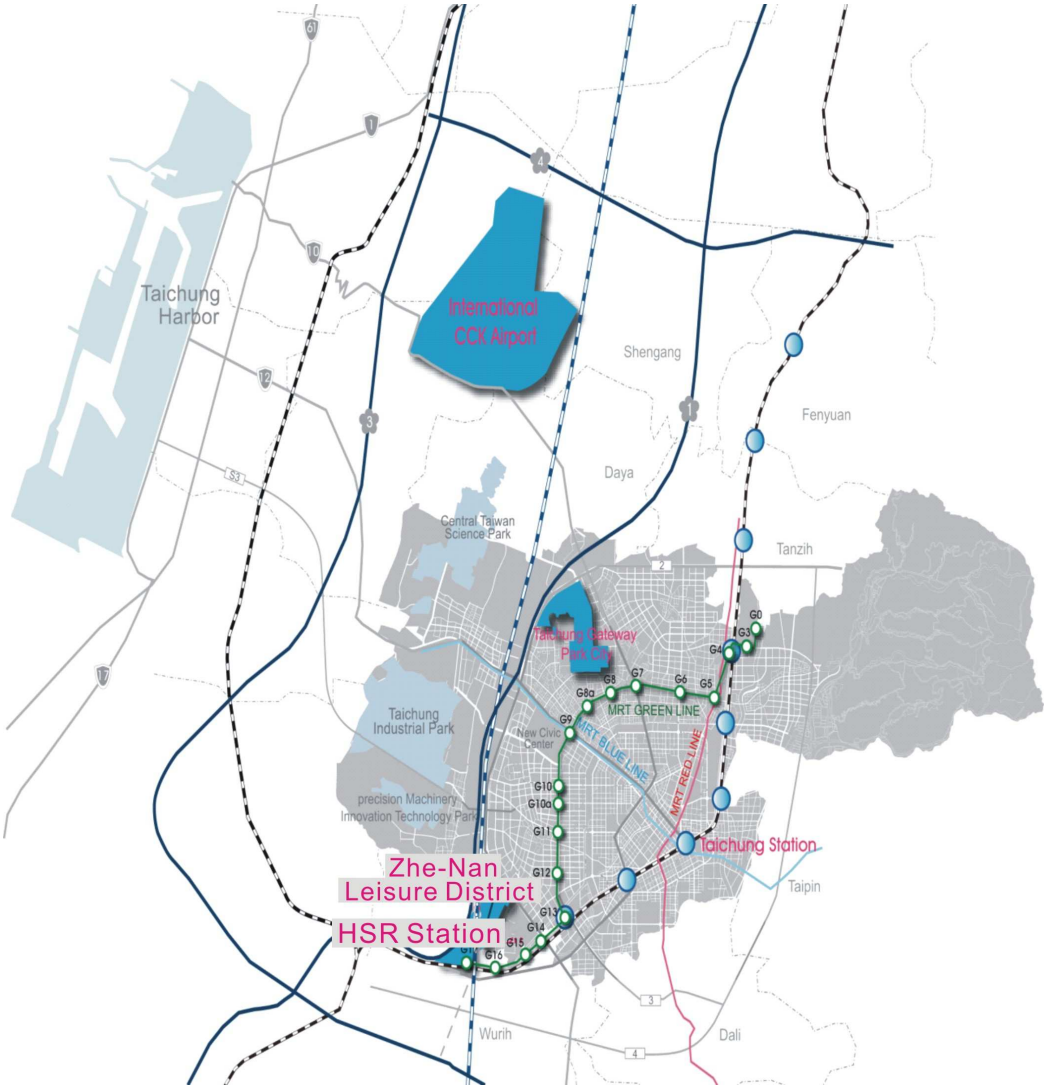

Chart 1 Specification of HSR Taichung Station Core District and Zhe-Nan Leisure District in Taichung City Urban Plan

4 Relevant Issues

After reviewing the above-mentioned spatial planning theories and strategies, empirical studies in European countries and Japan, and current planning and development strategies adopted by central and local governments for Taichung city, we propose a few issues that should be taken into consideration by the authority in the following development.

4.1 Coordination and Integration of Central and Local Plans

For example, in the “Draft of Detailed Plan of Taichung Urban Planning (Zhe-Nan Leisure District),” Taichung city hall was planning to develop the area into business hinterland for THSR. But because its content and development location partly overlapped with the THSR Taichung Station Core District Project launched by central government, external concerns such

as land use limitations on some parts of the land were raised. In October 2007, after reviewing thrice by City Planning Commission of the Ministry of Interior Affairs, the project was requested to be adjusted completely different from the original local plan. High-density housing was substituted by low-density one with 350% of floor area ratio. Commercial districts where a cap of 10 floors was imposed on buildings within would be transformed into residential districts where a cap of 2 floors was imposed. Taichung city hall felt that the change would greatly impact the rights of local landlords, thus insisted on its own stance against that of the central government. The incident could be considered as an example to show the lack of integration and comprehensive planning in urban spatial development projects.

4.2 Disconnection of Planning and Construction

Urban districts are complicated units in terms of economic activities and space. The bottom-up, organic development of such districts, on a certain level, transcends the boundary of administrative jurisdiction and government policies. Nowadays, problems with urban districts in Taiwan have surfaced, among them the most serious is local autonomy, and it might worsen when Western Corridor is transformed into a jumbo metropolitan area within the one-day living circle because of THSR. Therefore, central and local governments should prioritize relevant issues and start proposing corresponding policies to coordinate and improve the development model of urban districts. Take present Taichung urban area as an example: a series of issues have derived from the lack of connection, coordination and resource sharing among different regions or cities, and they might become worse after the operation of THSR, which will bring opportunities of cross-region development. In the future, the inconsistent coverage between economic space and administrative jurisdiction might affect the integration efficiency of urban construction and governance as a whole, and lead to sluggish urban planning with real construction lagging behind the development in suburban areas, as well as a lack of integrated, cross-region urban development plan and construction project. The underlying problems include difficulties in coordinating administrative departments, unreasonable tax and financial burdens, disconnection between transportation planning and corresponding management, conflicts among different usage plans for public facilities, and loopholes in public nuisance precaution systems (Chen and Li 2002).

For example, in January 2008, the media reported that due to changes in urban planning, the opening of Special Highway No. 3 had to be postponed until June 2009. Therefore 91 manufacturers, including HIWIN Technologies, in Taichung Precision Machinery Technological Park (TPMTP), would not be able to start operating in June 2008 as planned. TPMTP, highly relied on Special Highway No. 3 for transportation, was supported by Ministry of Economic Affairs and expected to generate 25.8 billion NTD as annual return with a total investment of 33.7 billion NTD. The manufacturers were extremely discontent with the delay, and the estimation done by Taichung city hall also showed that the loss resulted from it was around 25 billion NTD (Wang Jan. 11th, 2008).

4.3 Over Suburbanization and Inappropriate Land Use

In both urban development histories of Western countries and Taiwan, the high-income class left downtown to suburban areas to have a broader and more elegant living environment. In developing countries, rising land prices in downtown forced factories, mid- and low-income

classes and new immigrants from rural areas to move to suburban areas, which led to a rapid expansion of suburbanization. To an extent, it decreased the rationality and efficiency of land use models. The leapfrogged development in suburban areas, and the over-dependence on transportation, educational and shopping facilities provided in the city center were resulted from the previous development policies of Taichung city hall. The expansion of suburban areas also obstructed an urban district from developing into a compact city adopting rational spatial structure, and some obstacles, such as competition on resources and traffic jam around downtown also appeared. If this unhealthy suburbanization was not properly regulated by public intervention, effects brought by THSR would accelerate the deterioration of the situation, and the present elegant living environment in suburban Taichung city is likely to follow the path of degrading living quality in downtown area.

4.4 Hollowed Spatial Structure and Risks of Degradation in City Center

THSR is usually located at the periphery of cities, and is always accompanied by the development of newly-emerged industries and housing space. Therefore, from the experience in developed countries, we know that it often led to mid- and high-income classes moving from a city center to suburban areas in pursuit of living quality, meaning that the spatial structure in the city center was hollowed out. The degradation of a city center was first revealed as the decrease of population and economic activities, followed by the poverty expansion from a city center and the outbreak of fiscal crisis. The United States serves as a typical example. During the process of suburban development, the population in a city center not only underwent a decrease in number, but also a change in structure, which was even a more serious problem: white and rich people left, while poor people and minority groups surged in. This two-way immigration greatly reduced the financial sources of the city, forcing the city hall to curtail expanses on the construction, maintenance and management of public facilities, and on other social welfares, and it led to a vicious circle that was difficult to break.

4.5 Surfacing of Issues Relevant to Inappropriate Locations in Early Stage

A certain period in the forming process of Taichung urban area was the urbanization and marketization based on industrialized environment. The establishment of industrial districts, at that time, was considered essential in response to the needs of urban growth and economic growth. However, as the urban areas became more mature, the old industrial districts whose locations had been chosen merely based on economic development purposes seemed to be polluting and detrimental to the environment, and obstructed urban spatial development model and land use efficiency because of changes in external criteria as time passed. In addition, the diminishing, outsourcing and deterioration of the industries in the old industrial districts also led to idling space of old plants and restrained space restructuring. This scenario is the most obvious in Dadu Plateau Corridor. The authority should re-draft and adjust the spatial plan of this key industrial area, so it can better fit into the industrial development trend and fulfill future location and spatial needs.

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