



Evaluating indirect impacts of Transit Oriented Development (TOD). The case of Bangkok, Thailand.

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1. Introduction

Heavy and light rail transport system is claimed to be the most practical technique in sustainable urban areas. To alleviate commuting and pollution, the system becomes a global urban development frontier. A parallel tool, Transit Oriented Development (TOD) is implemented to facilitate a high level of accessibility to public transportations and to reach the highest efficient use of land. However, an influx of investment on TODs areas changes social structure and urban morphology through real estate development and speculation. These can produce gentrification since Neil Smith (2002) explained that an increasing of rent in housing market produces gentrification. Atkinson (2004) elaborated some positive effects of neighborhood improvement while Ruth Glass (1964 cited in Smith, 2002) pointed out that gentrification is a negative process. However, there are some questions that come together with the development. Will it be beneficial for everyone? Is it affordable and available for all? What are further consequences that should be taken into account? Are there any parallel planning strategies on TOD along with heavy-light rail development? To answer those questions, a single case study is used, focusing on TODs areas within 500 meters from stations. Evaluation of the first implemented metro line (BTS) noticeably shows a relationship between the rail system and urban development in TODs. The variables for this analysis are Urban Morphology and Land Utilities, Transportation Modes, Impact on Gentrification, and Policies and regulations that are related with urban development. We claim that the promotion of heavy rail development leads to gentrification and could produce undesirable consequences. Nonetheless, it is difficult to avoid gentrification but avoiding its negative effects is conceivable.

2. Chaos in Bangkok: Inconvenience of using public transportation

Bangkok, the capital of Thailand, is a center of South East Asian development. Since the first metro system was implemented in 1999, there are highly demands of use that put many new lines are under construction. At the same time, South East Asian Nations Countries will be united into a single regional center by 2015 as AEC: ASEAN Economic Committee. This special economic agreement calls all the attention and creates a big wave of development into Thailand. As located in the middle of the region's mainland with high potential to connect to neighbors, improving connectivity under heavy rail system becomes the first agenda of the nation. It raises land value along the rail development line, especially in major cities and at high potential stations. Metro extension plan and high-speed train project are accelerated. Nevertheless, rail networks go beyond the system's territory. They include and integrate policy instruments, structures of governments, political, social, and economic aspects (Desjardins et al. 2014).

Bangkok has one of the longest commuting times in the world. In order to access the inner city, where the work places are concentrated, inhabitants have to spend an average of two hours per trip either by using public buses or private vehicles. Because of the traffic congestions and poor connectivity of road systems (Rujopakarn 2006). The poor conditions, hot and humid weather, and urban crime support the use of private vehicles more and more, while the amount of roads remains constant with 8-10 percent of total urban area. Because of



these, investment on rail systems comes along with a promise of better quality of life for urban dwellers. In developed worlds, rail transport systems have been used and improved along with proficient plans for many decades, while the systems are relatively new in developing countries. The effects from this development have created dramatic changes of urban fabric and rapidly transformed the land use in TODs areas. The network automatically increases land value and housing market movement. Nowadays, real estate developers are taking place as a pioneer of development. People's lifestyles have dramatically changed in TODs along with arrival of metro system, named BTS Sky Train. BTS is an elevated train that consists of two lines, 34 service stations, and a length of 36.9 kilometers. After 1999, there were 57,803 completed condominium units within 500 meters of BTS and MRT (the second metro system that operated in 2004) stations (Matsuyuki et al. 2013). Urban fabric and social structures are, hence, slowly gentrified by the influx of new residents. Those consequences are overlaying with a process of gentrification, a movement of social classes from working-class into middle or upper classes in certain areas of the inner city.

3. Unplanned Development

Ari Station, which is located in the northern part of BTS' route 1, is selected as a unit of study. It can illustrate a strong impact from rail development and surrounding area because it was a low-density residential neighborhood. A change would have fewer effects from outer factors compared with the others. Meanwhile, every station after an interchange station to route 2 and a connection to the southern part of route 1, settles in prime areas. The prime areas have been concentrating with business-economic activities before BTS was implemented. Focusing on physical improvement that comes along with the rail development, urban morphology and land utilities have been noticeably shifting from single housing neighborhood into high-rise buildings. A statistic report from Department of City Planning shows that there was one condominium registration with 1.189 sq.m in 2001 and there were 8 registrations with 65.529sq.m in 2005. The trend of living in condominium continued with 7 registrations that add up to 215.757sq.m in 2011. Low-density residential area has been becoming high-density residential area with a mixture of office buildings, retails, and commercial activities. An adjustment of density creates more possibilities for inhabitants to live in catchment areas, which is a positive change in urban area. It meets both aims of TOD and the Compact City Development. On the other hand, a survey (Matsuyuki et al. 2013) from new residents who live in condominium along the BTS line shows that the average income household is 51.133 Baht while the average income per household of the country is 18.660 Baht and 35.004 in metropolitan areas. Besides a study from Wasuntaasook & Nakamura (2012) proofed there is a relationship between price and distance from mass transit station. "Several high rent samples exclusively reside within 1 km from the station, where an average price of the sample within 1 km is 400 baht/month/sq.m. If the minimum size of a house is 30 sq.m, the rent will be 12.000 baht/month".

4. Middle Class Riders and Policy Instruments

The social-economical statuses of those who can afford living cost in TODs areas are middle or upper-middle class. This impact is nearly producing the process of gentrification. Letting private actors take a major part of development would increase the negative effects of gentrification or even increase displacement. Working-class, a majority user, with high dependency on public transportation systems could not afford living cost in the areas. The area is being gentrified in a negative way. An advantage from the arrival of the metro system is that it serves people who live in the area. It also supports real estate development and investors while the metro system mainly earns profit only from service fees. The fees could



not sustain all maintenance, operation cost, and turn over. As a result, BTS raised the price in 2014 in order to support the system. But paying 45 Bath for one trip or 10 percent of the average monthly income is not a reasonable price. Because of this, BTS is called “middle class ride”. In other words, it draws a line between social structures. If the implementation of the metro system integrates more socio-economic aspects instead of mainly planned under technical-engineering perspective, local government would be able to subsidize the system’s costs. As for policy and land use plan, Bangkok Comprehensive Plan is only one frame to be used as a tool for urban planning. The plan is a generally broad strategy while TOD requires a special action plan. For example, Architectural Construction Act identifies that each condominium is required to have a parking space per unit. This regulation is unnecessary in high accessibility areas. It can be readjusted under special plan in TODs. Special planning should be implemented along with rail development to facilitate efficient movement of people. A translation from urban policy into an action plan has been missing since the first comprehensive plan in 1960. This missing gap causes a difficulty of coordination between local governments, other planning sectors, and private developers. Integrating areas where the metro system is served into the specific action plan would generate benefit to local governments and the metro system in order to subsidize service fees. On the other hand, the enactment of a specific plan should raise strong awareness for further impact because the policy itself possibly gentrifies inhabitants as well.

5. Conclusion

Since TOD is an initial tool along with transport development, it could bring profits back to the systems and to inhabitants instead of letting the system and urban fabric grow under unplanned development. The planning can guide the coordination plan between the development sectors in parallel with an appropriate regulation to control the overwhelming investment from private actors. As rail network is a fundamental facility for all, not for any specific class. However, avoiding gentrification is as hard as avoiding development since they generally come together. Nonetheless, avoiding negative effects is conceivable.

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