Research Paper

Economic impacts of a linear urban park on local businesses: The case of Gyeongui Line Forest Park in Seoul

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ABSTRACT

This study aims to explore the economic impacts of urban open spaces using the sales data of local small businesses. A new urban park could attract more visitors and lead to neighborhood revitalization, especially in distressed neighborhoods. In order to explore this mechanism, this study analyzes the case of the Gyeongui Line Forest Park, a previously underutilized railroad that was converted to a linear urban park. A difference-in-difference approach was applied to evaluate the change in the sales of local businesses before and after the park's opening using credit card and cash sales data provided by the Seoul Metropolitan Government's Big Data Campus. The results showed that urban linear parks could have positive effects that lead to the neighborhoods' economic vitality. However, the economic impacts could vary depending on neighborhood contexts. Specifically, economically distressed neighborhoods could benefit more from the opening of a park. This study directly captured the revitalization impact of the Gyeongui Line Forest Park using actual sales data instead of analyzing indirect outcomes such as property values, thereby providing an alternative approach to measure the economic impacts of parks.

1. Introduction

An urban park or open space provides amenities and recreational opportunities, thereby contributing to public health by reducing people's stress and promoting their physical activities (Alcock, White, Wheeler, Fleming, & Depledge, 2014; Cohen et al., 2007; Konijnendijk, Annerstedt, Nielsen, & Maruthaveeran, 2013; Scottish Government, 2007; Thompson et al., 2012). Urban open spaces also improve the quality of the urban environment by reducing air pollution, preventing excessive run-offs, and having a cooling effect on the surrounding areas (Bolund & Hunhammar, 1999; Bowler, Buyung-Ali, Knight, & Pullin, 2010; Heidt & Neef, 2008; Knight, Price, Bowler, & King, 2016; Zupancic, Westmacott, & Bulthuis, 2015). Understanding the role of urban open spaces is essential for effective landscape and urban planning practice, but little is known about the effects of urban open spaces on neighborhoods, especially in the context of business districts.

Many hedonic studies have explored the neighborhood effects of urban open spaces and revealed that their positive or negative effects capitalized into property values (Hackett & Dissanayake, 2014; Latinopoulos, Mallios, & Latinopoulos, 2016; Tyrväinen & Väänänen, 1998; Yang & Choei, 2003). For instance, Levere (2014) analyzed the influence of open spaces on the property values of areas surrounding the High Line in New York and found that the rent premium was higher

by 10–18% in the apartment complexes located within a one-third mile distance from the park following its opening. Jim and Chen (2006) revealed that the existence of urban parks increased house values by 14.93% and a view of a park contributed an additional 1.95% housing value premium in Hong Kong. These hedonic studies are meaningful in measuring the economic value of urban open spaces. However, they often focus on the parks' effects on residential rather than commercial aspects. Additionally, the results simply reveal the relationship between urban open spaces and nearby property values instead of directly explaining the mechanism by which the externalities of urban open spaces are capitalized into property values.

Some studies explore the role of urban parks in promoting neighborhood revitalization (Ganser, 2017; Klenosky, Snyder, Vogt, & Campbell, 2017; Ernst and Young, 2003). Beautiful urban parks are considered engines that attract visitors from surrounding areas and allow for engaging activities to take place within the parks. For example, Bryant Park in New York City had been a derelict place known for its high crime rate in the 1980s. However, after the renovation of the park with desirable amenities in 1991, it became a popular place, attracting approximately 20,000 daily visitors. Ernst and Young (2003) revealed that the rent for commercial offices near Bryant Park increased by 115–225% while other offices in the control area recorded a 44–73% hike in rent. The High Line in New York is one of the most well-known

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cases that reflect the neighborhood effects of urban open spaces. Built on an old railroad track, it became an extraordinary attraction, with over 7.6 million visitors in 2015, 67% of whom came from outside New York (Ganser, 2017). According to Levere (2014)'s assessment, New York City gained $100 million from property tax increments in 2010 with the remarkable spread of art, entertainment, and recreation establishments after the opening of the park.

A linear urban park may have greater potential for revitalizing neighborhoods because its long and narrow shape can penetrate the urban fabric, providing greater access to green spaces. The linear park could promote the benefits of the green spaces more effectively than a square or rectangular park by improving the neighborhood environment and encouraging more physical and recreational activities (Brown, Schebella, & Weber, 2014; Gusteler, López, & Faggi, 2017; Marcus & Francis, 1997; Molnar, 2015). Therefore, linear green spaces that have been transformed from industrial-era infrastructure have become popular as a tool for the revitalization of deprived areas in the past few decades (Kullmann, 2011). Many scholars have reported that the land and property values of surrounding neighborhoods recorded an increase owing to the presence of linear parks, which were converted into lively green spaces from abandoned infrastructure. Examples of these include the High Line in New York City (Levere, 2014), Atlanta's BeltLine (Immergluck, 2009; Immergluck & Balan, 2018; Weber, Boley, Palardy, & Gaither, 2017), Boston's Big Dig project (Tajima, 2003), Chicago's the 606 (Smith, Duda, Lee, & Thompson, 2016), and Seoul's Gyeongui Line Forest Park (Jung, Choi, & Yoon, 2016; Kwon, Joo, Han, & Park, 2017). However, these studies are limited in reflecting longitudinal changes before and after the opening of the parks in commercial neighborhood contexts and have not addressed the actual economic activities of the parks' surrounding neighborhoods.

How do urban open spaces increase nearby property values in commercial areas? What is the role of an urban open space in the urban regeneration process? Starting from these questions, this study aims to explore the neighborhood effects of urban open spaces based on the sales data of local small businesses. Conceptually, a new urban park could attract more visitors and lead to neighborhood revitalization, especially in distressed neighborhoods (Konijnendijk et al., 2013; Ramlee, Omar, Yunus, & Samadi, 2015). As shown in Fig. 1, the opening of a new park in a disadvantaged neighborhood involves changing the built environment of the park site from being abandoned, underutilized, or disliked to being desirable and pleasant. The effects of new urban parks could be much larger in the case of linear urban parks because they provide greater accessibility from surrounding neighborhoods (Brown et al., 2014; Gusteler et al., 2017). As the improved

environment of the park attracts more visitors to the neighborhood, the gross sales of local businesses could increase (Konijnendijk et al., 2013; Sherer, 2006). The enhanced business environment then brings about an increase in the openings of new small retail businesses, which in turn converts the area from a depressed to a competitive commercial district. The increase in the number of visitors and subsequent demand for new local businesses are reflected in property values as increased rent. Eventually, increased property values enhance the tax base of the neighborhood and the growth of local small businesses leads to more job creation in the neighborhood revitalization process, all of which was triggered by the opening of the park (Chandralal, 2010; Mika, Zawilinska, & Pawlusinski, 2016; Sutton, 2010).

In order to explore the mechanism by which a new urban park revitalizes the neighborhood, this study analyzed the case of the Gyeongui Line Forest Park in Seoul. The current park area was previously an underutilized railroad that depressed the growth of the surrounding neighborhoods. However, the railroad was reconstructed as an underground subway line and the ground was converted to a beautiful, linear urban park in June 2015. The Gyeongui Line Forest Park is located near the Hongik University commercial zone, which is one of the most popular commercial districts in Seoul, having been commercialized since 2000. After the opening of the Gyeongui Line Forest Park in 2015, the surrounding neighborhoods have become popular, attracting visitors from the nearby commercial zone. The park is now named "Yeontral Park" and many young Koreans compare it to Central Park in New York City. This park is thus a perfect case to explore the neighborhood effects of a new park in the context of a business district.

This study is different from existing literature in several aspects. As described earlier, this research focuses on the neighborhood effects of opening a new park in the context of commercial rather than residential areas. Additionally, it addresses the intermediate process that makes connections between urban parks' externalities and property value premiums with an emphasis on local business openings and sales. To account for the economic impacts of the park, this study applies a difference-in-difference (DID) approach using the sales data of local businesses from 2014 to 2016, which allows a comparison of the effects of the Gyeongui Line Forest Park on the neighborhood before and after the its opening, thus providing more robust empirical evidence. Finally, this study uses actual sales information to analyze the economic impacts of parks on the neighborhood.

2. Methodology

2.1. Case: The Gyeongui Line Forest park

The Gyeongui Line Forest Park is a 6.3 km-long linear park in Seoul. It was originally a railroad built in 1996, which connected Seoul with Sinuiju (the northern border of North Korea). After the division of Korea, it served the purpose of transporting passengers and goods between downtown Seoul and the northern part of the Seoul metropolitan area. The railroad had been underutilized until the 2000s when new plans to convert the railways to urban parks were initiated and implemented. The project removed existing railways and constructed a new underground railway system; the ground-level railroad was then converted to a linear urban park with a width of 10–60 m. The Gyeongui Line Forest Park was completed in 2016 following the completion of the three phases as shown in Fig. 2.

The opening of this park attracted many visitors and accelerated the revitalization of nearby neighborhoods. Recent studies show that the park's opening led to an increase in residential property values and commercial rent (Jung et al., 2016; Kim, 2016). It also resulted in the change of land use from residential to commercial purposes, consequently leading to the growth of the number of retail businesses (Lee, 2017; Won, 2017). Some researchers consider this rapid neighborhood change triggered by the Gyeongui Line Forest Park as gentrification
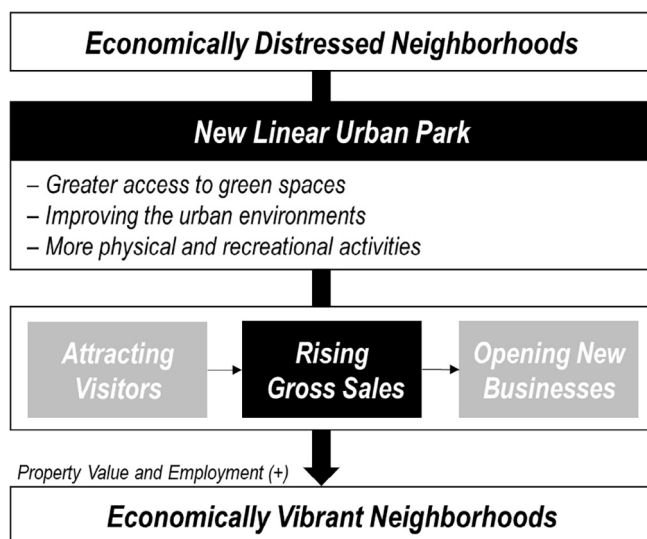
Fig. 1. The revitalization process from the park's designation.

In the figure:

Economically Distressed Neighborhoods

New Linear Urban Park
– Greater access to green spaces
– Improving the urban environments
– More physical and recreational activities

Attracting Visitors → Rising Gross Sales → Opening New Businesses

Property Value and Employment (+)

Economically Vibrant Neighborhoods