Retail accessibility and proximity effects on housing prices in Seoul, Korea: A retail type and housing submarket approach

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ABSTRACT

The debate over retail and urban economics, mixed land use policy, and retail deserts has increased attention on relationships between retail locations, accessibility, and housing prices. Most hedonic price models focus on effects of aggregate retail accessibility on residential property prices without considering retail types and submarkets. This study investigates spatial accessibility by retail type in housing submarkets in the context of 2010 condominium prices in Seoul, Korea. The model employs gravity-based accessibility and isolates differential effects of accessibility by retail type in submarkets on housing prices by controlling for housing attributes, location and transportation characteristics, and features of neighborhood land use. According to the results, the effect of accessibility by retail type varied across housing submarkets. The analysis highlights the importance of investigating accessibility effects by retail type at the housing submarket level. The results suggest that policies on mixed land use should take into account local contexts and complex relationships between retail type and housing prices within housing submarkets.

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1. Introduction

Retail activities are important functions of urban life. They influence urban characteristics such as social activities and physical and environmental structures. Moreover, retail development and decline impact spatial land use patterns, mobility, local economic well-being, and environmental issues (Lang, 2003). Recent urban trends reveal continued growth of the retail city, the influence of mixed land use principles associated with New Urbanism, and retail deserts—all of which have heightened interest in the external effects of retail accessibility.

The retail function promotes urban growth and development, since better shopping opportunities attract more residents, retail consumers, tourists, and firms (Glaeser, Kolko, & Saiz, 2001). However, both positive and negative spatial externalities result from retail activities in urban areas. At the local scale, retail services provide shopping convenience for, and are a nuisance to, nearby housing markets (Song & Sohn, 2007). Thus, urban scholars and planners face a debate on the impacts of retail externalities on residential welfare.

As cities in developed countries have suffered from global climate change, urban sprawl, and the overconsumption of energy, many alternative approaches to urban design—such as New Urbanism, neo-traditional neighborhood developments, transit-oriented development, and smart growth—have been adopted to provide new guidelines for creating more livable and sustainable cities (Handy, 2005). The most recognizable shared feature of these guidelines is mixed land use. While it raises questions about the accessibility of different land uses, greater ease in approaching different land uses results in better, location-efficient, development. In addition, mixed land use is a suitable technical tool for preserving environmental values, and closing social gaps based on race, status, and housing (Cervero & Duncan, 2006).

Retail deserts are defined as low-income, socially disadvantaged areas, with less access to retail stores than other areas (Schuetz, Kolko, & Meltzer, 2012). While urban economics mainly considers public goods such as schools, roads, and parks as local amenities, private goods, such as those provided by retail shops and services, also play a role as neighborhood amenities for residents. Less accessibility to retail outlets by marginalized social groups, such as low-income classes, the elderly, the disabled, and the unemployed, generates severe social equity issues (Guy, 2006). Gordon et al. (2011) confirmed that access to retail stores varied with income levels and neighborhoods' socio-economic features.

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Measuring accessibility provides a better understanding of the reasons behind the relative deprivation of retail access, and policies intended to promote retail development and relieve retail deserts. We note that spatial accessibility is a key concept for identifying the connection between retail development and urban economics, measuring the spatial configuration between residential and commercial land use, and detecting areas with a shortage of retail stores (Páez, Mercado, Farber, Morency, & Roorda, 2010; Öner, 2015). Previous studies have paid less attention to the different effects of retail types, and housing studies have consistently emphasized the significance of the housing submarket framework for a more reliable and accurate analysis of access to residential property (Adair, McGreal, Smyth, Cooper, & Ryley, 2000).

Combining the above points, we confirmed that few studies have focused on access to different types of retail stores in heterogeneous housing submarkets, and that we have less understanding of the micro-level effects (Song & Sohn, 2007). Thus, this study applies advanced accessibility measures to investigate how spatial externalities of different types of retail stores affect housing submarkets, to attain a more comprehensive understanding of the micro-spatial links between retail locations and housing prices.

A brief literature review and elaboration of this study's contributions to the field of study follows. The study context is refined, and the methods and data sources used for analysis are then provided in some detail. The section titled Results and Discussion presents the study's findings with regard to the determinants of housing prices. The conclusions summarize the importance of this research, and note its limitations.

2. Measuring accessibility and proximity

Accessibility is an important topic in various academic and nonacademic fields, because it is closely related to the real world. In particular, many studies have focused on access to medical and public facilities. Information technology and geographic information systems (GIS) have facilitated accessibility research due to their advanced methods for calculating and realizing complex models (Song & Knaap, 2004).

Several approaches are used to measure accessibility. The most popular typologies are (i) the gravity-based model, (ii) the benefit approach, and (iii) the locational profile approach (Sohn, Choi, Lewis, & Knaap, 2012). Although it is possible to employ advanced techniques, measuring accessibility involves much more than just finding the fastest route from the point of origin to the destination, because it includes the concept of time and the mode of transportation in addition to the physical distance.

This study notes that proximity to retail stores also generates differential effects on nearby residential facilities. Therefore, the study uses the straight-line distance from each condominium to each retail store as a proxy for spatial proximity. The study examines the effects of spatial accessibility and proximity to retail stores on housing prices.

3. Accessibility and housing values

Examining accessibility can provide a better understanding of its role in urban areas. In particular, this study examines the relationship between the accessibility of retail stores and housing prices. Several studies have examined these effects using the hedonic price model, with housing prices as a dependent variable, and the accessibility of retail stores as an independent variable.

Two streams of research are evaluating the relationships between the accessibility of retail stores and housing prices. The first stream analyzes the accessibility of retail stores as a direct independent variable. Song and Sohn (2007) measured the accessibility of retail stores in Hillsboro, Oregon, and examined the impact of those measures on housing prices. Several studies have employed the concept of accessibility as a characteristic of paradigms such as mixed land use (Koster & Rouwendal, 2012), new urbanism (Song & Knaap, 2004), and transportation (Adair et al., 2000). Previous studies have produced some mixed results with regard to the role of accessibility, but they have generally concluded that the accessibility of retail stores has a significant effect on housing prices. Many studies have emphasized the importance of planning for urban contexts, rather than just focusing on accessibility itself (Tsou & Cheng, 2013). Also, the Taiwan case confirmed that a higher density and availability of convenience stores has conferred premiums on low housing prices, while having negative effects on higher housing prices (Chiang, Peng, & Chang, 2015).

4. Expected contributions of this study

Noting that few studies have focused on the relationship between spatial accessibility and different retail store types and housing prices in housing submarkets, we address unexplored questions and test the core hypotheses. First, we compare the effects of different types of retail stores. We try to identify how different retail accessibility patterns generate premiums or discounts on residential property prices. Moreover, while previous studies have not classified different types of retail stores, this study internalizes differences across retail stores, including their sizes and functions. Second, few previous studies have examined the effects of a residential—retail mix based on the effects different retail types have on housing prices. This theme will allow us to better understand the response of the housing market to mixed commercial and residential land use intended to create sustainable and livable cities. Third, most studies of retail deserts fail to focus on housing submarkets. This study compares the effects of access to retail services at a housing submarket level. Finally, many hedonic price models do not take into account the variable of different aggregate units. Thus, we employ a multilevel model for our analysis. Although the hedonic price model is the most popular one, it may not appropriately identify meaningful differences between various spatial units. In this regard, using a multilevel model can provide a better understanding of relationship variables at more

Table 1
Types and definitions of retail stores.

Type	Definition
Department store	A large retail establishment that sells a wide variety of usually high-end consumer goods in various categories
Shopping center	A complex of one or more buildings that sells various categories of merchandise placed along interconnecting aisles, and usually offers other services such as movie theaters and restaurants
Hypermarket	A large store that amalgamates the functions of a supermarket and a department store
Supermarket	A large grocery store with a self-service base that sells food products and household items arranged in organized aisles
Convenience store	A small store close to neighborhoods or offices that sells a wide variety of everyday items

Source: Encyclopedia Britannica, 2014.