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Spatial mismatch in Beijing, China: Implications of job accessibility for Chinese low-wage workers

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ABSTRACT

The spatial mismatch literature has historically been U.S.-centric. This paper offers a theory of how spatial mismatch may have become a growing problem in China. The research uses Beijing, China as a case study to empirically examine the magnitude and geography of spatial mismatch across low-wage workforce segments. It finds a significant jobs-housing mismatch among low-wage workers in Beijing, particularly for blue-collar workers and workers without local *hukou* (registered permanent residence). The degree of spatial mismatch increases after accounting for worker access to transit. The results indicate that spatial mismatch in Beijing is more due to a greater dispersion of workforce residences than job locations and a central city-focused public transit system incapable of serving the dispersed low-wage workforce. The research findings suggest that Chinese cities should be more strategic in where they build affordable housing and where they make future transit investments.

Introduction

In 1968, Kain formulated the original spatial mismatch hypothesis that racial discrimination in the housing market, exacerbated by job suburbanization and limited transportation options, resulted in poor job accessibility and employment outcomes among African-Americans in U.S. cities (Kain, 1968). Over time, the spatial mismatch literature has evolved to look beyond African-Americans and to include other disadvantaged groups in the U.S. such as Latinos, low-income single mothers, welfare recipients, and immigrants (Fan, 2012). Despite this evolution, U.S. researchers have consistently dominated the field and much of the literature has retained its focus on the specific context of U.S. cities.

The U.S. focus of the spatial mismatch literature is not surprising. U.S. cities are generally more spread out, have lower job and population densities, and more segregated land use patterns than cities in other countries (Korsu & Wenglenski, 2010). Marked by stronger car dependency, U.S. cities also have less developed public transit networks than cities in many other countries (Button, 1998; Kenworthy & Hu, 2002; Kenworthy & Laube, 1999). In U.S. cities (except the very few that have well-developed public transportation systems, such as New York City), an individual without access to a car almost necessarily faces poor job accessibility. U.S. cities are also notable for their relatively high levels of economic and racial segregation, providing only limited residential location choices for low-income minorities (Massey & Denton, 1993).

Compared to U.S. cities, Chinese cities are presumed to be more resistant to spatial mismatch and job accessibility problems. Some suggest that the supposed hallmarks of Chinese cities, including higher densities with closer proximity between jobs and housing, extensive public transit networks, and lower levels of segregation (Kenworthy & Hu, 2002; Knaap & Zhao, 2009), reduce the risk of uneven access to job opportunities between population groups with different socio-economic status. However, the presumed differences in spatial mismatch between U.S. and Chinese cities may have been exaggerated. Many Chinese cities have experienced urban sprawl affecting the location of housing and, to a lesser extent, jobs over the past two decades (Jiang, Liu, Yuan, & Zhang, 2007; Li, 2010). Despite these recent changes to the location of residences and jobs, limited research has focused on the issue of spatial mismatch in China. Even less research looks into how the issue may have affected China's socio-economically disadvantaged groups in particular (Wang, Song, & Xu, 2011; Zhou, Wu, & Cheng, 2013).

With these shortcomings in the literature in mind, this article offers theoretical explanations and empirical examinations of spatial mismatch in China. More specifically, we discuss underlying factors that may have resulted in poor job accessibility of

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disadvantaged workers in China. We then empirically examine the pattern and magnitude of spatial mismatch in Beijing, China, while accounting for worker access to transit. Our research findings indicate a significant jobs-housing mismatch among low-wage workers in Beijing, particularly for those workers without local *hukou* (registered permanent residence). The mismatch is largely due to a greater dispersion of residences than job locations and a central city-focused public transit system incapable of serving the dispersed low-wage workforce.

Spatial mismatch in China

Relatively few studies have focused on the presence of spatial mismatch in China, but the emerging research indicates that spatial mismatch is a growing problem. Some of the first studies to shed light on the prevalence of spatial mismatch in Chinese cities focused on the relationship between residential location and commuting time. Cervero and Day (2008) indicated an increase in commute time for Shanghai residents who had relocated to a suburban neighborhood. Similarly, Wang and Chai (2009) found that Beijing residents who lived in *danwei*-supplied housing had shorter commute times than those who lived in market housing. Li (2010) found that both residences and jobs in the city of Guangzhou were suburbanizing at a rapid rate, resulting in increases in commuting distances and times. Wang et al. (2011) argued that the spatial imbalance between employment and population has increased significantly over time, and has become especially evident in the inner city where the loss of residents continues and the concentration of employment persists.

One cause of spatial mismatch in China is the erosion of the *danwei* system. Under the leadership of Mao Zedong and into the early years of the reform era in China, much of the housing available in urban areas was allocated by *danwei*, which represented the main spatial and social organizing principle of urban life. Each *danwei* was designed to be autonomous, incorporating employment, housing, basic social services, and other aspects of social and cultural life in China into a single compound (Bray, 2005). As such, *danwei* systematically coupled housing and employment for the vast majority of urban residents in China (Wang et al., 2011), making spatial mismatch virtually impossible. Beginning in the early 1990s, reforms in the system of urban housing pushed *danwei* to support a fledgling real estate market by selling housing to workers, spinning off the real estate development functions to development companies, and eventually abolishing the allocation of housing through *danwei* altogether by 1998 (Wang & Chai, 2009; Wang et al., 2011). As a result, increasing numbers of urban residents buy housing on the private market.

As Chinese residents increasingly turn to private market housing, changes in land policy and municipal-level fiscal behaviors have dictated that most housing (including most affordable housing) has been built in suburban locations, while the most expensive private market housing is closer to the center of cities (Zhou et al., 2013). As China's land reform shifted land leasing and land management responsibilities to local governments from the central government, local governments also inherited the responsibility to fund more of their municipal services (Zhou & Logan, 1996). This shift in rights and responsibilities has increased the incentive for local governments to use revenue generated from property development to augment their municipal budgets (Zhang & Fang, 2004). As a result, municipal governments often encourage the "highest and best use" of urban land, which frequently translates into activities such as luxury apartments and commercial uses (Zhou & Ma, 2000). For example, initial municipally-led redevelopment programs in China focused on "upgrading" inner city housing and resulted in massive displacement of residents who could not afford the luxury housing that typically replaced the older housing (Zhang & Fang, 2004; Zhou & Ma, 2000) and resettled on the periphery of urban areas as a result (Xu, Chan, & Yung, 2014). These kinds of redevelopment programs have led to an inflated housing market in China that is increasingly unaffordable for many residents. In fact, according to the China Statistical Yearbook of 2011, the annual average sale price of residential apartments more than doubled between 1998 and 2010, rising from 1854 to 4,725RMB/m^2.

Changes to the urban housing market have coincided with the arrival of a massive wave of rural migrants. China's household registration system (*hukou*) classifies individuals according to their places of presumed regular residence (*suozaidi*). Migrants who live outside their officially-registered areas are often denied state-provided education, housing, social security, and economic opportunities (Chan & Zhang, 1999; Fan, 2002). Defined as temporary residents (*Zanzhu renkou*) who left their officially-registered areas for six months or more, there were 221.4 million migrants in China in 2010 (approximately 17% of the total population) (National Bureau of Statistics of China, 2011). Migrants are permitted to work in cities on the basis of temporary residence permits, but have much less access to government subsidies and, in several respects, they occupy a social and economic status similar to that of unauthorized immigrants in the U.S. (Fan, 2001). Because they are ineligible for state-subsidized housing and are legally barred from or cannot afford most other types of housing in urban areas (Wu, 2002), rural migrants frequently rent housing located in "villages in city" (*ChengZhongCun* in Chinese) (Song, Zenou, & Ding, 2008). Most commonly located on the periphery of cities around rural and urban transitional spaces, these urbanizing villages are comprised of hundreds of thousands of housing units developed by native villagers who have taken advantage of their land ownership to develop low-cost, poor quality housing units for migrant workers (Song et al., 2008). Although it is probable that migrant workers experience spatial mismatch to a high degree as they concentrate in the periphery of urban areas, to date none of the studies on spatial mismatch in China has assessed the extent to which spatial mismatch affects migrant workers differently from workers with local *hukou*.

In contrast to the U.S. spatial mismatch research that has historically focused on low-income minority residents, little of the existing literature on spatial mismatch in China focuses on disadvantaged or impoverished residents. One exception is research by Zhou et al. (2013) that investigates the growing spatial mismatch problem for residents in low-income neighborhoods in Guangzhou. Zhou et al. (2013) define their population of interest for assessing spatial mismatch by the respondent's housing, classifying subsidized-rental housing residents as disadvantaged. They find increased incidence of spatial mismatch for residents driven by a variety of mechanisms that differ between low-income and relatively more affluent residents (Zhou et al., 2013). Xu et al. (2014) offer another perspective on spatial mismatch in China for disadvantaged residents, suggesting that low income residents displaced from inner city neighborhoods lack the means to acquire relatively expensive housing close to employment centers. As such, they reason that economically disadvantaged residents have a mobility problem rather than a segregation problem that causes spatial mismatch. In general, the existing research on spatial mismatch for disadvantaged populations in China focuses on economic factors, such as limited incomes as revealed by the housing where residents live, rather than social factors, such as migrant status.

The likelihood that spatial mismatch is an increasing problem in China is not necessarily mitigated by public transit systems. Public transit systems in Chinese cities provide frequent services and extensive network coverage, but increased road congestion has made long-distance trips difficult to achieve by transit within