Workplace parking and agglomeration effects: An illustration for Barcelona

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Context and literature

Policies on workplace parking are receiving a growing interest among academics and practitioners as an effective way to improve urban mobility. Employer-paid parking at the workplace is a very common practice, although two main economic misallocations are usually linked to it. First, employer-paid parking implies excessive land and capital resource costs dedicated to parking (Shoup, 2005; Van Ommeren & Wentink, 2012). Second, it is widely acknowledged that employer-paid parking is a major cause for solo driving in work commuting trips (Shoup, 1997). Consequently, congestion and air pollution externalities, which are generally already underpriced in urban areas, will be even worse. Indeed, in a second-best setting, a workplace parking tax may be a substitute for congestion tolls (Calthrop, Proost, & van Dender, 2000).

Employer-paid parking affects the residential location decision and, in turn, the urban form. Brueckner & Franco (2016) and Franco (2015) show analytically that free workplace parking contributes to urban sprawl, as it favors car use and reduces available land in the city center. Their models are based on the monocentric city and assume that all the employment is concentrated in a central business district (CBD). However, cities are nowadays mostly polycentric, with employment clustered but spread throughout the urban area. Consequently, the impacts of workplace parking policies on firms’ location choice and the derived agglomeration effects are also important dimensions of the problem. To the best of our knowledge, Voith (1998) is the only paper linking workplace parking policies to agglomeration economies. He finds a non-monotonic relationship between parking taxes and CBD size.

Aim of the paper

The aim of this paper is to analyze the impact of workplace parking policies on the supply of employer parking, the business location and, ultimately, the derived agglomeration effects. The analytical results are illustrated for the Barcelona metropolitan area.

Methodology

The analysis is an extension of the model of Brueckner & Franco (2016). They build a two zone model where the CBD is located in the central zone and residents live in either the central zone or the suburb. The suburb is connected to the central zone via a congestible road and a public transport mode with constant variable costs. Employer-paid surface parking reduces the available land for production and this has two negative effects: it reduces the productivity of labor and it forces more people to live in the suburb aggravating the congestion problem.
The model presented in this paper considers four extensions of Brueckner & Franco (2016)’s that are necessary to better match the problems of European agglomerations like Barcelona. First, our model allows for production also in the suburbs and thus new endogenous commuting flows emerge. Second, agglomeration economies related to labor density are incorporated in the production technology. Third, the supply of on-street or off-street parking is described in terms of a single continuous cost function and thus the model incorporates off-street workplace parking. Fourth, the analysis considers other deviations from the first-best: absence of congestion tolls and use of public transport subsidies as second-best instruments as well as additional taxes on parking land and parking spaces. The model is applied to the case of the Barcelona metropolitan area, for which data are available.

Expected results

This research is expected to provide new insights on the effects of workplace parking on the urban economy and mobility and, in particular, on the agglomeration effects derived from employment location. When applied to Barcelona, we expect to quantify the current cost of employer-paid parking to the city and assess different workplace parking related policies.

References