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## Parking practices and policies under rapid motorization: The case of China



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### ABSTRACT

With the rapid motorization in China, parking has become increasingly difficult and costly for automobile users. However, the effects of parking on the society go far beyond vehicle owners' costs. To inform decision makers in China and cities in similar motorizing societies, this study describes the market and policy trends of automobile parking in Chinese cities. Available data show that the gap between supply and demand in parking has enlarged, while most city governments have little experience and are institutionally unprepared for the proper planning, regulation, and management of parking. International experience and the Chinese problems call for a reform in urban parking management in order to promote sustainable urban transportation and maximize social welfare. This paper offers policy and planning suggestions regarding on- and off-street parking.

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### 1. Introduction

The rapid development of China in the past three decades has made the country a global economic heavyweight, significantly increased per capita income, while caused serious environmental problems. Despite being the second largest economy in the world and the second largest energy consumer, China has also become the largest carbon dioxide emitter in the world. The rise in China's global impact has been accompanied by perhaps the grandest urbanization process in history. The proportion of urban residents in total population increased from approximately 20% around 1980 to just over 50% by 2012 – an average of more than ten million new urban dwellers annually. The recent explosion in motor vehicles followed the growth of cities. In 2008, China overtook the United States as the world's leading market for new vehicles (Wang, 2011a) after having just reached the international income threshold of accelerated motorization (Dargay et al., 2007; Haddock and Jullens, 2009). Inevitably, parking quickly became a serious transportation and urban management problem in increasing numbers of Chinese cities.

Compared to the study of traffic, research on parking policy, planning, and/or management has largely been overlooked until fairly recently. Economists were among the first to suggest that parking is not independent from the rest of the transportation system and that optimal parking policy often depends on how

road usage is priced. Glazer (1992) questions the intuitive idea that congestion would be reduced by increasing the price of parking – if road usage is sub-optimally priced, then a lump-sum parking fee can increase welfare, but a parking fee per unit time does not. This is because under a marginal parking cost scheme, an increase in the price of parking incentivizes each person to park for a shorter period of time, allows more people to use parking spaces each day, and subsequently increases traffic. For this reason, consumers may not prefer free parking. Verhoef et al. (1995) suggest the possibility of using spatially differentiated parking fees to regulate traffic in the absence of road pricing. By simulating alternative policy scenarios in an urban transport market, Calthrop et al. (2000) further suggest that the second-best pricing of all parking spaces produces higher welfare gains than the use of a single-ring cordon scheme, though marginally lower than the combination of a cordon charge with resource-cost pricing of parking spots.

Evaluating alternative parking policies, economists generally believe that parking fees prove superior to restrictions on parking space supply for information, temporal efficiency, and intertemporal efficiency arguments (Verhoef et al., 1995). A prominent planning scholar against free parking, Donald Shoup emphasizes several aspects of distortions in parking cost. Using case studies of eight firms that have complied with California's employer parking cash-out requirement, Shoup (1997) shows that by eliminating the free parking to employees, the benefits to commuters, employers, taxpayers, and the environment exceed program costs by at least three times. Addressing the popular minimum parking requirements, Shoup (1999a, 1999b) argues that a forced supply of parking spaces reduces the price of parking, but the cost translates into the price increases of the goods and services sold.

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By modeling the curb parking behavior, Shoup (2006) suggests that below-optimal curb parking prices induce inefficient cruise searching for cheap curb parking, leading to traffic congestion, air pollution, and additional energy and safety costs. Shoup's work has convinced countless practitioners that efficiency can be restored by pricing on-street parking and abandoning required off-street parking.

Theoretical advances and empirical evidence on parking policies have resulted in significantly improved understanding of the importance of parking for the efficiency of transportation and the regional economy (Marsden, 2006). A growing list of policy changes and innovations in parking has been implemented. Several reports of conventional and best practices in parking policy and management in recent years are now available in North America (Litman, 2006; Weinberger et al., 2010; FHWA, 2012; Nelson and Schrieber, 2012), Europe (Kodransky and Hermann, 2011), and Asia (ADB, 2011).

However, little information has been collected and analyzed on parking policies and practices in China, a country of rapid urbanization and motorization. Have laws and regulations succeeded in guiding the planning of parking infrastructures and the development of urban parking markets? In the era of exploding private automobile ownership, what important issues should policy makers address? Taking information from multiple cities, this article describes the trends of automobile parking and evaluates major policy choices within the specific institutional and spatial context of Chinese cities. Sections two and three present the recent history of parking regulation, demand and supply across Chinese cities. Section four offers a list of likely beneficial directions for local decision makers through comparative policy analyses based on international experience and Chinese cities' own characteristics. Section five concludes the paper and discusses future research needs.

## 2. Parking regulation

Perhaps different from many countries, earlier development of parking regulations was led by the central government in China, and quickly followed by local regulations and standards that conform to or adapt based on national policies. This part of paper starts with the overall regulatory framework at the central and local government levels. It then elaborates on the two most important aspects of parking regulation – supply and price.

### 2.1. Regulatory framework

1988 seems to be the year when the national framework regulating parking was established. The 1988 “Regulations on Road Traffic Management of the People's Republic of China” prescribed parking lot sizes of buildings and public structures. Adopted in October 1988, the “Temporary Provisions on Construction and Management of Parking Lots” introduced parking management fees, encouraged private investment for the construction of public parking lots, and granted local governments permission to plan and regulate parking based on their own needs. At the same time, the “Rules for Parking Lot Planning and Design” were enacted by the state to guide the siting and design parameters of parking lots. Implemented in the early 2000s, the “Road Traffic Safety Law”, together with the “Rules for the Implementation of Road Traffic Safety Law”, started to regulate safety issues in parking as well as other aspects of transportation. The “Road Traffic Safety Law” acknowledged the legitimacy of curb parking for the first time. Based on two subsequent revisions of the “Road Traffic Safety Law”, the Ministry of Housing and Urban-Rural Development, the Ministry of Public Security and the State

Development and Reform Commission jointly released the “Instructions on Planning and Management of Urban Parking Facilities” in 2010, aiming to resolve the increasingly serious problem of parking in cities. The “Instructions on Planning and Management of Urban Parking Facilities” emphasized planning parking facilities, setting differential parking fees and developing parking-transit systems as ways to meet and guide the demand for parking in cities.

Guided by state regulations, local governments, particularly major cities, quickly enacted detailed regulations and standards for parking.<sup>1</sup> Beijing implemented its own parking rules in the 1989 “Temporary Provisions on Construction and Management of Parking Lots for Large- and Medium-Sized Public Buildings”, prescribing a set of quantity standards of parking spaces for public buildings. Guangzhou also adopted its first parking-related provision in early 1989. In fact, due to the unbalanced development of motorization across cities, local parking policies in some cities often preceded nation-wide regulations. For example, Beijing's rules for curb parking were established in the “Procedures for Temporary Road Occupancy” in 1993, much earlier than the corresponding state provisions. City governments have also enacted specific local standards of parking prices. For instance, Guangzhou's 1995 “Circular on Rectifying the Parking Fees of Automobiles, Motorbikes and Bicycles” specified a set of standard parking fees for curb parking, while permitting indoor parking lots to determine their own prices. So far, most, if not all large- and medium-sized cities have adopted local provisions and standards for parking.

Along with the decentralization of parking regulation, recent observations from some cities suggest that the municipal administration of parking has become more interdepartmental and government's pricing of parking started to embrace transparency and market efficiency. In the early years, parking was considered a public service because most automobiles were publically owned. Urban Planning and Traffic Police had been the major departments in charge of parking since the late 1980s. These departments had been responsible for formulating, revising and implementing parking-related regulations. As parking became more and more of a market behavior due to China's rapid motorization, more administrative entities and stakeholders got involved. In Guangzhou, since its 1990 “Circular on Strengthening the Management of Automobile Parking Lots”, a series of government bureaus including Industry and Commerce, Taxation, Pricing, Environment, Land and Resources, Housing, etc., have been involved in managing the urban parking infrastructure, service, and market. Naturally, local governments have been gradually transitioning from the role of a service provider to that of a policy maker. To adjust parking price according to demand, many cities, including Chengdu and Yinchuan,<sup>2</sup> have introduced public hearings over parking price. In the meantime, there has been growing private investment in parking infrastructure and service, increasingly through tendering or bidding.

### 2.2. Quantity regulations

Similar to the practice in many other countries (Kodransky and Hermann, 2011), Chinese cities regulate the quantity of off-street parking spaces through minimum parking requirements. The March 1988 “Regulations on Road Traffic Management” was the

<sup>1</sup> Due to the state ownership of urban land and features of China's political system, there is no corresponding zoning code that governs local land use (including parking provisions) in China's cities as in many other countries.

<sup>2</sup> Relevant news reports available at <http://scnews.newssc.org/system/2011/07/14/013232407.shtml> and [http://www.ycen.com.cn/content/2012-01/11/content\\_1038872.htm](http://www.ycen.com.cn/content/2012-01/11/content_1038872.htm).

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