Transportation Research Part A 49 (2013) 358–378

Contents lists available at SciVerse ScienceDirect

Transportation Research Part A

journal homepage: www.elsevier.com/locate/tra

# Case analysis of simultaneous concessions of parking meters and underground parking facilities

Felix Caicedo *, Alejandra Diaz [1]

*Pontificia Universidad Católica de Valparaíso, School of Transport Engineering, Valparaiso, Chile*

ARTICLE INFO

*Article history:*
Received 12 April 2012
Received in revised form 10 October 2012
Accepted 3 January 2013

*Keywords:*
Parking
Parking meters
Concessions
Location problem
Local authority
Developing countries

ABSTRACT

The ongoing discussions of a city, where potential bidders for the concessions of on-street and off-street parking questioned separate bids procedures recalled our attention; in addition, willing to satisfy public demands the municipality planed to keep free spaces in the same area. In this article we assess the impact of joint concessions of parking meters and underground parking facilities, firstly by considering a radial pattern around the location of the underground facility, and secondly by proposing GA which analyzes different patterns. The results corroborate that providing free parking generates excess demand and high cruising for parking. Furthermore, they support joint provision of above ground and underground parking concessions because otherwise there can be too high level of competition in a small area, which may erode potential bidders incentives -specially when local authorities expect that the concession rights be reinvested into social needs.



## 1. Introduction

The motivation of this paper comes from the ongoing discussions of a city, where potential bidders for the concessions are questioning separate bids for above ground and underground parking facilities and free parking, while the public is concerned about the efficiency of installing both parking infrastructures.

Open bidding for public parking facilities, grants and concession are commonly used to Build, Operate and Transfer (BOT) parking infrastructure in first world countries, while developing countries are currently having their first experiences. However, developing countries deal with collapsed streets, in districts where there is lack of parking spaces and lack of control, and illegal use of space is commonly observed.

A municipality may expect that the concession rights (i.e. a percentage of profits from the parking facility which operates on municipal land) be reinvested into social benefits. For example, the revenue can pay to clean and maintain the sidewalks, plan trees, improve lighting, remove graffiti, bury overhead utility wires, and provide other public improvements (Shoup, 2006). Still, such initiatives must be properly planned and supported by studies that identify (prior to operation) possible demand–supply conflicts.

This is the case of Viña del Mar, a coastal city on the Pacific Ocean, and probably the most important resort spot in Chile. It is surrounded by hills where 65% of the inhabitants live; according to the latest population census Viña del Mar had 286,931 inhabitants in 2002 (INE, 2002). Chilean highway standards are high, allowing trips between the capital (Santiago) and Viña del Mar in 1.5 h; for this reason the population triples during the summer.

* Corresponding author. Tel.: +56 32 2273744; fax: +56 32 2218854.
*E-mail addresses:* felix.caicedo@ucv.cl (F. Caicedo), alita.diaz.cruz@gmail.com (A. Diaz).
[1] Tel.: +56 32 2273744; fax: +56 322218854.

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http://dx.doi.org/10.1016/j.tra.2013.01.038

Major activities such as leisure, dining, banks, hospitals and malls are located in the city's downtown on the coast. However, the downtown of the city is mainly made up of single-family housing built without garages or drive ways. There is no public transport in the downtown because the city's development plan does not allow buses to circulate in this area; and off-street parking is free, uncontrolled and scarce, hence drivers are accustomed to being part of gridlocks or spending time cruising for parking.

Since parking is free, very often the number of vehicles parked in the downtown is over the legal limit (close to 18% according to the PUCV, 2009). The municipality has attempted to initiate two projects: the first to build underground parking facilities underneath squares, and the second to install parking meters in downtown of the city. Although combining these projects was based on experience from successes in Santiago and Valparaiso (which is practically joined with Viña del Mar), the attempt to get the projects underway failed due to a lack of agreement between the local government, the public and the companies interested in the parking facility concessions.

The inhabitants and businesses in the area, which experience the shortage of places to park, were opposed to parking meters without taking into account that the shortage of parking is perhaps caused by the fact that it is free and that this also increases the time spent searching for a space and the incidence of illegal parking. They also showed doubts on the idea of building underground parking facilities as they think this would attract more cars and increase congestion.

At the same time, the municipality of Viña del Mar independently held one competition for bids on the underground parking facility concessions and another for bids on the project to install parking meters in the same zone. And last but not least, the municipality planned to reserve spaces to provide free parking -about 50% of the area.

What the municipal authority did not foresee was that this procedure generated a feeling of lack of guarantees in the interested firms, who saw a scenario of unfair competition in a small area. Parking policy groups facility regulation, pricing, financing, management and design decisions. This article does define the parking policy required, but it attempts to demonstrate that this city like many others needs one.

## 2. Literature review

Studying the case of Taipei (Taiwan), a city where large percentage of commuters use private modes in their daily commute (Jou et al., 2010), Shyr and Wo (2011) report that the initiative of privatisation of public parking facilities via open bidding was highly criticized; the public felt this measure was favouring private operators at the expense of car users, and the low parking rates proposed increased the use of private transport. About this issue, Leino and Laine (2012) perfectly capture the public's angle, taking part in the planning process and interested in particular issues rather than representation via political parties.

The hidden reasons for Viña del Mar inhabitants and businesses' dislike to parking meters and new garages are the new charge, congestion and control involved. Businesses naively believe that charging for parking will drive off the clients; inhabitants, used to park for free, fear that new garages will attract more cars. Before worrying about more vehicles coming to the downtown due to increases in supply, these stakeholders should focus on current status: free and uncontrolled parking is practically an invitation to making inefficient urban traveller's decisions (Calthrop et al., 2000; Ison and Wall, 2002); there are examples in which congestion is caused by people who have already arrived, instead of people who are on their way somewhere (Shoup, 2006). Such practice is influenced by driver's income or trip purpose (Van Ommereg et al., 2012), and high average cruising time for touristic cities were calculated for Sydney (Australia) and San Francisco (6.5 min in measured in 2001 and 1997 respectively), or New York (7.9–13.9 measured in 1993) in the US.

Considering only construction costs of underground facilities, it is illogical to assume that parking garages in Viña del Mar will be low priced; hence the expected combination of high priced off-street supply and free on-street will result in more uncontrolled driver's duration of stay, low availability (Shoup, 2004), cruising (Gallo et al., 2011), congestion and pollution (Dougherty, 1997; Hoglund, 2004; Arnott and Inci, 2006; Chu and Tsai, 2011). Such inefficiency can be partially restored by parking charges (Hensher and King, 2001), which has effects on modal choice (Jou et al., 2010; Kelly and Clinch, 2006), and is complemented by road pricing (Petiot, 2004), as well as managing the demand, availability and the spatial distribution in the study zone (Rye et al., 2008). It appears that the municipal authority of Viña del Mar has been ignoring relevant findings of academic and practical references about providing free parking. The stakeholders, on the other hand, are ignoring that on-street supply and developments in parking policy have been recognized as a crucial part of the economic and transport policy of a city as it can impact upon economic development and the competitiveness of the local economy (Arnott, 2006; Daunfeldt et al., 2009).

The private sector's participation in transport infrastructure funding and management is growing around the world, and has been essential in developing countries to attract private investment in order to finance, build and operate infrastructures (Guasch et al., 2008; De Brux, 2010). Such tendency is sometimes supported by growing budgetary constraints (experienced by many economies in the world, which led them to look for resources outside of the public budget); or by the search for greater productive efficiency in the provision of public goods (Vassallo, 2010). In view of the role they play, Albalate and Bel (2009) and Khanzadi et al. (2012) describe concessionaires, cautious and apprehensive about the investments, terms and expected demand in concessions.

Parking policy literature addresses this topic by means of models that define optimal size, prize and location of parking supply. For example, D'acierno et al. (2006) propose a model to evaluate a spatial parking pricing strategy based on trip ori-