

Off-Street Parking Policy without Parking Requirements: a Need for Market Fostering and Regulation?

This version revised in light of referee's comments was subsequently published as:
Barter, P.A. (2010) Off-Street Parking Policy without Parking Requirements: a Need
for Market Fostering and Regulation? *Transport Reviews*, 30 (5), 571-588.
<https://dx.doi.org/10.1080/0144164090321695>.

by

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Abstract

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Word count (including table but excluding reference list): 7,796

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Abstract

This paper addresses and extends upon the recent upsurge of interest in market-oriented reform of parking policy, which has been reinvigorated by the work of Donald Shoup. His market-oriented approach to parking policy is shown to be the more ambitious of two distinct challenges to the conventional supply-focused approach. The other is 'parking management'. However, off-street parking markets and their post-reform dynamics have been neglected so far in proposals to deregulate the quantity of off-street parking. The paper highlights additional barriers to the emergence of off-street parking markets and several likely problems within them. Rather than suggesting the rejection of market-oriented parking policy, these findings are taken to imply a need for a more vigorous policy effort than has so far been called for. Achieving well-functioning off-street parking markets would require efforts both to actively foster such markets and to regulate to ensure their health. Deregulation would not be enough.

1. Introduction: Where next for off-street parking under market-oriented reforms?

Parking policy seems ripe for profound change. Highly regulated parking supply and mispricing is the norm around the world but these arrangements are profoundly inefficient (Roth, 1965; Shoup and Pickrell, 1980; Button, 2006). In particular, parking requirements tend to entrench excessive vehicle ownership and use and are thus implicated in a wide range of urban transport problems (Shoup, 2005).

Car parking policy horizons have been widening through a recent resurgence of interest in market-oriented options. Most prominent is the work of Donald Shoup, culminating in his 2005 book, *The High Cost of Free Parking*. Shoup deepens and extends previous critiques of mainstream US-style parking policy and mounts a persuasive argument for market-based arrangements, arguing that 'prices can do the planning' (p.499). He advocates abolishing off-street parking supply requirements and setting up a market-clearing price setting approach for on-street parking. This echoes earlier calls for market-based parking policy (such as Roth, 1965). Such thinking seeks to overthrow conventional parking policy. However, reforms along such lines have been few and uncertainties abound, especially for off-street parking. The practice of imposing parking requirements has been remarkably resistant to the attacks upon it (Ferguson, 2004).

One problem with market-oriented parking literature so far is inadequate assurance on what would happen to off-street parking after initial reforms take place. It is not clear how reformed off-street parking markets would function and how they should be regulated. While efficient pricing of *on-street* parking obviously requires active policy intervention and would not appear spontaneously, the market-oriented parking reform literature has tended to assume that quantity deregulation (plus on-street reform) would be enough to shift *off-street* parking towards a market-basis and that

such arrangements will work well. Such faith seems a little optimistic in light of some obvious potential barriers to market health and to market emergence in off-street parking, especially in suburban areas.

This essay takes aim at these gaps and focuses on the prospects for well-functioning market-based arrangements for off-street parking with little bundling and an active market price mechanism. It discusses the possibility of setting a goal of market-based parking, not only in inner city areas but also for suburban contexts. It suggests that to achieve this would require 'market fostering' policies in order to overcome barriers, to speed up a transition, to deal with problems in such markets and to reassure potential reformist jurisdictions about outcomes. The focus here is not on the pros and cons of market-based parking but on the extent to which additional policy effort would be needed to bring about such a vision.

The paper is organised as follows. Section 2 below reviews the main approaches to parking policy, and suggests a simple three-way categorisation. This addresses a gap in the literature and places market-oriented parking policy into a clearer theoretical and policy context, arguing that it is one of two main alternatives to the conventional approach. Section 3 begins by introducing reasons to suspect that a vigorous policy effort would often be needed to foster market-based off-street parking. It then draws on a range of literature and examples to examine possible barriers to the emergence of market-based off-street parking. It argues that deregulation and efficient on-street pricing cannot sweep away all of these barriers except very slowly. Then it examines likely problems within any laissez-faire off-street parking markets if they emerge. These findings suggest that a successful market-oriented approach to off-street parking may require a range of policy efforts in order to overcome these barriers and problems.

2. Approaches to parking policy

After first providing some wider context, this section categorises parking policy into two mainstream approaches and contrasts these with market-based proposals. This addresses the lack of a clear overarching categorisation of parking policy approaches in the literature. The two major alternatives to the conventional approach will be shown to be strongly distinct, although they are often conflated. Table 1 at the end of the section highlights the key contrasts among the three approaches.

2.1. Background: contrast between neo-classical expectations and actual practice

Markets have featured in a strong stream in academic public policy interest in parking, which has tended to proceed from considering an ideal first-best market situation to examining distortions to the market and their implications, using a neo-classical economics framework (Button 2006; Anderson and de Palma, 2004). Recently some have sought to understand and model markets in parking (Arnott

2006). However, such market-oriented academic interest in parking contrasts with most of the actual practice. Except in city centres, the possibility of market-based parking is rarely even considered. Political economy considerations and an institutional perspective help explain this gulf (Button, 2006; Calthrop, 2005).

Thus, parking practice escaped the push for deregulation and privatisation which, since the 1970s, had an impact on many other transport and infrastructure industries (Gómez-Ibáñez and Meyer, 1993). New interest in market-oriented parking policy might seem odd at a time when widespread disillusionment with similar of reforms in public services and infrastructure has prompted many to again consider a more assertive public sector role (see for example, Ramesh, 2008). However, the arguments here will resonate with the view that reaping benefits from markets often requires appropriate regulation rather than just deregulation.

2.2. Conventional supply-focused parking policy

For many decades, a conventional approach to parking policy has applied engineering rules embodied in planning requirements to try to ensure 'enough' parking. Despite the obvious rivalry and excludability of parking, conventional policy tends to treat on-street parking as a commons. Any 'excessive' parking demand generated by nearby real estate is treated as a free rider problem, known as 'spill over' (see Table 1). It is therefore assumed that, unless required to, developers would rationally provide too little on-site parking.

The solution is seen as requiring every building site to provide sufficient parking space for its own demand. To set these parking requirements, the traffic engineering and planning professions prepare tables of recommended parking levels for each kind of land use. In setting such guidelines it is often assumed that this parking will be free to users (Shoup, 1999). A result of such generous requirements is that parking is indeed very often free for motorists and paid for by building owners out of other sources of revenue. In other words, parking requirements have led to widespread 'bundling' of parking with other services, housing or employment.

This conventional approach, which began in the United States and then spread to most countries, has long come under a great deal of criticism (Buchanan, 1956; Roth, 1965; Shoup and Pickrell, 1980; Willson, 1995; Litman, 2006; Shoup, 1995 and 1999). The main critique, reiterated and deepened by Shoup (2005), focuses on the failure to price on-street parking efficiently and on attempts to boost supply by requiring plentiful off-street parking. These practices are held responsible for the costly oversupply of parking that typifies suburban landscapes, for the failure to alleviate searching for parking in denser urban environments and for undermining these older areas economically.

Nevertheless, conventional supply-focused parking policy is seen by some as a success, at least when applied to areas built under car-oriented investment patterns and regulations. Ferguson (2004) for example, points out that 'zoning for parking' is popular with local governments in the USA. It is rarely questioned in suburban contexts worldwide. Moreover, although bundling has often been criticised as unfair and inefficient, it is arguably a rational response where prices would be too low to be efficiently levied (Gómez-Ibáñez, 1997). With parking in low-density suburban areas seemingly unproblematic, reviewers of Shoup (2005) have debated the relevance of his reforms for suburban landscapes (Levinson, 2005; Gordon, 2006).

By contrast, Shoup (2005) has documented enormous economic distortions and costs arising from parking requirements and the flawed ways that they are set. Excessive parking requirements eliminate the possibility of a price signal. They distort travel choices, promote low-density development, increase the cost of housing, thus harming low-income households, and blight the built landscape. This has relevance not only to the United States but everywhere there are parking requirements and/or underpriced on-street parking.

There is more agreement on the need for reform with respect to older, denser areas developed before mass motorisation. The lack of on-site parking in such areas is seen as a problem in the conventional approach. Unfortunately, enforcement of parking requirements in such areas, when triggered by a change of use or construction, can lead to blight by rendering uneconomic many creative reuses of old buildings that lack on-site parking (Shoup 2005, pp. 97-98). Enforcement of parking requirements is also difficult in some dense contexts, such as parts of South Asia's large cities, where built space can be more valuable for other uses than for parking. Use of parking space for other uses is reportedly widespread and a source of corruption in local government (Bhagwandas, 2007; Ganguly, 2005). Meanwhile, under the conventional approach, on-street parking in dense areas usually remains free or so cheap that it is often saturated for much of the time.

2.3. *Parking management*

One answer to the unsuitability of the conventional approach in dense and congested locations has been a more sophisticated set of policies that look beyond supply-side efforts and which see parking as a tool with which to balance multiple policy goals. This approach can be called 'parking management' (following Litman, 2006). This category includes a wide variety of specific policies but all have in common an effort to balance various conflicting objectives, such as revenue, the urban regeneration of certain districts, and travel demand management (TDM) (Marsden, 2006; McShane and Meyer, 1982). For example, parking policy has been applied to TDM objectives in many city centres, such as London's, since the late 1960s. Parking management assumptions and the prospect of using parking policy for demand management are

common themes in much, if not most, recent parking policy literature, especially from Europe (Marsden, 2006; Calthrop et al., 2000; Verhoef et al., 1995).

Parking management policies are most often applied to traffic sensitive locations or where a parking problem is perceived but where extra supply is not possible or is undesirable (Litman, 2006). Parking management can be considered an adaptation of conventional policy to better suit areas developed before automobile-based standards. It has had little impact in suburban contexts, since places with plentiful parking may see little reason to adopt the approach. However, Litman (pp.23-24) does urge its application beyond its city-centre heartland (see also Forinash et al., 2003). Unfortunately, deviations from standard parking requirements tend to be subjected to a high burden of proof. The institutional strength of the conventional approach has thus been an obstacle to the wider expansion of parking management.

Parking management often still seeks to ensure 'sufficient' parking but by various means, such as increasing efficiency in parking space use and reducing or managing demand, possibly through pricing. Parking management also breaks somewhat with the conventional obsession with handling parking on-site. For example, many inner-urban municipalities allow in-lieu payments instead of on-site parking with the money going towards shared municipal parking (Shoup, 2005, pp. 229-246).

Parking management has been called a 'paradigm shift' (Litman, 2006, p.3) but this may be overblown. While it embraces making zoning for parking more flexible and responsive to local needs, it generally retains parking requirements themselves (Ferguson, 2004, p.188 citing Box, 1993 and Smith, 1999). Parking management retains an onus on the local government to ensure adequate parking, even if this can now be met in a more sophisticated way. Its planning-based nature leads to political vulnerabilities as does its complexity. Pricing under parking management can also be perceived as 'taxation'.

The role of pricing as part of parking management's TDM-focused toolbox may obscure the distinction between this approach and the market-oriented approaches to be discussed below. However, it is important to emphasise that in parking management parking is still planned and regulated, albeit with a different set of objectives from the conventional supply-focused approach (Table 1). Nevertheless, it is true that the aim of providing the 'right' amount of parking introduces more economically sophisticated thinking. Litman is an economist and his book highlights that economic theory would regard 'optimal' parking supply as the 'amount consumers would purchase in an efficient market (if they are charged the full cost of providing parking facilities and have a reasonable range of options from which to choose)' (Litman, 2006, p.10). Furthermore, pricing under parking management does sometimes have a market element to the extent that price-setting practice may be somewhat responsive to demand. Indeed, commercial parking operators with profit-maximising pricing might even be present. However, supply in this approach remains

under planning control. Prices are more commonly seen as a tool rather than a market response. Cities following this approach also tend to try to meet their goals using various regulatory and planning-based policy tools before resorting to pricing.

2.4. Market-based parking policy

As mentioned earlier, parking practice missed the wider regulatory trend towards market-based arrangements (Button, 2006). Nevertheless, there have been several calls for market-oriented parking over the last century. As long ago as the 1920s, Miller McClintock pushed to ban on-street parking and argued that being forced to rely on priced, commercial off-street parking would provide a market test of the utility of motorists' trips (McClintock, 1925, cited by Shoup, 2005, p. 492-493). This was followed by Vickrey's (1954) work on on-street parking, Roth's (1965) polemical booklet on the subject and Shoup's persistent efforts since the 1970s. Shoup's version is ambitious in seeking parking reform not just in city centres but also throughout more automobile dependent areas.

By the way, there is some irony here. Shoup's critique of conventional parking policy is significant for being part of a wider challenge to the assumption that automobile-dependent suburban landscapes are primarily a market phenomenon (see for example, Lewyn, 2007). An increased role for market processes in parking supply seems likely to undermine, not reinforce automobile dependence. This parallels Levine's (2005) work attacking the view that low-density suburbia, and the zoning that preserves it, are primarily market outcomes. Levine argues that collective decisions, even those by small entities such as local governments, must be considered regulation not a market phenomenon.

A common theme in market-based thinking on parking has been the argument that solving the on-street parking 'commons problem' should enable a more laissez-faire approach to off-street parking. Underpriced on-street parking delays private investment in off-street parking by undercutting the potential market and depriving it of price information. With no relief in sight from parking saturation and its associated congestion, municipalities then often come under pressure to supply or require off-street parking. The fear of the return of such impacts (as 'spillover') also makes reversing any existing off-street parking requirements politically difficult in the absence of efficient on-street pricing (Shoup, 2005, p.21).

In the 1920s, McClintock felt that private enterprise would handle parking adequately if on-street parking were banned. However, rather than ban on-street parking, Roth (1965, pp.19-21) and Shoup (2005, pp. 297-303) follow Vickrey's lead in seeking optimal on-street pricing as the solution to 'cruising for parking' and to defuse spillover as an issue. Both call for performance-based pricing, with prices varying in time and space and set to always deliver approximately 15% vacancy rates and hence zero search time. Such a pricing scheme should yield a 'triple dividend': reduced

search time; revenue; and reduced congestion (Arnott, 2006). With trials underway in several American cities, such as San Francisco, there are signs that Shoup's tireless advocacy for this reform may be gaining acceptance. However, it is not clear if these cities see it as part of a shift to market-based parking policy or as just another parking management tool.

Clearly, there is no 'natural' market for on-street parking and efficient pricing does not emerge spontaneously. Policy effort is needed to achieve performance-based pricing. Parking protection rackets do emerge spontaneously but these are neither efficient nor in the public interest. Performance-based pricing is also politically challenging so Shoup (2005, pp.397-470) suggests an institutional innovation, parking benefit districts, to provide for local public spending of the revenue and to have the right set of incentives to price. Two reviewers of Shoup (2005) suggest outright privatisation of on-street spaces or competitive bidding for street-by-street concessions to manage and price on-street parking (Klein, 2006; Seibert, 2008).

Deregulation of the quantity of off-street supply is the other plank of the market-based parking literature. Roth (1965) attacks parking requirements and Shoup (2005) calls for their abolition. However, Shoup (2005) is willing to contemplate parking maximums and disavows the word 'deregulation' itself, preferring to call on planners to regulate the quality of parking not its quantity (Mukhija and Shoup, 2006). Surprisingly, the neoliberal Roth (1965, p. 41) stops just short of complete supply deregulation, instead suggesting that buildings be required to have sections that are convertible between parking and other purposes such as storage.

Market-based parking advocates appear to be confident that their suggested reforms will lead towards market-based parking with an active price mechanism. Shoup, for example, is explicit about this in a chapter entitled, *Let Prices Do the Planning*:

'Since [on-street] prices will vary to maintain a few curb vacancies, spillover will no longer be a problem. Individual property owners and merchants can then choose how much on-site parking to provide based on business considerations, not zoning. Some may choose to provide their own off-street spaces, while others may offer to validate parking in nearby garages. Regardless of the strategy, all firms will be able to decide for themselves whether parking is worth its costs. Parking will increasingly become unbundled from other transactions, and professional operators will manage more of the parking supply.' (Shoup, 2005, p. 496).

The excerpt above expresses faith that ending parking requirements will be for the best, whatever the private choices that result. It also hints that these private choices will eventually result in most parking everywhere (even in suburban centres) being provided in some kind of local parking market. Reviewers of Shoup, whether or not they are critical of abolishing parking requirements, seem not to question if this would be sufficient to cause substantial change (West, 2006; Lewyn and Cralle, 2005; Koushki, 2006; Klein, 2006; Seibert, 2008; Levinson, 2005; Gordon, 2006).

Roth (1965) also sees a similar core of reforms as moving parking towards a situation in which most off-street parking is open to the public, priced on a market-basis and provided as a commercial enterprise, with parking existing only if justified by its own revenue stream compared with alternative uses of the same space.

Table 1 outlines the contrasting assumptions behind market-based parking ideas and those of the conventional and parking management approaches. Some sense of how parking supply could work under the market-based vision can be gleaned by considering commercial parking operations in today's central business districts (CBDs), many of which already face a situation that somewhat resembles the market-based parking vision. Such localities have enough scarcity to support profitable parking enterprises. A high proportion of their parking spaces are open to the general public or 'shared'. Mixed land-use makes this efficient. Parking spaces tend to serve the vicinity rather than particular developments. Relatively little parking is bundled. Few buildings have enough on-site parking to handle their 'own' demand. The concept of spillover has no meaning here since on-site handling of parking demand is not expected. Most off-street parking in such CBDs is a commercial real-estate based service, not part of the infrastructure of a specific building. The market-based parking agenda suggests we imagine something similar extending to diverse vicinities throughout metropolitan areas.

Table 1. The three approaches to parking policy

	Conventional	Parking Management	Market-based Parking
Perspective on parking problem	Scarcity is a problem, both within a vicinity or on any site, because it causes spillover and conflict.	Problem if parking conditions mismatch with wider policy goals. Trade-offs among objectives are difficult.	Underpriced on-street parking causes search externality and inhibits off-street market. Supply-side policy causes more problems than it solves.
View of spillover	Seen as a free-rider problem. To be avoided by ensuring each site handles its own parking.	A source of conflict, so minimise by management or defuse by planning for shared parking.	Pricing defuses spillover problem. It is welcome as a trigger for market pricing to emerge.
How quantity of parking should be determined	Require developers to supply enough to meet all expected demand on-site (often at a price of zero).	Plan and manage, using diverse policy tools, for parking quantity, location and usage patterns to match wider policy goals.	Facilitate efficient on-street pricing. Remove obstacles to private choices determining supply in local off-street markets.
Perspective on shared parking (open to public)	Unusual since each site expected to provide for own parking.	A useful tool but needs careful management to avoid conflict.	Expected to be the norm. Restricted-access parking as exception not norm.

3. The possible need for parking market fostering and regulation

Will Shoup's 'core package' of market-oriented reforms, namely quantity deregulation and efficient on-street pricing, really be enough to create the conditions for market processes to emerge in diverse locations and for such parking markets to function in a healthy way? There are at least some *prima facie* reasons to want more reassurance.

Firstly, institutional and physical legacies seem likely to hinder implementation of such reforms in the first place. We have seen that the mainstream approaches and the thinking that supports them are strongly entrenched, especially in suburban contexts. Second, a sceptical public may need an assurance that policy will still be able to address matters of public value such as due process, justice, fairness or the serving of basic needs. Third, wider experience with deregulation has shown a need to demand relatively high standards for the functioning of the ensuing market, such as open entry and exit, good information, a tolerable lack of market power and of other market failures, such as externalities, and supply that is responsive to price signals without too much delay or rigidity. These points suggest a likely need for further policy effort aimed at both fostering market formation and appropriate regulation of such markets. Even though economists have pointed to potential problems in off-street parking markets (Button, 2006; Arnott, 2006), this issue does not feature in Shoup's or Roth's writings, nor in reviews of Shoup's proposals.

These observations also raise the question of how large is the gap between a well-functioning parking market and the outcomes to be expected from the core package of reforms? If the gap is large and difficult to overcome it would be a blow to the market-oriented parking agenda. If the gap is small then perhaps deregulation of off-street quantity and efficient on-street pricing would be enough to achieve a healthy market outcome. If the truth is somewhere between these two extremes, at least in some contexts, then a broader 'market fostering' effort could be considered, in order to ensure that parking markets emerge and that modest regulatory effort could keep them tolerably healthy and robust.

The first two sub-sections below will seek further insight on whether there is any need for such additional market fostering effort. A third sub-section very briefly outlines possible elements of such an approach. However, the feasibility of market fostering in many contexts will remain an open question.

Note that I assume here that society would indeed be better off if parking could be placed onto a thoroughly market-basis, with well-functioning markets, in which both suppliers and end users of parking see and respond to a direct parking price signal. Debate over this assumption is outside the scope of this paper. I also assume that somehow the climate of political opinion becomes able to accept market-oriented

parking reforms of the kind suggested by Shoup. Of course, that is a very big assumption, especially for suburban areas where the existing approach is in such stark contrast with market-based approaches. The lack of such a climate is obviously still a key barrier to any such reform in many places. There are a few words on this 'elephant in the room' at the end of the paper.

3.1. Barriers to market formation and price signal emergence

This section explores possible barriers to prices doing the planning, with a focus on those that may remain even after the basic market-oriented reforms of removing off-street parking requirements and imposing efficient on-street pricing. Relevant questions include how formidable is each barrier and in what contexts it is likely to be critical.

Several barriers to pricing and markets in parking are most important for places with an oversupply, where bundling and free parking are prevalent. Scarcity is obviously a prerequisite for a market-clearing price above zero and hence for the emergence of a commercial market for parking. Some barriers are also pertinent in locations that do have parking scarcity (or nascent scarcity).

3.1.1. Spillover and parking market 'failure to launch'

In the absence of parking requirements, the market-oriented parking literature expects some developers in suburban areas to take the opportunity to provide less parking than before (Engel-Yan et al., 2007; Shoup, 2005). Spillover from new 'parking-lite' developments is a key mechanism for pricing to appear in these areas. Such infill should create scarcity which triggers on-street pricing and then off-street unbundling, pricing and shared parking (Shoup, 2005, p.97). Spillover is thus not seen as a problem in market-based parking thinking but rather as essential for pricing to emerge (recall Table 1). However, this infill-based mechanism is likely to be a slow process unless pushed forward by additional policy efforts. For example, in slow-growing urban regions there may be little development pressure to drive infill.

An absence of shared parking could also slow the process. Recall that Shoup sees demand-responsive pricing for on-street parking as a crucial part of this infill-based mechanism (see section 2.4). It defuses spillover as a problem and also reveals the value of parking to actors in the vicinity. This underlines the importance of shared parking generally, not just on-street parking. Any parking that is open to the public could play the same role so long as its response to saturation is market-clearing pricing. However, if an infill vicinity has no accessible on-street parking and if all off-street parking is restricted to customers or employees only, then spillover would immediately cause conflict. So a lack of local shared parking may inhibit developers from making ambitious parking reductions in infill development plans.

These observations draw attention to the possible need to more actively encourage private parking to be open to the public. In fact, this would also be helpful in contexts where parking scarcity already exists but not pricing. In the presence of scarcity, access restrictions become a prerequisite to the bundling of parking. Attacking such restrictions may be more efficient than attacking bundling directly. Encouraging more privately-owned parking to remain open to the general public would not force pricing onto places where pricing would be inefficient but if restricting access to parking were made less attractive then pricing would become a more common response to parking saturation, thus helping to kick start a local market.

3.1.2. Cooperation traps

Another barrier to parking scarcity in suburban landscapes is a cooperation problem, or 'parking arms race'. Even in the absence of parking requirements, competitive considerations may still prompt certain developments, especially certain kinds of retail centre, to continue to provide generous bundled (free) parking, in an interesting example of price discrimination using parking (Shoup, 2005, p.167). Such enterprises rationally try to attract motorists (as customers or as skilled employees) from a wider catchment. During any transition away from oversupply towards priced parking, existing businesses with plentiful parking may have an unfair competitive advantage. This could deter aggressive parking reductions in new developments.

Transport economists have concluded that this amounts to a futile zero-sum game or cooperation trap which may require government action over and above basic market-oriented parking reforms (Shoup, 2005, pp. 167-168). An example that is already common is the use of parking maximum standards (limiting parking, not requiring it). Another possibility might include encouraging shared parking and discouraging restricted access parking, as mentioned above. Incentives might also be considered to encourage incumbents with excessive parking to divest some of their parking space, which could become commercial shared parking or sites for new infill development.

Fear of spatial competition also throws up political barriers to parking policy change at the local government level. The widely-held belief that parking is an important factor in spatial competition across an urban region often discourages local governments from embracing reforms that raise the price of parking or limit its supply. With the exception of some strongly transit-oriented CBDs, many local governments will probably be reluctant to embrace market-based parking reform without pressure from the metropolitan level or higher. Precedents (albeit within a parking management approach) include national maximum parking standards in the United Kingdom and the Netherlands (Marsden, 2006).

3.1.3. Undercut by government actions

Several barriers to market emergence arise from public sector actions (or the expectation of them) that deter or crowd out private commercial parking activity. A

key one already discussed is the failure to price on-street parking efficiently but there are several others. Together these are a key explanation of the absence or unresponsiveness of parking markets, even in places with apparent parking scarcity where the absence of parking pricing is otherwise puzzling. Market-oriented reform would probably need to be explicit in removing such practices and should not assume that they would automatically be removed when Shoup's basic reforms take place.

A widespread example is supply of parking by municipalities themselves, especially when priced below market price. Surprisingly, Shoup (2005) does not target the issue of local government off-street parking supply but it must certainly deter much private-sector investment in off-street parking (Bawolek, 2004). This was already apparent in the UK in the 1960s (Roth, 1965, p.35). It is being repeated today across developing Asia.

Some cities actually control the price of private parking garages. Jakarta seems to be an example (Asrianti, 2008). Some localities in the USA ban the pricing of parking altogether, in effect decreeing a price of zero (Shoup, 1995).

Zoning would also need adjustment in many places to become compatible with market-based parking. For example, changes may be needed in some cities to accommodate stand-alone parking investments, the divestment of parts of parking lots, and infill development to replace some parking. Another common planning practice in need of change is the exempting of some or all parking space from calculations of Gross Floor Area (GFA) for the purpose of zoning/development control. The opportunity cost of such GFA-exempted parking space is much lower than non-exempt parking. Some cities exempt all parking from GFA calculations, not just the required parking, so abolition of parking requirements would not automatically remove the exemption.

3.1.4. Crowded out by informal markets

Informal markets can deter the formation of formal sector markets and parking seems to be an example. Informal fee collection for parking is common for on-street parking in various developing cities. This might be some kind of market phenomenon but is unlikely to be efficient or socially beneficial. Such extortion activity is usually small in scale but in some cases the entities involved, or their protectors, become powerful enough to corrupt policing and local government. Most importantly for the argument here, they can also sabotage efforts at formal, government-sanctioned parking pricing. Jakarta and Karachi provide recent reports (Jakarta Post, 2007; Azmat, 2008). Preventing such a situation, by avoiding having a pricing vacuum, is probably easier than curing it once entrenched. More research is needed on this problem and how to address it.

3.2. Problems within parking markets

Now I turn to the likely health of parking markets if they can be made to emerge. Just as the core package of market-oriented reforms may not be enough to create parking markets, it may also be insufficient for confidence in the quality of their functioning and outcomes.

3.2.1. A need for anti-trust regulatory effort in parking markets?

Could we expect parking markets generally to work well and be competitive? Would market-oriented parking reform also require a regulatory effort to contain abuse of market power? This section offers some insight but more research is needed on this question.

We saw in section 2.4 that parking in many city centres already operates in some kind of market context. Local government involvement in many of today's city centres changes the competitive picture, presumably reducing the number of private operators involved. Nevertheless, at least some of today's large city-centre parking markets appear to feature considerable competition among commercial parking operators even without a vigorous regulatory anti-trust effort. For example, in May 2004 the Australian competition watchdog decided not to oppose a joint venture agreement between two of Australia's private parking operators on the grounds that adequate competition would remain in the relevant markets, mostly in city centres (Australian Competition and Consumer Commission, 2004).

However, there are also theoretical reasons to believe that even CBD parking markets may see some market power. City centre off-street parking is usually mostly in parking garages, which have scale economies and a minimum viable size (Arnott 2006). Parking garage investments are therefore lumpy to some degree and necessarily spread unevenly in space. This lumpiness may not be extreme but may be significant since parking markets are inherently highly local. Building space devoted to parking can also be difficult to convert to and from most other uses (more on this below). These characteristics lead us to expect a degree of localised market power

This is countered by other considerations that may help allay concern. For example, for unsubsidised decreasing-cost enterprises, prices must exceed marginal cost prices or lead to bankruptcy. Accepting some degree of market power can alleviate this problem by allowing pricing that can support a viable garage industry (Button, 2006). Moreover, Arnott (2006) notes that prices somewhat above marginal cost may be welfare enhancing if they compensate for the absence of congestion pricing or complement the presence of existing mass transit investments with economies of scale to exploit. In any case, the presence of rich substitutes also constrains market power in CBDs.

Information asymmetries are also an issue in parking markets (Button, 2006) but are addressed to an extent through parking information and guidance systems which are becoming much more sophisticated and common (Litman, 2006, pp.171-177). Parking markets appear to have high pricing transparency (Gross, 2005). The physical character of city centres is also helpful. Characteristics such as a high density of destinations and small blocks, among others, make for high pedestrian permeability. Every place in the area is generally within an easy walk of several parking enterprises. The market areas of CBD garages apparently overlap, allowing competition to limit their pricing power.

Would prospective parking markets away from city centres perhaps be more prone to market power problems and more likely to require regulatory effort? There are reasons for some concern. For example, a poverty of substitutes to driving would focus more attention on market power in parking. If parking enterprises outside city centres are necessarily large and spread out beyond walking distance then local monopolies may prevail. On the other hand, less lumpiness is to be expected outside city centres, since cheaper land will prompt less factor substitution and allow smaller, less capital-intensive parking investments to be distributed more evenly in space. A legacy of plentiful parking under earlier policies would also usually ensure this. However, comfortable walking distance will often be shorter outside city centres, which could also tend to limit competition. Many suburban areas lack the pedestrian amenity and permeability of older centres.

On balance, it seems likely that sufficiently competitive and well-functioning local parking markets may be feasible in urban contexts, at least with some modest anti-trust policy effort and vigilance.

3.2.2. Difficulties with conversion to and from parking

The more easily parking space can be converted back and forth, the less worried we would need to be about market power, stranded asset problems, or local fears of being locked into 'too much' or 'too little' parking. Difficulty in converting real estate space between parking and other uses contributes to sunk costs and lumpiness. Concern about this rigidity led Roth (1965, p.41) to suggest that councils require developers to provide space that can potentially be used for parking, rather than require parking itself (as mentioned earlier). A reviewer of Shoup (2005) similarly suggests requiring local banks of space that can easily be converted between parking and other uses (Ben-Joseph, 2005). Parking space in single-family homes is of course routinely used for other purposes, such as home workshops, recreation and storage. Shoup (2005, pp. 573) sees unbundling as potentially enabling this also in multi-family housing.

Regulation, not physical issues, is probably the key barrier to conversion and to the building of convertible parking space. Restrictions on the removal of parking are part of most parking requirement ordinances. Without such regulatory barriers developers

would have more incentive to build with the potential for conversion in mind. In theory, abolishing parking requirements should fix this but, again it may need to be made explicit. Cities struggling with parking saturation will find this suggestion challenging. For example, the large Indian cities, with underpriced parking but acute saturation, wage a battle against the illegal misuse of parking space (see for example, Ramu, 2007). The Mayor of Calcutta has railed, 'illegal conversion of garage space is an unpardonable crime in a city like Calcutta ...' (Ganguly, 2005). It would take much reassurance for such cities to relax and let parking prices and supply find their own level.

3.2.3. *Externalities, parking quality and the role of planning*

Parking supply imposes negative externalities and creates local conflict. Any market-based parking reforms will be politically difficult unless they include ways to address these, probably through a role for planning. Examples of parking impacts include hydrological effects from impervious surfaces, heat island effects, conflict with pedestrian ways, noise and visual blight. Some but not all of these might be addressed with economic policy instruments to internalise the external costs (Button, 2006).

A need for planning effort would remain in order to mitigate local conflict over parking supply. Objections to parking removals and to bad-neighbour parking proposals are of course already commonplace. This points to a familiar role for planners, since such conflict is familiar in real estate markets generally. A reviewer of Shoup (2005) lamented the lack of attention to parking design and quality (Ben-Joseph, 2005). As if in answer, Mukhija and Shoup (2006) agree that there are inadequate economic incentives for quality. While reaffirming Shoup's call to abolish quantity requirements, they outline ways for planners to improve parking quality, namely: limit parking space numbers; improve its location; and require better design of lots, parking structures and residential garages.

3.2.4. *Persistent bundling*

Even after parking markets emerge, the bundling of parking may remain persistent, possibly to the extent of hindering the efficiency of the market. Neither suppliers nor users of such bundled parking are responsive to the direct parking price signals. Reasons to expect some persistent bundling include a climate of opinion that is hostile to pricing. Moreover, unbundling is especially difficult wherever it means the removal of a privilege, as with employer-provided parking. Parking 'cash outs' are a way of easing the transition, a reform which is otherwise full of obstacles (Shoup, 1995; Rye and Ison, 2005).

As mentioned earlier, attacking bundling directly is unlikely to be efficient but addressing some of the underlying causes may be. For example, discouraging restricted access and encouraging sharing might help. So would addressing barriers to pricing, such as regulatory restrictions or undue bureaucratic costs. Transaction costs

and the fixed costs of charging for parking are also important barriers to pricing. Their effect is greatest for short-term parking pricing in places where the market price will initially be low, and for the owners of small numbers of spaces. Fortunately, it is getting cheaper to establish and run parking fee collection systems and the range of choices is growing rapidly. An expansion of parking markets after market-oriented reforms would further drive down these costs. Nevertheless, some remain sceptical that pricing will be worth the transaction costs in many contexts (Levinson, 2005). There may be a role for governments to help ease transaction costs by encouraging coordination and inter-operability of payment systems (Litman, 2006, p.142).

3.2.5. Parking endorsements and perks from third parties

Some may be concerned about parking markets being undermined by parking perks offered by third parties (who do not own the parking). We need not worry about this, at least not on market grounds. The price mechanism and market-based supply are compatible with third-party businesses offering to pay for or provide an allowance for the parking of qualifying clients, such as employees or customers. It may be regrettable that the end-user is thus shielded from price signals, but the intermediate customer (the business offering the perk) still sees the market price. Such parking perks are voluntary and explicitly accounted for rather than hidden. Market fostering would not need to discourage such perks although, for TDM reasons, governments might seek to encourage mode-neutral travel allowances instead.

3.2.6. Parking industry political power

Similarly, some might worry that an enlarged commercial parking industry might be too politically powerful. Parking industry interests have, for example, been known to oppose travel demand management policies, such as New York City's proposed congestion charge in 2008. Business lobbying is familiar in many policy-making arenas and is usually not a reason to avoid or abandon markets unless there is concern that the industry will 'capture' relevant policy-making and regulatory institutions. There is a legitimate case for providing some credible commitment to the parking industry that it will not be arbitrarily undermined. But at the same time, local institutions may need to guard against capture and maintain legitimate freedom for the political process to deliberate on and pursue wider transport policies.

3.3. Policy implications: fostering and regulating parking markets to make prices do the planning

I have identified and reviewed various barriers to having prices do the planning for parking, as well as worries about how well the resulting markets would work. It seems clear that in many contexts Shoup's core market-reform package would not be enough to overcome all of these barriers and problems within a reasonable period of time. However, the discussions above do suggest a strong possibility that with some additional policy effort it should be possible to facilitate the emergence of parking

supplied on a market-basis in various contexts, even in suburban locations. Such an approach, which could be called 'market-fostering', would seek to encourage conditions in which the supply and usage of parking space is informed by efficient market signals.

Any market fostering approach would obviously need to begin with the core package of market-oriented reforms that Shoup and others suggest, or something very similar. However, this paper has shown that market fostering would then need to go further and work at overcoming the various additional barriers and market problems highlighted here.

Market fostering is less laissez-faire than the suggestions of Roth and Shoup, since it shows more willingness to structure and correct markets, recognising that well-functioning market processes often need a helping hand to emerge and to flourish. Paradoxically perhaps, it also involves a firmer resolve to ensure that it will indeed be parking prices that do the parking planning. Market-fostering would countenance a more vigorous push away from bundled, free parking towards unbundling and pricing.

What specific policies might be involved in such parking market-fostering? A detailed answer is beyond my scope here but sections 3.1 and 3.2 suggested that it might include some of the following. A credible policy commitment not to undermine parking markets would be needed. Where parking oversupply is extreme, policy efforts may need to ease the way for 'parking lite' infill (in suburban centres of activity for example). Incentives for incumbents with excessive parking to divest part of their parking facilities might also help. Developers will face the full opportunity cost of parking if calculations for zoning include parking space as part of the gross floor area. Incentives for private parking to be open to the public may be useful for several reasons. Competition policy will need to be applied to parking markets. Encouraging convertibility between parking and other uses of space would ease concern about supply rigidities and market power. It was also noted that the impetus for such policy efforts will often need to come from metropolitan level governments or higher.

Although the policy details obviously remain to be investigated, this approach appears to offer valuable clarity on goals. In this vision of market-oriented parking, policy should focus on fostering markets, regulating for parking market health, planning for parking quality, location and design, but not determining the quantity of parking. Clarity on aims should make it easier to adapt the approach to local circumstances. Note also that these aims (more obviously than in Shoup's agenda) are compatible with various other legitimate policy priorities related to parking so long as such priorities and the tools involved are compatible with parking market health and existence. Finally, the additional reassurance offered by the willingness to regulate under market fostering may help reduce political obstacles to market-oriented parking reforms.

4. Conclusion

In this paper I have taken up previous market-oriented agendas on parking and argued that for such ideas to deliver their full potential may require a more ambitious policy effort aimed at fostering well-functioning local parking markets. Off-street parking policy in the absence of parking requirements would benefit from an effort to actively foster markets and to regulate their health. The heart of the paper was a discussion of reasons for the need for such market fostering and regulation. These included various barriers to the emergence of parking markets and problems for their healthy functioning. These obstacles and problems are over and above those that would be addressed by the core proposals of Shoup or Roth.

Another contribution was to put the market-oriented parking paradigm into perspective by contrasting it with two more mainstream approaches to parking policy. This led to a three-way categorisation of parking policy into 'conventional', 'parking management', and 'market-based' categories, as summarized in Table 1. The market-fostering approach suggested here could be thought of as a variation or refinement of the broad market-based category. Like other market-oriented proposals, its objective is to better enable markets to reveal and provide the 'right' amount of parking (notwithstanding distortions elsewhere in the wider transport and urban development systems).

Whether or not market fostering is desirable remains an open question. Further research is obviously needed to provide a more detailed explanation and evaluation. Nevertheless, the idea offers an extension and generalisation of the thrust of Shoup's ideas in a way that should help to open new market-based policy reform horizons, in more contexts, for more rapid reform, with more confidence of success.

5. Acknowledgements

I am grateful to three anonymous referees for their insights and constructive suggestions. I would also like to thank Alan Altschuler, Eduardo Araral, Shreekanth Gupta, Benjamin Sovacool, Craig Townsend, Seetharam Kallidaikurichi and Sheila Koh for helpful comments and suggestions. Thanks also to Rakhi Shankar, Anuwan Vongpichet, Jelita Md. Ariffin and Ngiam Shin Shin for research assistance. The research that led to this paper was supported by a Staff Research Support Scheme (SRSS) Grant from the LKY School of Public Policy, National University of Singapore.

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