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The ideal source of local public revenue

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Abstract

Free or underpriced curb parking creates a classic commons problem. Studies have found that between 8% and 74% of cars in congested traffic were cruising in search of curb parking, and that the average time to find a curb space ranged between 3 and 14 min. Cities can eliminate the economic incentive to cruise by charging market-clearing prices for curb parking spaces. Market-priced curb parking can yield between 5% and 8% of the total land rent in a city, and in some neighborhoods can yield more revenue than the property tax.

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The mode of taxation is, in fact, quite as important as the amount. As a small burden badly placed may distress a horse that could carry with ease a much larger one properly adjusted, so a people may be impoverished and their power of producing wealth destroyed by taxation, which, if levied in another way, could be borne with ease.

HENRY GEORGE.

Land that belongs to the whole community, and is freely available to everyone without charge, is called a commons. The classic example of a commons is village pasture land that is freely available to all members of a community for grazing their animals. This open-access arrangement works well so long as the community is small and there is plenty of grass to go around. But when the community grows, so does the number of animals, and eventually, although it may take a while to notice it, the land is overrun and overgrazed. Thomas Schelling describes the problem.

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The commons has come to serve as a paradigm for situations in which people so impinge on each other in pursuing their own interests that collectively they might be better off if they could be restrained, but no one gains individually by self-restraint. Common pasture in a village of England or Colonial New England was not only common property of the villagers but unrestrictedly available to their animals. The more cattle (or sheep or whatever) that were put to graze on the common, the less forage there was for each animal—and more of it got trampled—but as long as there was any profit in grazing one's animal on the common, villagers were motivated to do so.¹

Free curb parking is an asphalt commons: just as grazing cattle compete in their search for scarce grass, drivers compete in their search for scarce curb parking spaces. Drivers waste time and fuel, congest traffic, and pollute the air while cruising for curb parking, and after finding a space, they have no incentive to economize on how long they park.

When many people want to use a scarce public resource, individual self-restraint does not produce any perceptible long-term gains. Free curb parking thus presents the perfect commons problem—no one owns it, and everyone can use it. In his famous essay on the “tragedy of the commons,” Garrett Hardin used curb parking to illustrate the problem he was describing.

During the Christmas shopping season the parking meters downtown were covered with plastic bags that bore tags reading: “Do not open until after Christmas. Free parking courtesy of the mayor and city council.” In other words, facing the prospect of an increased demand for already scarce space, the city fathers reinstated the system of the commons.²

Some cities continue to gift wrap their parking meters in December, and they give motorists a commons problem for Christmas. Although voters may thank their mayor and city council for free parking at the time of peak demand, vacant spaces become even harder to find. Drivers circle the block searching for a curb space, and when they find one, they occupy it longer than they would if they paid to park. What makes sense for each individual driver is bad for the community as a whole.

1. Cruising for parking

Cities sometimes restrict the use of curb spaces by regulations such as 1- or 2-h limits, but time restrictions are difficult to enforce and often violated. Where all the curb spaces are occupied, turnover leads to a small supply of vacancies over time, but drivers must

¹ Schelling (1978, 111–113).

² Hardin (1977, 21). Hardin (1977, 27) also used parking meters as an example of social arrangements that encourage responsible behavior: “To keep downtown shoppers temperate in their use of parking space, we introduce parking meters for short periods, and traffic fines for longer ones. We need not actually forbid a citizen to park as long as he wants to; we need merely make it increasingly expensive for him to do so. Not prohibition, but carefully biased options are what we offer him.” Most parking meters are in cities’ central business districts, however, and curb parking is free almost everywhere else.

cruise to find a space being vacated by a departing motorist. The more cars that compete for the curb spaces, the longer it takes to find one.

Cruising creates a mobile queue of cars that are waiting for curb vacancies, but one cannot see how many cars are in the queue because the cruisers are mixed with other cars that are actually going somewhere. Nevertheless, a few researchers have tried to estimate how many cars are cruising, and how long it takes to find a curb space. They have analyzed videotapes of traffic flows, interviewed drivers who park at the curb, and have themselves cruised for parking.

The first research on cruising was, appropriately, conducted in Detroit. In 1927, Hawley Simpson (who later became president of the Institute of Traffic Engineers) measured cruising for parking by counting cars as they repeatedly passed observation points at two locations in Detroit's CBD between 2 p.m. and 6 p.m.³ He estimated that 19% of the cars passing the first point, and 34% of the cars passing the second one, were cruising for parking.

Table 1 shows the results of 16 studies of cruising for parking in 11 cities. The estimates depend greatly on the locations studied, but between 8% and 74% of traffic was cruising for parking, and the average time to find a curb space ranged between 3.5 and 13.9 min. The studies are selective because researchers study cruising where they expect to find it where curb parking is underpriced and overcrowded. But because curb parking is underpriced and overcrowded in the busiest parts of most big cities, cruising is a worldwide problem.⁴

Even a small cruising time per car can create a surprising amount of traffic. Consider a congested downtown area where it takes an average of three min to find a curb parking space. If the parking turnover is 10 cars per space per day, each curb space generates 30 min of cruising time per day, and if the average cruising speed is 10 miles an hour, each curb space generates 5 vehicle miles traveled (VMT) per day. As estimated below, the average commercial block is surrounded with 33 curb parking spaces on its perimeter, so cruising around each block creates 165 VMT a day, and 60,000 VMT a year (equivalent to more than two trips around the earth). Because cruising increases traffic in areas that are already congested, it makes a bad situation even worse.

Cruising is an odd form of vehicle travel because it increases VMT without adding either vehicles or travel. All the excess VMT refers to searching for curb parking after drivers have reached their destinations—cars simply circle the block going nowhere. Cruising may even reduce travel to congested areas if potential visitors think “nobody goes there anymore because it's so crowded.” The impression of crowding created by cruising can deter visitors who would be willing to pay a premium if they could park without cruising, and therefore limits patronage of the businesses that cheap curb parking is supposed to help. Underpriced curb parking creates the wrong kind of crowding—too many cars and not enough customers.

³ Simpson (1927).

⁴ The decision to cruise is part of a larger decision of whether to make the trip. Arnott and Rowse (1999) develop a parking model that incorporates the decision to cruise in the larger decision of whether to travel. They do not, however, consider the difference in the prices of curb and off-street parking as an incentive to cruise, which is at the center of my analysis.

Table 1
Twentieth century cruising

Year	City	Share of traffic cruising (%)	Average search time (min)
1927	Detroit (1)	19	
1927	Detroit (2)	34	
1933	Washington		8.0
1960	New Haven	17	
1965	London (1)		6.1
1965	London (2)		3.5
1965	London (3)		3.6
1977	Freiburg	74	6.0
1984	Jerusalem		9.0
1985	Cambridge	30	11.5
1993	Cape Town		12.2
1993	New York (1)	8	7.9
1993	New York (2)		10.2
1993	New York (3)		13.9
1997	San Francisco		6.5
2001	Sydney		6.5
Average		30	8.1

The numbers after Detroit, London, and New York refer to different locations within the same city. Sources: Simpson (1927), Hogentogler et al. (1934), Huber (1962), Inwood (1966), Bus+Bahn (1977), Salomon (1984), O'Malley (1985), Clark (1993), Falcocchio et al. (1995), Saltzman (1994), and Hensher (2001).

Cities create the incentive to cruise when they charge less for curbside parking than the price of adjacent off-street parking. To suggest how strong this incentive can be, Table 2 shows the prices of curbside and off-street parking at noon on a weekday at City Hall in 20 American cities.⁵ Column 3 shows the price for curbside parking nearest each site, and column 4 shows the price for the first hour of off-street parking.⁶ Curbside parking is cheaper than off-street parking in all but three cities, and sometimes much cheaper. On average, the first hour of off-street parking costs a bit more than 5 h of curbside parking.

When choosing whether or not to cruise, drivers can save money by parking on-street, or save time by parking off-street. Column 5 shows the amount of money that a driver who parks for 1 h will save by parking at the curbside rather than off-street. For example, suppose you want to park at the Los Angeles City Hall for an hour to visit the Department of City Planning. Curbside parking costs \$1.50 and off-street parking costs \$3.30, so parking at the

⁵ The cities are an opportunistic sample of places where my research assistants and I visited and were able to gather the data. Nevertheless, the sample shows that curbside parking is probably much cheaper than off-street parking in many big and small cities. City Hall was chosen because it is a standard reference point that everyone can recognize.

⁶ The prices for one hour of off-street parking do not mean, for example, that it costs \$11 *per hour* to park at the Boston City Hall. Many off-street facilities charge a flat fee for the first two or three hours, or for the whole day, which explains the high cost for only one hour of parking. Also, the price of curbside parking does not need to be \$11 an hour to eliminate the incentive to cruise in Boston. Rather, to eliminate cruising, the price of curbside parking needs to be only high enough to create a few vacancies, because at that level cruising becomes pointless.

Table 2
The price of parking at City Hall

City	State	Price for 1 h		Savings from curb parking
		Curb	Off-street	
(1)	(2)	(3) \$/h	(4) \$/h	(5)=(4)–(3) \$
Baltimore	MD	2.00	6.00	4.00
Berkeley	CA	0.75	0.00	0.00
Boston	MA	1.00	11.00	10.00
Buffalo	NY	1.00	3.00	2.00
Cambridge	MA	0.50	4.00	3.50
Chicago	IL	1.00	13.25	12.25
Houston	TX	0.25	1.50	1.25
Long Beach	CA	2.00	2.00	0.00
Los Angeles	CA	1.50	3.30	1.80
New Orleans	LA	1.25	3.00	1.75
New York	NY	1.50	14.38	12.88
Palo Alto	CA	0.00	0.00	0.00
Pasadena	CA	1.00	6.00	5.00
Philadelphia	PA	1.00	3.00	2.00
Portland	OR	1.00	1.50	0.50
San Diego	CA	1.00	6.00	5.00
San Francisco	CA	1.00	1.50	0.50
Santa Barbara	CA	0.00	5.00	5.00
Santa Monica	CA	0.50	4.20	3.70
Seattle	WA	1.00	8.00	7.00
AVERAGE		1.11	5.76	4.70

Assumption: A solo driver parks for 1 h at noon on a weekday. The prices refer to the first hour of parking in the spaces nearest the City Hall. The data were collected in 2001–2003.

curb will save \$1.80. The savings in the 20 cities range from \$0 to \$12.88, and the average is \$4.70. These savings create the economic incentive to cruise.

If on-street parking is cheaper than off-street parking, cruising is individually rational. Collectively, however, it congests traffic, wastes fuel, causes accidents, and pollutes the air. Cities create all these problems when they underprice curb parking. This underpricing is gross mismanagement of a scarce urban resource, with widespread ramifications for cities, the economy, and the environment.

2. Charging for curb parking

To eliminate cruising, cities can charge the right price for curb parking: the market-clearing price. The right price will balance the demand for parking—which varies over time—with the fixed supply of curb spaces. If a city charges prices that are just high enough to keep a few spaces open on every block, drivers can always find an available place to park near their destination. The right price may be high or low, but there will not be a shortage. Governments often price public services to cover their cost of production, but the purpose of charging for curb parking is to manage a scarce resource, not to finance the cost of providing it.

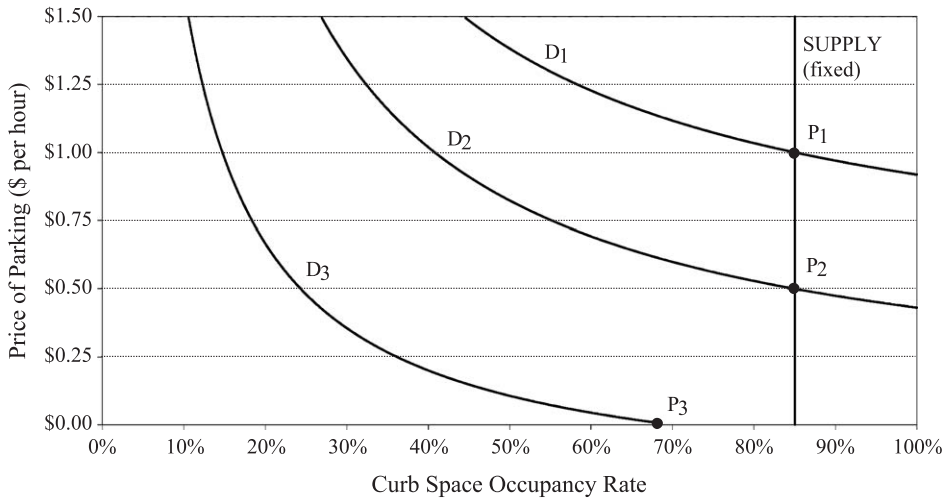


Fig. 1. The market price of curb parking.

If the goal of right pricing is to achieve a curb-space vacancy rate that allows drivers to park without cruising, what is this rate? Traffic engineers usually recommend that about 15% of curb spaces—one space in every seven—should remain vacant to ensure easy ingress and egress.⁷ The cushion of vacant spaces eliminates the need to search for a place to park. If we accept this recommendation, the right price for curb parking will vary throughout the day. Fig. 1 illustrates this market-clearing price for curb parking. The supply of curb spaces on a street is fixed, so a vertical line positioned at the 85% occupancy rate represents the supply of curb spaces available with a 15% vacancy rate. The point where the demand curve for curb parking intersects the vertical supply curve shows the price that will clear the market for curb spaces. If the price is too low, overcrowding and cruising results. If it is too high, many spaces remain vacant and a valuable resource is underused. In this hypothetical example, when parking demand is high (curve D_1), \$1 an hour is the right price. When demand is moderate (curve D_2), 50¢ an hour is the right price. Also, when demand is low (curve D_3), the vacancy rate is 70% even with free parking, so the right price is zero.

William Vickrey recommended this variable-pricing policy in 1954. He proposed that parking meters should be interconnected, and that curb parking prices should be set,

at a level so determined as to keep the amount of parking down sufficiently so that there will almost always be space available for those willing to pay the fee . . . the meters could be arranged so that whenever more than say 3 out of 20 spaces [15 percent] are vacant, there would be no charge; whenever only 3 spaces are unoccupied, a slight

⁷ Brierty (1972), May (1975), and Witheford and Kanaan (1972). If the average block has 33 spaces on its perimeter, it has 8 spaces on each side; 1 vacant space on each side of a block should therefore eliminate cruising.

charge would be made; the charge would become higher as more spaces are occupied, and would be quite high if all of the spaces become occupied.⁸

Parking should be free when occupancy is less than 85% at a zero price because it is then a public good in the sense that the marginal cost of adding another user is zero. But when demand increases, the public good becomes crowded, it takes time to find a vacant space, and the marginal cost of adding another user increases. Because curb parking is in fixed supply, the price must increase to limit occupancy to 85%. Curb parking is thus a congestible public good, with charges needed only when the occupancy would exceed 85% at a zero price.⁹

When using prices to manage transportation demand, Goodwin (2001) distinguishes between two policies. The first is “get the prices right: where travel is currently undercharged, this will reduce traffic.” The second is “let’s decide how much traffic we want, and then use prices to achieve it.”¹⁰ Setting an 85% target occupancy rate for curb parking represents the second policy. Administrators do not choose the right price for curb parking; instead, the right price emerges as a result of choosing the right occupancy rate.¹¹

Charging for curb parking will also let cities abandon time limits as a way to create parking turnover. The demand curves in Fig. 1 refer to occupancy rates that would occur without time limits on curb parking. Cities can rely on prices alone to maintain a few curb vacancies and to create turnover. Prices cannot constantly fluctuate to maintain an occupancy rate of exactly 85%, but they can vary sufficiently to avoid chronic overcrowding or underuse. If about 15% of spaces are vacant, the price is right.

Charging for curb parking can be related to the ideas of the 19th-century reformer Henry George, who argued that land rent is the most appropriate source of government revenue. We rarely consider curb parking spaces to be ‘rented,’ but they are, albeit on a

⁸ Vickrey (1954, 64). With this pricing policy, Vickrey noted that “there would be an incentive for each parker to park as far as possible in locations where the demand is light, and there will be a natural tendency for the long-term parkers to park somewhat further away from the areas of heaviest demand.” Vickrey may be the first to recommend what are now known as pay-by-space meters. He proposed mounting several conventional meters on a single post, with numbers painted on the pavement to identify which space corresponds to which meter. He speculated that “Possibly five to seven spaces is about as many as can conveniently be controlled together on this basis” (Vickrey, 1954, 67), and this turns out to be the number of spaces typically controlled by a modern pay-by-space meter. He even noted that snow on the ground will cover the numbers painted on the sidewalk, and will create a difficulty with this arrangement.

⁹ Ellickson (1973) analyzes congestion of public goods, which he calls crowding. “When the addition of another consumer increases the resources required to maintain the level of public good consumed by all, we will refer to the public good as ‘crowded’” (Ellickson, 1973, 417).

¹⁰ Goodwin (2001, 29).

¹¹ Vickrey (1955, 618) wrote, “Metering of curb parking on marginal cost principles would thus require rather substantial fluctuations in the rate per hour as the degree of occupancy fluctuates in the neighborhood of 100 percent.” He thus envisioned a very steep supply curve, not a vertical one implied by a target occupancy rate, such as 85%. To derive this supply curve, he recommended estimating the marginal social cost of cruising, and using this cost to set the price of curb parking. Because this estimate of social cost requires so much information, a target occupancy rate is much simpler to aim for, and would produce much the same result.

small scale and for a short duration. A parking space is the smallest parcel of land that is commonly rented, but because so much urban land is devoted to curb parking, charging the market price for it can yield substantial revenue. Charging for curb parking can produce many of the same benefits that Henry George predicted would flow from taxing urban land.

3. Henry George's proposal

In *Progress and Poverty*, Henry George contended that taxes on land are a “naturally ordained” source of government revenue, for two reasons. First, a tax on land is fair because communities rather than individuals create land values.

The tax upon land values is, therefore, the most just and equal of all taxes. It falls only upon those who receive from society a peculiar and valuable benefit, and upon them in proportion to the benefit they receive. It is the taking by the community, for the use of the community, of that value which is the creation of the community. It is the application of the common property to common uses.¹²

George's second point is that taxes on land do not reduce the incentives to invest in constructing buildings. The need for cash to pay taxes may even prompt owners to put their land to its “highest and best” use. Taxes on buildings, in contrast, reduce the returns from investment, and discourage the construction and maintenance of buildings. Further, George argued, the added revenue from land taxes will allow cities to cut other taxes and stimulate economic growth.

To abolish the taxation which now hampers every wheel of exchange and presses down upon every form of industry would be like removing an immense weight from a powerful spring. Imbued with fresh energy, production would start into new life, and trade would receive a stimulus which would be felt to the remotest arteries.¹³

In the most ambitious form of his proposal, George maintained that taxes on land can produce enough revenue to replace all other taxes in the economy. The land tax would become the “single tax,” replacing all taxes on labor and capital, and the enterprise unleashed by this shift in taxation would produce progress without poverty.

These ideas were not entirely new. A century before Henry George began writing, Adam Smith also endorsed land value taxation in *The Wealth of Nations*.

Ground-rents are a still more proper subject of taxation than the rent of houses. A tax upon ground-rents would not raise the rents of houses. It would fall altogether upon the

¹² George (1879 [1938], 421).

¹³ George (1879 [1938], 434).

owner of the ground-rent, who acts always as a monopolist, and exacts the greatest rent which can be got for the use of his ground.¹⁴

Henry George echoed Smith, but this did not give him credence in the economics profession. Most contemporary economists considered George a radical, or even a crackpot, but his ideas attracted a huge following. As [Blaug \(1992\)](#) says “in the English-speaking world in the last quarter of the nineteenth century it wasn’t Marx but Henry George who was the talking-point of all debates among fiery young intellectuals.”¹⁵ Running as a labor candidate, George narrowly lost the race for mayor of New York in 1886, but he drew more votes than the Republican candidate, Theodore Roosevelt, who dismissed George as “an utterly cheap reformer.”¹⁶

Regarding the contemporary economists’ harsh criticism of George, [Schumpeter \(1954\)](#) wrote,

Barring his panacea (the Single Tax) and the phraseology connected with it, [George] was a very orthodox economist. . . Professional economists who focused attention on the single-tax proposal and condemned Henry George’s teaching, root and branch, were hardly just to him. The proposal . . . is not *economically* unsound, except in that it involves an unwarranted optimism concerning the yield of such a tax.¹⁷

Many popular economic theories have disappeared without a trace since *Progress and Poverty* was published, but economists continue to discuss land value taxation. After initially opposing George, and then ignoring him, most economists now agree with his central proposition that property taxes are better placed on land than buildings. Nine Nobel Laureates in economics, conservative and liberal alike, have endorsed land value taxation, for the same reasons that George gave: it raises public revenue without distorting private incentives, and it is fair.¹⁸ “In my opinion,” Milton Friedman said, “the least bad tax is the property tax on the unimproved value of land, the Henry George argument of many, many years ago.”¹⁹

¹⁴ [Smith \(1776 \[1937\], 795\)](#). [John Stuart Mill \(1965, 825\)](#) made a similar observation: “A tax on rent falls wholly on the landlord. There are no means by which he can shift the burthen upon anyone else. . . A tax on rent, therefore, has no effect, other than its obvious one. It merely takes so much from the landlord, and transfers it to the state.” [Priest \(1981\)](#) summarizes the history of economic thought on land value taxation. He says, “The first observation about urban land tax policy during the last century or so is. . . it survived. Whereas many other ideas in tax policy have come, gone, and been forgotten, we find the enormous interest taken in these matters in one form or another in the 1890s is in some ways paralleled in the 1970s” ([Priest, 1981, 105](#)).

¹⁵ [Blaug \(1992, ix\)](#).

¹⁶ [Cord \(1965, 36\)](#) says, “Some well known historians, such as John R. Commons, felt that the corrupt Tammany machine then in power used bribery and their control of the election machinery to deny him an election [George] actually won.” See also [Birnie \(1939, Chapter XI\)](#).

¹⁷ [Schumpeter \(1954, 865\)](#), italics in the original.

¹⁸ James Buchanan, Milton Friedman, Franco Modigliani, Paul Samuelson, Herbert Simon, Robert Solow, Joseph Stiglitz, James Tobin, and William Vickrey (see *Incentive Taxation*, November 1991, p. 1). [Cord \(1965\)](#) and [Whitaker \(1997\)](#) explain how and why contemporary economists criticized *Progress and Poverty*.

¹⁹ [Blaug \(1992, x\)](#).

Arnott and Stiglitz (1979) showed that, under certain assumptions, total land rent in a city will equal the total expenditure on municipal public goods. Their research suggests that a tax on land rent can indeed finance local government, a proposal that economists had previously dismissed. In homage to the idea's originator, Arnott and Stiglitz dubbed their finding the "Henry George Theorem." Despite the efficiency and revenue potential of land value taxation, however, political resistance has been fierce and effective: most cities levy the same tax rate on land and buildings.

George died in 1897, just as the car was born, so what do his ideas have to do with parking? There are two main connections. First, the revenue from curb parking is land rent that can be used to finance local governments. Second, underpricing creates a shortage of curb parking, which in turn leads cities to impose off-street parking requirements for every land use, and these parking requirements act like a tax on buildings. Free curb parking and off-street parking requirements are therefore the exact opposites of what Henry George recommended: cities fail to collect land rent, and they impose a heavy tax on buildings. Although most voters may not want to tax land rents in the Georgist style, cities can still obtain many benefits by adopting two related policies: charge market prices for curb parking, and remove off-street parking requirements.

4. Curb parking revenue is public land rent

Curb parking spaces are bare land in fixed supply, so the revenue derived from them is rent.²⁰ Demand determines the rental value of curb spaces, the revenue comes from public land, and the city can use it to pay for public services. Charging for curb parking fits well with Henry George's proposal, and is actually far simpler than taxation as a way to collect land rent.

Table 3 compares prices for curb parking and taxes on land values as ways to collect land rent for public purposes. The comparison suggests two important points, the first of which is the nature of the revenue. A price for curb parking is a user fee, not a tax, and it falls on motorists, not landowners.²¹ Nevertheless, it has the advantages that Henry George ascribed to a land tax. Curb parking fees are paid only by motorists who occupy scarce public land, and only in proportion to the time they occupy it. The revenue is, as George said, a "taking by the community, for the use of the community, of that value which is the creation of the community," and spending it to pay for neighborhood public services is the "application of the common property to common uses."

²⁰ Motorists must pay the market price for parking to ensure the efficient allocation of curb spaces, but the city doesn't have to receive the payment to draw the curb spaces into use. The supply of curb parking is not perfectly inelastic, however, because cities can create more curb spaces, such as by converting parallel parking spaces to diagonal parking spaces and thus converting more of the roadway from moving cars to parking them. This does not change the condition that the curb parking supply is fixed in the short run, and that if the city aims for an 85% occupancy rate the supply curve is a vertical line at the 85% occupancy rate.

²¹ Harriss (1972, 296) says about the incidence of taxes on land values, "In effect, the owner at the time of each jump in the tax rate will have suffered a loss of capital value—except as the spending of the funds adds offsetting benefits which enhance the demand for the property."

Table 3
Prices for curb parking compared with taxes on land values

Criterion	Market prices for curb parking	Taxes on land values
Revenue source	Rent for the use of publicly owned land	Taxes on the value of privately owned land
Incidence	Motorists who park at the curb	Landowners when tax rates increase
Assessment	Cheap to measure and mark parking spaces Frequent turnover of curb parking spaces Easy to price accurately	Expensive to create cadastral records Rare sales of unimproved land Difficult to assess accurately
Efficiency	Increases incentive to improve land Eliminates cruising for free curb parking Reduces traffic congestion and air pollution Eliminates need for off-street parking requirements	Increases incentive to improve land
Equity	Motorists pay for public space they occupy	Landowners pay for public services

A second point is that charging for curb parking is easier than taxing land value. What George said about taxes on land better describes market prices for curb parking.

There is no necessity of resorting to any arbitrary assessment. The tax on land values, which is the least arbitrary of taxes, possesses in the highest degree the element of certainty. It may be assessed and collected with a definiteness that partakes of the immovable and unconcealable character of the land itself.²²

Despite George's optimism, assessing and taxing the value of land is not easy. Many books have been written on the difficulty of assessing land values (such as how to separate the values of land and buildings), and on the difficulty of taxing them (such as whether to tax rent or capital values).²³ However, curb parking spaces are bare sites, are identical except for location, and are transacted constantly. They are like rental property with a high tenant turnover and a low transaction cost per new tenant. Curb parking thus resembles a spot market in rented land, and no other type of land is better suited to market pricing. Rental prices can vary by hour of the day, day of the week, and time of the year. Mispricing is immediately obvious: if the price is too high, too many curb spaces will be vacant, and if it is too low, too many will be occupied. The solution is simple in either case—adjust the price. Curb parking can become the most efficient land market in any city.

Charging for curb parking is a modest reform compared with taxing all land rent, but this is an advantage. Bolton (1985) says that land value taxation failed to gain acceptance because Henry George was too extreme.

George's excessive enthusiasm in two respects—that all rent should be taxed and that governments should trust completely to a single tax on land—got in the way of his acceptance by professional economists. They also helped blind later generations to the

²² George (1879 [1938], 418).

²³ See, for example, Holland (1970). Pittsburgh, Pennsylvania, levied a higher tax rate on land than on improvements from 1913 until 2001, when a dispute over assessment errors led the city to revert to a uniform tax rate on land and improvements.

possibilities of a modest increase in rent taxes as a substitute for other more objectionable taxes.²⁴

Similarly, *Andelson and Gaffney (1979)* explain that much contemporary criticism of Henry George was “directed against the single tax, not against land value taxation as merely one component of a public revenue system.”²⁵ If cities spend the resulting revenue to pay for neighborhood public goods, residents will be able to see that charging market-rate prices for curb parking is a modest reform that can greatly improve transportation, land use, and public finance.

Finally, the shortage of free curb parking fuels the political pressure for off-street parking requirements, and market-priced curb parking will reduce this pressure. Off-street parking requirements saddle all forms of development with increased costs, and therefore increase the prices of everything except parking. Removing these requirements will increase the incentive to improve land, and reduce the prices of everything except parking.

5. Parking requirements act like a tax on buildings

Market-priced curb parking performs well according to the traditional criteria for a source of public revenue, and it also produces yet another important fiscal benefit: it allows cities to remove off-street parking requirements, which act like a tax on buildings.

Property taxes reduce the returns to property owners, and therefore discourage investment in greater quality, durability, and floor area of buildings.²⁶ Parking requirements do much the same thing. The government imposes costs on developers by requiring them to provide parking spaces in proportion to floor area. Parking requirements differ from property taxes in that they are not related to the value of buildings, so they do not discourage investment in buildings’ quality and durability. However, they do impose a burden in proportion to floor area, and we can compare this burden with the burdens imposed by impact fees and property taxes.

5.1. *Parking requirements as impact fees*

Many cities require developers to pay impact fees to finance the public infrastructure—such as roads and schools—that development makes necessary. Parking requirements resemble these impact fees, because cities require developers to provide the on-site parking spaces that development supposedly makes necessary. A few cities also allow developers to pay a fee in lieu of providing the required parking, and they use the

²⁴ Bolton (1985, 11).

²⁵ *Andelson and Gaffney (1979, 284)*. *Seligman (1931, 68)* said, “a tax on land values is not necessarily a single tax. The essential feature of the single tax is the singleness of the tax.” The essential feature of a tax on land value is not its singleness, but is instead its ability to raise revenue without distorting incentives. Similarly, curb parking revenue cannot replace all taxes, but cities can use it to reduce some taxes, such as property taxes.

²⁶ *Pollock and Shoup (1977)* and *Shoup (1978)* present case studies to estimate how property taxes reduce investment in buildings. *Fischel (2001)*, *Nechyba (2001)*, and *Zodrow (2001)* explain the uncertainty in estimating whether and how property taxes reduce investment in buildings.

in-lieu revenue to provide public parking spaces. These in-lieu fees reveal the “parking impact fees” implicit in parking requirements.²⁷ These impact fees depend on (1) the number of required parking spaces, and (2) the cost per required space. Palo Alto, CA, for example, requires 4 spaces per 1000 ft² of floor area in its downtown, and its in-lieu fee is \$50,994 per space. This amounts to an impact fee of \$204 per square foot of floor space: a developer must pay \$204 per square foot for the privilege of not providing any parking.²⁸ As with all impact fees, it is not clear exactly who pays for the required parking, but someone has to—landowners, investors, workers, developers, and all users of real estate. It is clear that drivers do not pay it, and it would be a mistake to assume that because drivers do not pay, nobody does. The cost of parking does not cease to exist just because drivers park free.

5.2. *Parking requirements compared with property taxes*

Most in-lieu fees are one-time payments that are not directly comparable to annual property taxes. The in-lieu parking fees in Montgomery County, Maryland, however, are property taxes. Montgomery County has established four “Parking Lot Districts” (Bethesda, Montgomery Hills, Silver Spring, and Wheaton), and in each, it levies a 0.28% parking surcharge on the annual property tax rate. The revenue is used to finance public parking facilities, and together the four districts provide a total of 22,000 public parking spaces. All taxable real property in a district is subject to the surtax, but owners can apply for an exemption by showing that they meet the County’s minimum parking requirements. That is, properties that have 100% of the required on-site parking are exempt from the surtax, but all other properties pay it. In effect, Montgomery County has discovered how to impose parking requirements retroactively: all older buildings that do not meet the current requirements must pay the tax surcharge that finances public parking. New buildings pay the surcharge only if they provide less than the required parking.

Montgomery County’s general property tax rate is 0.741% of assessed value. The 0.28% parking surtax thus amounts to a 38% increase in the general property tax.²⁹ This provides a useful commentary on municipal priorities: the surtax that pays for parking amounts to more than a third of the tax that pays for education, health, libraries, police, social services, and transportation.³⁰ Yet developers pay

²⁷ Shoup (1999a,b) explains how in-lieu fees reveal the impact fees implicit in parking requirements.

²⁸ $\$50,994 \times 4 \div 1000 = \204 . This impact fee for parking is higher than the square-foot cost of most buildings. The parking requirement and the in-lieu fee refer to their values in 2003. In-lieu fees reflect only the cost of *constructing* parking spaces, which also have operating costs for cleaning, lighting, repairs, security, insurance, and property taxes. If the capital cost of providing an on-site parking space is as high as the city’s in-lieu fee, developers who provide their own spaces will pay more than the impact fees calculated here.

²⁹ $0.28\% \div 0.741\% = 0.38$. The tax base for these tax rates is the “full cash value” of real property. These rates apply to Fiscal Year 2002. This information is available on Montgomery County’s website at (<http://www.co.mo.md.us/>). This parking surtax understates the tax rate on buildings alone, because the parking surtax applies to both buildings and land. Suppose the assessed value is 50% land value and 50% building value. If an owner chooses to pay the 0.28% surtax on total assessed value in lieu of providing the parking spaces required for the building, this amounts to a 0.56% surtax on the value of the building, because no parking is required for the land alone. Any building (new or existing) that does not provide the required parking must pay the surtax.

³⁰ Property taxes are not, of course, the sole source of revenue for these public services.

this surtax for a simple reason: it is cheaper than providing the required parking spaces.³¹

Beyond providing public parking spaces, Montgomery County's in-lieu arrangement creates another benefit: it lets properties that pay the surtax be converted to any use, regardless of the parking requirement for that use (while the parking requirements themselves are different for different land uses).³² As a result, parking requirements no longer freeze properties into their existing uses, and the new freedom to reuse older buildings has stimulated economic development. For example, the county requires 25 spaces per 1000 ft² of floor area for restaurants (at least 7500 ft² of parking for a 1000-ft² restaurant), and exemption from this onerous requirement has been credited for the opening of hundreds of new restaurants in Bethesda, Silver Spring, and Wheaton.³³ Anyone who wants to open a 1000-ft² restaurant in a building with no parking would obviously prefer to pay a 38% property tax surcharge rather than provide 7500 ft² of parking in a commercial center with high land values. Willingness to pay the in-lieu fee suggests that parking requirements impose a heavier burden on enterprise than does a substantial increase in the property tax rate.

The high tax rates implicit in parking requirements explain their large effects on development. Consider the results found in a case study conducted when Oakland, CA began to require one parking space per dwelling unit: housing density fell by 31% and land values fell by 33%.³⁴ Conversely, another study found that reducing the parking requirements for office buildings in Southern California by 34% would increase density by 42% and increase land values by 48%.³⁵ Parking requirements impose major costs on development and create major distortions in the markets for both land and buildings. What Henry George said about abolishing taxes on buildings can also be said about abolishing parking requirements: it will eliminate a burden that "presses down upon every form of industry."

Both property taxes and parking requirements place a burden on buildings, but property taxes at least provide public revenue. What do parking requirements provide? Free parking, which skews transportation choices toward cars, adds to congestion, contributes to pollution, and plays a part in many other problems. Henry George warned about the

³¹ When businesses provide on-site parking rather than pay the in-lieu fee, they do get the benefit of the parking spaces. They will pay the in-lieu fee only when it is less than the net loss (costs minus benefits) of the required parking spaces. Because parking spaces are worth something, the cost of the required spaces must be significantly greater than the in-lieu fee before a business would pay the fee.

³² Off-street parking requirements have different meanings for new and existing buildings. For a new building, parking requirements determine the number of spaces that a developer must supply. For an existing building, parking requirements limit the uses that a city will allow. By eliminating the restrictions that off-street parking requirements place on the use of buildings, Montgomery County's in-lieu fees permit many more uses for existing buildings.

³³ Sec. 59-E-3.7 of the Montgomery County Zoning Ordinance: "Twenty-five parking spaces for each 1,000 square feet of floor area devoted to patron use within the establishment and 15 parking spaces for each 1,000 square feet of ground area devoted to patron use on the property outside the establishment."

³⁴ Shoup (1997).

³⁵ Willson (1995).

harm done by taxes on buildings, but parking requirements tax buildings and use the revenue to subsidize driving. The harm here is even greater.

6. What would Adam Smith say about charging for curb parking

Although parking fees are user charges, not taxes, we can evaluate them according to the traditional criteria for judging a tax. Economists from Adam Smith onward have recommended various ways to evaluate the tax structure, but none differs greatly from Smith's four maxims.

- (I) The subjects of every state ought to contribute towards the support of the government, as nearly as possible, in proportion to their respective abilities.
- (II) The tax which each individual is bound to pay ought to be certain, and not arbitrary. The time of payment, the manner of payment, and the quantity to be paid, ought all to be clear and plain to the contributor, and to every other person.
- (III) Every tax ought to be levied at the time, or in the manner in which it is most likely to be convenient for the contributor to pay it.
- (IV) Every tax ought to be so contrived as both to take out and to keep out of the pockets of the people as little as possible, over and above what it brings into the public treasury.³⁶

Curb parking revenue excels on all but the first criterion (ability to pay), and it partially satisfies even that because those who cannot afford a car do not pay anything. As for the second criterion (certainty and transparency), market prices for parking are certain rather than arbitrary, and the amount, time, and manner of payment are clear to everyone. Regarding the third criterion (convenience), motorists pay for curb parking in small amounts throughout the year, rather than in lump sums once or twice a year (as with the property tax). Also, curb parking revenue performs exceptionally well when judged by the last criterion (efficiency). The cost of collecting curb parking revenue is often no more than 10% to 20% of the gross revenue paid by motorists—the other 80% to 90% is net revenue to the city.

Because market-priced curb parking eliminates cruising, it saves motorists' time, and reduces traffic congestion, air pollution, and fuel consumption. These non-revenue effects of charging for curb parking differ greatly from those of most taxes, which are a drag on the economy. Several economists have estimated that each extra \$1 raised by taxation increases other costs in the economy by about 30%.³⁷ Market-priced curb parking can thus

³⁶ Smith (1776 [1937], 777–778).

³⁷ Drèze (1995, 114) explains the “marginal cost of public funds.” Taxes that distort prices reduce efficiency and create a “deadweight” loss, which increases the cost of the tax revenue to the economy. The “marginal cost of public funds” is greater than an extra dollar of tax revenue because it includes the estimated deadweight loss associated with the higher tax rate. Hamond et al. (1997) describe the double dividend created by shifting the tax burden off “goods” like work and saving, and onto “bads” like pollution and waste.

increase efficiency in two ways: first by reducing the cost of transportation, and second by raising enough revenue so that cities can reduce taxes that distort the incentives to work, save, and invest.³⁸

7. Revenue potential of curb parking

We can estimate the revenue potential of curb parking in three ways: the revenue per curb space, curb parking revenue as a share of total land rent, and curb parking revenue's ability to finance public improvements.

7.1. Revenue per curb space

The ground beneath our wheels is quite valuable, because, even at modest prices, curb parking can earn substantial revenue. At a price of \$5 a day, one curb space yields \$1800 a year.³⁹ In comparison, the median property tax for owner-occupied housing units in the US was \$1188 in 2001.⁴⁰ Many houses have two curb spaces in front, so curb parking revenue can easily exceed (and perhaps even replace) the current property tax revenue in neighborhoods where parking demand is high.

The cost to construct an off-street parking space suggests the potential revenue from curb spaces. To pay for itself, a parking structure must earn enough to cover the cost of constructing and maintaining the new spaces. Smith (2001) estimates that the capital-plus-operating cost per space for an unattended aboveground parking garage is at least \$5 a day (\$150 a month, or \$1800 a year).⁴¹ Structured spaces should therefore earn at least \$5 a day to justify their cost. Because most drivers will park at the curb if it is cheaper than off-

³⁸ This rationale for market-priced curb parking is similar to the one that William Vickrey (1967, 136) offered for congestion tolls: "Given the serious financial plight of many urban governments, it would perhaps be desirable to use added charges on urban vehicular users to provide an appropriate source of additional funds. This would on the one hand be free of the baneful economic impact of most other revenue sources, such as taxes on property improvements or sales taxes, and on the other constitute a local resource more conducive to economical use of the proceeds than grants from larger jurisdictions, the spending of which is more often decided upon without adequate consideration of the tax consequences."

³⁹ For example, the meters in the Old Pasadena parking meter district of Pasadena, CA yielded net revenue of \$1712 a year in 2001. Gross revenue was \$2096 per meter, and all expenses (capital and operating) were \$383 per meter.

⁴⁰ Property tax revenues are reported in the *American Housing Survey for the United States: 2001*, Table 1A-7, "Financial Characteristics—All Housing Units" (United States Census Bureau 2001).

⁴¹ Smith (2001, 24 and 27) shows that structured parking is cheaper than surface parking only when the price of land is more than \$30 per square foot. At a land price of \$30 per square foot, the cost of both surface and above-ground structured parking are equal at \$12,000 per space. If land is worth less than \$30 a square foot, surface parking is cheaper than structured parking. Therefore, it makes economic sense to build a parking structure only if a parking space is worth more than \$12,000, and she estimates that the capital and operating cost of a structure that costs \$12,000 per space is \$150 per month. She also says a common rule of thumb is that the first level of an underground parking structure costs 1.5 times the above-grade costs, with the multiplier doubling for each additional underground level.

street, curb parking spaces should be able to earn at least \$5 a day before it pays to build off-street structured parking.⁴²

If the interest rate is 5% a year, one curb space that yields \$1800 a year has a capital value of \$36,000.⁴³ Because a typical curb space is 160 ft², its value would be \$225 per square foot of land. To put this value in perspective, a small 5000-ft² residential lot that is worth \$225 a square foot would sell for \$1.1 million.

Condominium parking spaces also show curb parking's revenue potential. The *New York Times* wrote with amazement about the high price of these spaces in Manhattan and Brooklyn.⁴⁴ For example, consider a building on Greenwich Street in TriBeCa, which was built in 1897 as a lantern factory, and was converted into condominium apartments and parking in 1996. The parking spaces range from \$45,000 to \$80,000, and on top of that owners pay maintenance charges of \$75 to \$130 a month. Most people are staggered by these prices, which seem outrageous—after all, anyone can park free on the street. Small wonder, then, that Manhattan drivers cruise for curb parking: they have a chance to get, free, the most expensive space conceivable for storing a car.

Market prices for off-street parking spaces are also high in other cities. The *London Sunday Times* reported that a former hotel in Knightsbridge was being converted into apartments, with prices ranging from £500,000 to £1.75 million. The marketing director said that one underground parking space was available for each apartment: “We’re valuing them at £35,000 and selling them separately because not everyone wants one.”⁴⁵ Small wonder, again, that not everyone wants a parking space when the price is £35,000 (\$56,000).

7.2. Revenue as a share of total land rent

A standard curb parking lane is 8 ft wide. We can thus compare the area of a parking lane with the area of the land that it fronts. Where property lines extend 160 ft back from the street (a deep lot), curb parking occupies about 5% as much space as the property it fronts ($8 \div 160$). Where property lines extend only 100 ft back from the street (a shallow lot), a curb parking lane occupies about 8% as much space as the property it fronts. If market-priced curb parking yields the same land rent per square foot as the property that it fronts, the ribbons of public parking threaded throughout all cities can generate public revenue equivalent to between 5% and 8% of total private land rent.⁴⁶ Also, because cities

⁴² If curb spaces earn much *more* than \$5 a day, the revenue should justify constructing adjacent off-street spaces. The cost of constructing off-street parking should, in the long run, limit the price of curb parking. The current price of curb parking understates its full revenue potential in most cities because minimum parking requirements have increased the off-street parking supply. The ability of curb parking to produce public revenue can be seen only in cities that have never required off-street parking.

⁴³ $\$1800 \div 0.05 = \$36,000$. This is the net present value of the future revenue from a curb space. Because it is land value, there is no depreciation, and the time horizon is effectively infinite, so the capital value is the annual revenue divided by the interest rate. If parking prices increase at the inflation rate, the real interest rate should be used to discount future revenues. Five percent is a high estimate of the real interest rate, and this leads to a conservative estimate of the present value of a curb parking space.

⁴⁴ “For Sale: Minimalist Condos, No View,” *New York Times*, July 29, 2001.

⁴⁵ *Sunday Times*, December 12, 1999.

⁴⁶ Curb parking can earn either more less rent per square foot than the adjacent land use does.

can charge for curb parking in front of land that is exempt from property taxes (such as schools, government buildings, and churches), curb parking can yield public revenue even where the property tax cannot. Curb parking spaces may therefore yield more than 5% to 8% of taxable land rent.

This 5%-to-8% estimate is approximate because it depends on assumptions that can lead to either an over- or underestimate. It is an overestimate because not all curb space is available for parking; it is an underestimate because curb spaces are also available along the sides as well as the front of a block. To obtain a more accurate estimate for one location, I measured the land area devoted to curb spaces surrounding 12 blocks in Westwood Village adjacent to UCLA, and compared it with the land area (excluding sidewalks and alleys) within these blocks. The ratio of curb parking to privately owned land was 5.1%. If market-priced curb parking yields the same rent per square foot as the property that it fronts, it will in this case yield about 5% of total land rent.

The most comprehensive study of the number of curb parking spaces surrounding commercial blocks was conducted in Portland, OR.⁴⁷ Using a random sample of 129 non-residential blocks, researchers recorded the total curb length, the curb length where on-street parking was allowed, and the remaining curb length where parking was prohibited (driveways, bus stops, fire hydrants, loading zones, and the like). On average, two-thirds of the total curb length was available for parking, and the remaining third was committed to other uses. The researchers also counted the number of marked parking spaces available on each block, and estimated the number of cars that could park in the unmarked curb length available for parking. On average, there were 3.3 parking spaces per 100 linear curb feet.

We can use the Portland data to make a rough estimate of the curb parking area surrounding the average block.⁴⁸ The average curb length on one side of a block was 253 ft. If the block is square (253 ft on every side), the total area inside it is 64,009 ft², and the perimeter available for curb parking is 1012 linear feet. At 3.3 parking spaces per 100 curb feet, 33 spaces are available on the perimeter. If each curb space is 160 ft² (20 ft long and 8 ft wide), the total curb parking area around the perimeter is 5280 ft², which is 8.2% of the area inside the block.⁴⁹ For every 100 privately owned blocks, then, the city owns adjacent curb parking spaces equivalent to about 8 more blocks. If market-priced curb parking yields the same rent per square foot as the private property that it fronts, it will yield about 8% of total land rent.

Although the limited data suggest that curb parking can yield substantial revenue, cities now collect almost nothing. In their survey of parking policies in 20 large metropolitan areas, *Dueker et al. (1998)* found that 51% of parking meters are located in the CBD; two

⁴⁷ [Portland Metro Regional Transportation Planning \(1995\)](#).

⁴⁸ Block length was defined by the property lines within the block, so the added curb length associated with sidewalk around the block was not included in the measure of the available curb space or of the area within the block.

⁴⁹ Among rectangles of the same area, a square has the lowest ratio of perimeter to area. If blocks are not square, the ratio of parking area to area within the block will therefore be more than 8%. For example, if the block is 100 ft on the short side and 640 ft on the long side, it will still be 64,000 ft², but its perimeter will be 1480 ft, or 46% longer than the perimeter of the square block. The curb parking space would be 12% of the area of the block. Among square blocks, the ratio of perimeter to area declines as the area increases.

cities (Houston, TX and Portland, OR) do not have them anywhere else.⁵⁰ Because the CBD is a tiny fraction of the metropolitan area, cities charge for only a tiny fraction of their curb spaces, and collect almost none of the potential land rent.

7.3. Revenue per front foot

Converting the revenue per parking space into the revenue per front foot shows the surprising ability of curb parking to finance public improvements. If the average block has 33 parking spaces on its 1012-ft perimeter, and if each space earns \$1800 a year, the block will earn \$59,400, or \$59 a year per linear front foot.⁵¹ This revenue can pay to clean and repair the sidewalks, plant and trim street trees, and provide other important public services. We can put the buying power of this revenue in perspective by comparing it to the cost of sidewalk replacement. In Los Angeles, the cost of sidewalk replacement ranges between \$10 and \$20 per square foot. Revenue of \$59 a year per front foot is therefore enough to completely replace a 6-ft-wide sidewalk in front of every property every 1 or 2 years.⁵² Because many curb spaces should be able to earn \$5 a day (\$1800 a year), they can earn enough to make substantial improvements in their neighborhood.

Demand determines the rent of land that is in fixed supply, and parking spaces are no exception. Cities can collect whatever revenue curb parking yields, and spend it in the adjacent neighborhoods. The added revenue can make the difference between poor and excellent public services. Front foot finance is a particularly appropriate way to pay for “linear” public investments, such as sidewalks, streets, sewers, and underground utilities. Charging the right price for parking is much better than leaving it free, earning no public revenue, and requiring off-street parking spaces everywhere.

8. Parking benefit districts

The curb spaces that fringe almost every block amount to between 5% and 8% of the land within the block, but cities rarely charge for curb parking. Why not? Money fed into a parking meter seems to vanish into thin air: no one knows where the money goes, and everyone wants to park free. Rather than charge for scarce curb parking, cities require off-street parking, because hiding a cost is much easier than charging people for it and having the money disappear. But to change the politics of curb parking, cities can earmark the meter revenue to pay for neighborhood public goods. Many neighborhoods will want to charge for curb parking if cities establish “parking benefit districts” modeled on the existing parking permit districts. The new benefit districts are similar to conventional permit districts because residents can park free on the streets in front of their homes, but the benefit districts differ from conventional permit districts in two ways: (1) nonresidents can pay the fair market price to park on

⁵⁰ Dueker et al. (1998, 28).

⁵¹ $\$1800 \times 33 = \$59,400$ and $\$59,400 \div 1012 = \58.70 .

⁵² If a sidewalk is 6 ft wide and the cost of sidewalk replacement is \$10 a square foot, curb parking revenue of \$59 a front foot would be enough to replace the sidewalk every year.

the streets in the district, and (2) the city earmarks the resulting revenue to finance public investment in the district.

There is a world of difference between your feeding a meter and never seeing the money again, and someone else feeding the meter and your seeing the money come back to your neighborhood. If nonresidents pay to park, and cities spend the money to benefit residents, curb parking can become a popular source of public revenue.⁵³ Residents who form a parking benefit district will be taking out a license to collect land rent.

Currently, one of the biggest potential advantages of paid parking is also one of its biggest weaknesses. Drivers do not want to pay for curb parking precisely because its revenue potential is so high: the more parking costs, the more drivers do not want to pay for it. Only by creating neighborhood interest groups that aspire to the potential revenue will cities be able to charge the fair market price for curb parking. To overcome the widespread political opposition to paying for parking, cities can return the curb parking revenue to the neighborhoods that generate it. If citizens think all the money they pay for curb parking disappears into the city's general fund, most of them will want to park free. However, if citizens know that they can charge nonresidents for curb parking and use the money to improve their neighborhood, many will support market prices for curb parking.

The politics of parking benefit districts fit into the category of “client politics” as defined by [Wilson \(1980\)](#). Wilson explained that both the benefits and costs of a public policy can be either widely distributed or narrowly concentrated, and that the distributional effects of a policy strongly affect the incentive to form political organizations and to engage in political action. Some policies produce concentrated benefits and widely distributed costs.

When the benefits of a prospective policy are concentrated but the costs widely distributed, client politics is likely to result. Some small easily organized group will benefit and thus has a powerful incentive to organize and lobby; the costs of the benefit are distributed at a low per capita rate over a large number of people, and hence they have little incentive to organize in opposition—if, indeed, they even hear of the policy.⁵⁴

We can apply Wilson's model to parking benefit districts. Neighborhoods are small, stable, place-based groups that will benefit from the new districts, and the residents have a powerful incentive to organize and lobby because they receive additional public services

⁵³ In Britain, earmarking is called “ring-fencing,” as if a fence were put around the revenue to prevent its leaking out. This is particularly appropriate description for a parking benefit district, because the earmarking is for any purpose in a specific neighborhood, not for a specific purpose (such as public transit or a tax reduction) in a large area. [Harrington et al. \(1998\)](#) found in a survey in Southern California that residents were more willing to support congestion tolls if the revenues were returned to the public as a tax reduction. If toll revenues were dedicated to paying for added public services in the corridor where the toll is collected (perhaps a few blocks on either side of a freeway), I suspect that most corridor residents would support congestion tolls: they would suffer less traffic, and they would get better services paid for by those who drive through the area. Although corridor residents do not have an unquestioned right to all toll revenue, parking permit districts already give residents exclusive rights to all their curb parking.

⁵⁴ [Wilson \(1980, 369\)](#).

paid for by parking revenue. On the other hand, nonresidents who park on the neighborhood's streets are transients who each pay a small share of the total cost and who therefore have little incentive or ability to organize in opposition. Indeed, it is the narrowly concentrated benefits and widely distributed costs that have motivated formation of the existing permit districts, which reserve curb parking exclusively for the residents. Residents also have the legitimate political power to form a parking benefit district, and nonresidents have no say in the matter. The residents' desire for local public goods at no cost to themselves will create the most effective way to overcome superficial, opportunistic arguments against charging for curb parking, such as "The streets belong to everyone" (which really means that the streets belong to motorists). Even motorists may be more willing to pay for parking if they do not have to spend time cruising for it, and can see that the revenue is used to provide services that benefit them, such as cleaner sidewalks and greater security for themselves and their cars. The principal justifications for parking benefit districts are pragmatic and political, not theoretical or ideological.

Fig. 2 shows, in a hypothetical case, how the division of curb parking revenue between a city and its neighborhoods can affect the total amount collected. The diagonal line from the lower left to the upper right shows that total parking revenue increases as the city gives a greater share of it to the neighborhoods, because increasing the neighborhood's share strengthens the political incentive to support charging for curb parking. The two lower curves show the revenues that accrue to neighborhoods and the general fund.

First, consider the lower left corner, which represents the current situation in almost every city: all curb parking revenue goes into the general fund, and nothing goes to the neighborhoods. Paying for parking seems like paying rent to an absentee landlord. Because everyone objects to paying for parking, and no one sees a direct benefit from the revenue, few voters support the idea of charging for curb parking. Instead, everyone wants the city to require off-street parking for every land use, so that spillover does not create parking shortages. In some areas, the city sets limits on curb parking duration to create turnover, but strict enforcement is difficult and unpopular. If the city keeps all curb parking revenue for the general fund, it collects almost nothing because most people oppose parking meters. The neighborhoods also get nothing. Cities in the US collected only \$1.43 per capita in net parking revenues in 1997—less than 1/2¢ per person per day—a small share of the enormous potential land rent from curb parking in a nation with 208 million motor vehicles.⁵⁵ Taking all curb parking revenue for the general fund is, from the neighborhood's point of view, a 100% tax rate that eliminates the incentive for residents to support charging for curb parking, so curb parking yields almost no revenue. "High taxes, sometimes by diminishing the consumption of the taxed commodities," Adam Smith said, "frequently afford a smaller revenue to the government than what might be drawn from more moderate taxes."⁵⁶ So too with curb parking.

⁵⁵ See US Census Bureau (2000, Table 45) for local government revenue and expenditure for parking in 1997. The US Department of Transportation, Federal Highway Administration (1997, Tables MV-1 and DL-1C) reported that in 1997, there were 207,753,660 registered motor vehicles and 182,709,204 licensed drivers.

⁵⁶ Smith (1776 [1937], 835). The lower curve in Fig. 19-2 is sometimes called a "Laffer Curve" after the economist Arthur Laffer, who is reputed to have sketched it on a cocktail napkin in 1974. See Monissen (1999) for a discussion of the Laffer Curve.

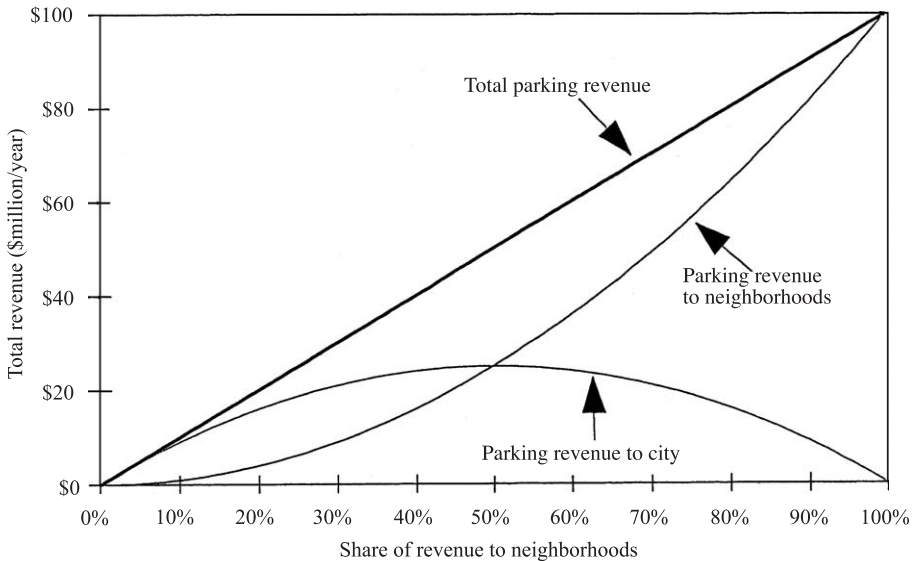


Fig. 2. Distribution of curb parking revenue.

Now, consider the upper right corner, which represents the situation where cities return all curb parking revenue to the neighborhoods that generate it. No one wants to pay for parking—that will never change—but residents begin to think like landlords, not tenants, and they agree to form parking benefit districts that charge nonresidents for parking.⁵⁷ Business owners also form Business Improvement Districts (BIDs) that use the curb parking revenue to finance public improvements in commercial areas. Market-clearing prices create curb vacancies, so the city no longer needs to require off-street spaces, and the smaller supply of off-street parking further increases curb parking prices and revenue. Since motorists who fail to pay for curb parking reduce the revenue available to improve neighborhoods, businesses and residents support enforcement of parking regulations. Because the city returns all revenue to the neighborhoods that generate it, citizens demand market prices for their curb parking, which yields \$100 million a year in new public revenue.⁵⁸

Most curb parking is free because we are to the left side of the figure: all curb parking revenue goes into the general fund, and voters think like tenants, not landlords. Obviously, the curves are only an illustration, and cities do collect a small amount of curb parking

⁵⁷ The proposal for parking benefit districts is explained in Shoup (1994, 1995, 2003).

⁵⁸ The \$100 million of revenue is hypothetical. If, however, curb spaces yield \$1800 a year, a city with 56,000 curb parking spaces will earn a total revenue of \$100 million per year. As the neighborhoods' share increases up to 50%, the revenue to the general fund also increases (revenues to the general fund are maximized at the 50% share only if the total parking revenue curve is a straight line, which it need not be). If the city and its neighborhoods split the revenue equally, they each get \$25 million a year. As the neighborhoods' share further increases to 100%, the revenue to the general fund declines to zero (the lower right corner) and the revenue to the neighborhoods increases to \$100 million a year (the upper right corner).

revenue (mostly in the CBD), even if they deposit all of it in the general fund. Likewise, cities need not earmark all curbside parking revenue for neighborhoods to generate the political support necessary for curbside parking fees. How much cities can take for the general fund without significantly reducing the incentives to charge for curbside parking is an issue more of politics than economics.⁵⁹

The oldest, densest neighborhoods do not have enough curbside spaces for all the residents (let alone nonresidents) who want to park on the street, so even the residents will have to pay for parking to avoid overcrowding the few curbside spaces available. To deal with this problem, San Francisco is considering a plan to restrict the number of resident permits to the number of curbside spaces, and to charge market rates for them. Existing permits would be grandfathered at the current below-market price, but new permits would be priced to equate demand with supply.⁶⁰ These market-rate permits can become a popular revenue source if only a few residents park on the street but everyone in the neighborhood gets better public services.

By itself, analysis that supports charging for curbside parking will not go far. Everyone wants to park free, and rational arguments to the contrary are futile. Henry George said about the opposition to land value taxation, “It is not ignorance alone that offers opposition, but ignorance backed by interest, and made fierce by passion.”⁶¹ The same holds true for opposition to paying for parking. Nevertheless, returning curbside parking revenue to the metered neighborhoods will create a countervailing interest, and incite a passion to charge for parking.

9. Similarity to special assessments

Special assessments are often used to finance the same neighborhood public services that curbside parking can finance. Residents typically petition the city to form assessment districts to finance sidewalk repairs or street lights, for example, and property owners commonly pay in proportion to their street frontage. Similarly, residents can petition the city to form parking benefit districts to finance neighborhood public services, and curbside parking will produce revenue in proportion to street frontage. One big difference between a parking benefit district and a special assessment district is who pays for it: property owners pay special assessments, while nonresidents pay for curbside parking. Monty Python urged Britain to tax foreigners living abroad, and parking benefit districts can achieve almost the same result by charging parkers who live outside the neighborhood.

⁵⁹ As Bird (1991, 268) says, “Tax reform is a political, not an economic, process. It results from the interplay of interests and actors characteristic of the political process rather than the application of the ‘rational man’ (or ‘benevolent dictator’) approach that underlies the conventional analysis of tax reform.” The same is true of parking reforms.

⁶⁰ Adam Millard-Ball (2002) describes San Francisco’s proposal.

⁶¹ Quoted in the work of Cord (1965, 27). This was from an address in 1877 to the faculty and students at the University of California, where George was being considered as a candidate for a chair in political economy. He was not offered the post, and was never invited to speak at Berkeley again.

Many cities use special assessments to finance public services, and the revenues totaled \$3.5 billion (\$13 per capita) in 1997.⁶² One simple use for curbside parking revenue is therefore to pay existing special assessments, relieving property owners of the tax burden while continuing to provide a public service that has already passed the test of a neighborhood's willingness to pay for it. Cities have the accounting systems necessary to allocate special assessment revenue for neighborhood public services, so these districts are ready-made recipients for curbside parking revenue, and require no changes in cities' standard operating procedures. In effect, a parking benefit district is a kinder, gentler version of the conventional special assessment district.

Special assessment districts are formed only after a community has decided it wants a public service enough to pay for it. The demand for a public service comes first, and the special assessment then finances it. Parking benefit districts lower the bar on a community's willingness to pay, because everyone is more concerned with problems that can be solved at someone else's expense. And even if a community has not already identified a specific service that it wants to finance, it may choose to form a parking benefit district because the money will come in, and the community can then decide how to spend it. Unlike special assessment districts, which are communities based on a common desire for a specific public expenditure, parking benefit districts are communities based on the common ownership of valuable land that can earn rent. The curbside parking stays in public ownership, but the city establishes smaller communities to manage their common land. The new communities are motivated to manage their curbside parking efficiently because all the resulting revenue pays for local public services.

10. Parking increment finance

Returning curbside parking revenue to neighborhoods will encourage businesses and residents to form parking benefit districts, but citizens elsewhere in the city might oppose diverting general revenue to finance public improvements in specific areas. In this case, can a city return meter revenues to the neighborhoods that generate it without short-changing the rest of the city? Yes, if the city returns to neighborhoods only the increment in meter revenue—above existing meter revenue—that occurs after a parking benefit district is formed.

Consider the case where a city decides to share curbside parking revenues with its Business Improvement Districts. Without losing revenue from the general fund, a city can earmark 100% of any increment in parking revenue to help finance the BID. This seems reasonable, because curbside parking revenue should increase if the BID increases local business activity. We can call it Parking Increment Finance.

Parking Increment Finance closely resembles Tax Increment Finance, which is a popular way to pay for public investment in older areas: local redevelopment agencies

⁶² US Census Bureau (2000, 4). Shoup (1990) explains how special assessments based on front-foot charges are used to finance neighborhood public investments. What neighborhood public purposes should be eligible for finance by a parking benefit district? One simple answer is any public purpose that can already be financed by a special assessment.

receive the increment in property tax revenue that results from the increased property values in their project areas. Similarly, BIDs can receive the increment in parking meter revenue that results from increased business activity in their districts.⁶³ Securing agreement to create a BID should be much easier if businesses know that every additional dollar of curbside parking revenue generated in their district will be reinvested in the area, and will finance its revitalization.

If BIDs receive only the increments in parking meter revenue, the city will keep all the parking revenue it already collects. BIDs will receive additional public services without costing the city or themselves anything, and the guarantee of existing parking revenue to the general fund will reduce political concerns about returning revenues to BIDs.

Parking Increment Finance will also give BIDs a clear incentive to install meters for previously free spaces, to charge market-rate parking prices, to operate the meters for longer hours, to create more curbside spaces with diagonal parking, and to ticket illegally parked cars. If the parking revenue increment in a district is enough to finance the district's total expenditures, businesses and the taxpayers will receive a free BID.

Parking Increment Finance differs from Tax Increment Finance in one key aspect: many critics argue that Tax Increment Finance diverts to redevelopment districts money that should go to the general fund.⁶⁴ As Mason Gaffney put it, "certain favored groups get the increment while everyone else gets the excrement." Parking Increment Finance dodges this criticism because it will generate additional revenue, rather than divert existing revenue that would have accrued to the general fund. And because cities charge nothing for curbside parking in most neighborhoods, most parking benefit districts will automatically be Parking Increment Finance districts.

Pasadena, CA dedicates curbside parking revenue to BIDs, and its experience shows the benefits of this policy. Pasadena's downtown declined between the 1930s and the 1980s, but it has since been revived as "Old Pasadena," one of Southern California's most popular shopping and entertainment destinations. Dedicating parking meter revenue to finance public improvements in the area has played a major part in this revival. Pasadena had no parking meters until 1993. All curbside parking was free, and was restricted only by a 2-h time limit. Because employees parked in the most convenient curbside spaces, and moved their cars periodically to avoid citations, customers had difficulty finding places to park. The city's staff proposed installing meters to regulate curbside parking, but the merchants and property owners opposed the idea. They realized that employees occupied many of the most convenient curbside spaces, but they feared that meters, rather than freeing up space for customers, would discourage customers from coming to the area at all. Debates about the meters dragged on for 2 years before the city compromised with the merchants and property owners. To defuse opposition, the city offered to spend all the meter revenue to pay for public investments in Old Pasadena. Businesses and property owners began to see

⁶³ Casella (1985) and Johnson and Man (2001) explain tax increment finance. For parking increment finance, the revenue for the BID will presumably be the net increment in parking revenue after deducting the cost of collection.

⁶⁴ Dardia (1998) explains that much of the total tax increment would occur without any redevelopment projects, and that Tax Increment Finance therefore diverts revenue from cities, counties, and school districts to subsidize redevelopment districts.

the parking meters in a new light—as a source of revenue. They agreed to an unusually high rate of \$1 an hour for curb parking, and to the unusual policy of operating the meters in the evenings and on Sunday. Old Pasadena became, in effect, a Parking Increment Finance District.

The city installed the parking meters in 1993, and then borrowed \$5 million to finance the “Old Pasadena Streetscape and Alleyways Project,” with the meter revenue dedicated to repaying the debt. The bond proceeds paid for street furniture, trees, tree grates, and historic lighting fixtures throughout the area. Dilapidated alleys became safe, functional pedestrian spaces with access to shops and restaurants.

Old Pasadena’s 690 parking meters yielded \$1.3 million (\$1826 per meter) in 2001. After collection costs, Old Pasadena therefore received \$1.2 million of net parking revenue (\$1712 per meter) to fund additional public services; \$448,000 went to repay the \$5 million borrowed to improve the sidewalks and alleys, and the remaining revenue—\$694,000—was spent to increase public services in Old Pasadena, above the level provided in other commercial areas. Drivers who park in Old Pasadena finance all these public services, at no cost to the businesses, property owners, and taxpayers. Giving the BID the responsibility for spending the meter money has reassured business and property owners that the city does not use it for any other purpose. To remind everyone where the money goes, the meters have stickers that say, “Your meter money makes a difference in Old Pasadena.”⁶⁵

11. Equity

Charging market-rate prices for curb parking is economically efficient, and it may become politically feasible, but is it fair? To judge whether charging for curb parking is fair, we can compare it with the alternative—off-street parking requirements that increase the prices of all goods and services. Charging for curb parking is fairer than requiring off-street parking, for a simple reason: not everyone owns a car, and households without cars indirectly pay for parking requirements in the form of higher prices for everything they buy. The 2001 National Household Travel Survey found that households with incomes less than \$25,000 a year are nine times more likely not to own a car than households with incomes greater than \$25,000 a year. Similarly, households living in a rented residence are six times more likely than homeowners not to own a car.⁶⁶ Cars are unequally distributed in the population, and charging drivers for the curb parking they use is much fairer than forcing everyone to pay for off-street parking whether they use it or not. Off-street parking

⁶⁵ See Kolozsvari and Shoup (2003) for an evaluation of Pasadena’s parking revenue-return policy.

⁶⁶ The 2001 Nationwide Household Travel Survey found that 20.3% of households with incomes below \$25,000 a year do not own a car, while only 2.3% of households with incomes above \$25,000 a year do not own a car; 17.6% of households whose residence is rented do not own a car, while only 3% of households whose residence is owned or otherwise nonrented do not own a car (United States Department of Transportation, 2003, 20). Using data from the 1991–1993 Surveys of Income and Program Participation, Raphael and Stoll (2001, 109) calculated that Black households own 0.67 cars per adult, Latino households own 0.73 cars per adult, and White households own 1.14 cars per adult.

requirements take money from the poor to subsidize the better-off: drivers park without paying, while nondrivers pay without parking.

Off-street parking requirements force everyone, including the carless, to pay too much for parking. Instead, cities can *individualize*—decollectivize—the cost of parking, so that we pay less for parking if we use less. We all want to park free, but we shouldn't elevate this wish into a social judgment that charging for curb parking is unfair, especially when we compare it with the alternative—off-street parking requirements that impose a heavy burden even on those with the least ability to pay. Almost everyone would be better off paying only for the parking they use, and not paying the high costs that off-street parking requirements impose on everyone.

The income differences between car owners and nonowners are far greater in developing countries than in the US, and the equity of charging market prices for curb parking is even clearer. Spending the revenue to provide basic public services such as piped water, sewers, and other linear public investments will thus produce far greater benefits in poorer countries than in richer ones that are already well served. Because cities can borrow against the future stream of curb parking revenue in high density areas that have a high demand for scarce curb parking, parking benefit districts should be able to finance major improvements in a short time.

11.1. Paying for parking

Skeptics may assume that paying for parking directly will segregate drivers by income, and harm the poor by reserving the best spaces for the rich. However, several factors affect choices about where to park: parking duration, the number of people in the car, and the value drivers place on saving time for a specific trip.⁶⁷ Drivers value time differently from one trip to another, and market-priced parking gives travelers a trip-specific, spur-of-the-moment ability to place a high value on their time. Poor people can be in a hurry, and drivers who cannot always afford to park in the best spaces can still choose to park in them on occasions when saving time is most important. Conversely, everyone can save on parking if they are willing to carpool or spend time walking. Market prices will make curb parking spaces readily available for everyone, everywhere, all the time, and drivers will actually choose where to park. Many people get upset when they are in a hurry and can't find a place to park even if they are willing to pay for it, so they may feel that charging for parking is fair if they can always find a space when they want it.

11.2. Lifeline pricing

To ensure the equity of market-priced curb parking, cities can offer “lifeline” credits, similar to the existing lifeline pricing arrangements for electricity and telephone service. Cities can give every lifeline-eligible citizen a minimum parking credit without charge.⁶⁸

⁶⁷ Shoup (1999a,b) presents a model of parking choice that includes parking duration, number of persons in a car, and the value of their time.

⁶⁸ Cities can use the same lifeline-eligibility criteria for curb parking as they use for other public utilities such as telephone and electricity service.

These credits will guarantee at least a minimum level of access, and those who do not own a car can use their credit to pay for parking when drivers offer them a ride. Because the city will charge for curb parking that was formerly free, the lifeline credits will not require a cash outlay, and they will transfer income from those who own cars to those who don't. Charging for curb parking and offering lifeline credits is much fairer to the poor than offering free curb parking to everyone and requiring off-street parking everywhere.

Cities can also give lifeline credits to help the disabled who need to park close to their destinations. By creating a few vacancies everywhere, market-priced curb parking should improve access for the disabled because able-bodied drivers will never "need" to park in spaces reserved for the disabled. Eliminating the rancorous disputes about illegal parking in disabled spaces should be another advantage of charging the right price for curb parking.

11.3. Revenue sharing

Charging for curb parking may seem fairer than requiring off-street parking, but the resulting pattern of public spending may be unfair. Suppose that a high-income neighborhood happens to earn ample curb parking revenue from nonresidents, while a low-income neighborhood in the same city cannot earn anything because few nonresidents want to park there. The rich neighborhood will have plenty of money to spend on its public services, but the poor neighborhood will get nothing. This seems unfair, but it may also be uncommon, because many poor people live close to the downtown areas where parking demand is high, while the rich usually live far from land uses that create spillover parking. Still, many poor families also live in neighborhoods with no prospect of earning much curb revenue, and some rich people live at high densities on streets (such as Fifth Avenue or Wilshire Boulevard) that can earn substantial curb revenue. In these cases, a form of revenue sharing can overcome the fear that allocating curb parking revenue to neighborhoods will create inequities in public spending. Rather than give neighborhoods all of the parking revenue they generate, cities use some of it for general public purpose. San Diego, CA, for example, shares parking meter revenues with its neighborhoods: 55% of the revenue goes to the city's general fund, and 45% goes to the neighborhoods that generate it. Revenue sharing can reduce the inequities in revenue generation without totally breaking the link between charging for curb parking in a neighborhood and providing better public services there. With revenue sharing, all neighborhoods will still have an incentive to charge market prices for curb parking, and the neighborhoods that cannot earn sufficient curb parking revenue will still benefit.

11.4. Takings and givings

Charging for curb parking that was formerly free may seem to be a "taking" by the community, but this is unfair only if motorists are seen to have a private right to public property without payment. Motorists have not "earned" a right to park free, and free parking is more a "giving" than charging for parking is a taking. The giving, not the taking, needs justification. Why should the community give public land to motorists for their private use without any payment? Motorists do pay gasoline taxes for the roads, but

only when their cars are moving, not when they are parked: motorists pay less in gasoline taxes the longer they park.

Charging for curb parking is much less controversial than taxing land values. It does not require any justification on the grounds that property owners receive unearned increments in land values created by the community, or that land rent is a less-than-legitimate source of private income. Charging for curb parking is not an assertion of public rights in private land; instead, free curb parking is an assertion of private rights—motorists' rights—in public land. Because the community clearly owns curb parking, the community clearly has the right to collect its rental value, just as parking lot owners collect their rental value. This is not to say that Henry George was wrong in his views that the public should tax private land values, but rather that charging for curb parking is much easier to explain and defend. A community can fairly and legitimately collect rent from motorists who park their cars on scarce public land.

12. Conclusion: the revenue is under our cars

Free curb parking creates a classic commons problem, with many resulting pathologies. Drivers congest traffic by cruising for scarce curb spaces, and the shortage of curb parking creates demands for off-street parking requirements, which then distort the markets for both transportation and land. Free curb parking and onerous off-street parking requirements show that government ownership of land does not automatically capture land rent for the benefit of society.

Every city has a few neighborhoods that are obvious candidates for parking benefit districts, and the idea can spread by example: when one neighborhood begins to finance public improvements from curb parking revenue, other neighborhoods will see the benefits, and they can petition for a similar arrangement. Benefit districts will convert the parking problem into public revenue. Parking can contribute to progress, and help to reduce poverty.

Parking benefit districts will not, by themselves, completely solve the parking problem, but we should not expect them to. No single proposal can solve a problem that creates so many conflicting interests and opinions. Nevertheless, parking benefit districts offer a strategy that will improve transportation and land use, and will generate substantial public revenue. They will maintain curb parking as community property, but each community will be small enough to create the incentives necessary for efficient management. Market-priced curb parking will also allow cities to remove the off-street parking requirements that place a heavy burden on buildings.

If we continue to do what we have always done with curb parking, we will continue to get what we now have—the “parking problem,” with all of its ramifications. Fortunately, however, we can resolve this problem if we (1) charge market prices for curb parking; (2) return the revenue to finance neighborhood public improvements; and (3) remove off-street parking requirements. No other source of public revenue can so easily bring in so much money and simultaneously improve transportation, land use, and the environment. All things considered, land rent from market-priced curb parking is the ideal source of local public revenue.

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