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The Political Economy of Private Roads

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CosaNostra Pizza #3569 is on Vista Road just down from Kings Park Mall. Vista Road used to belong to the State of California and now is called Fairlanes, Inc. Rte. CSV-5. Its main competition used to be a U.S. Highway and is now called Cruiseways, Inc. Rte. Cal-12. Farther up the Valley, the two competing highways actually cross. Once there had been bitter disputes, the intersection closed by sporadic sniper fire. Finally, a big developer bought the entire intersection and turned it into a drive-through mall. Now the roads feed into a parking system—not a lot, not a ramp, but a system—and lose their identity. Getting through the intersection involves tracing paths through the parking system, many braided filaments of direction like the Ho Chi Minh trail. CSV-5 has better throughput, but Cal-12 has better pavement. That is typical—Fairlanes roads emphasize getting you there, for Type A drivers, and Cruiseways emphasize the enjoyment, for Type B drivers. (Stephenson 1992)

Introduction

This book reflects the increasing interest in the United States and elsewhere in road privatization and alternative financing, not just by science fiction writers, anarchists, and libertarians, but also by economists and policy analysts (de Palma and Lindsey 1998, Viton 1995, Gomez-Ibañez, and Meyer 1993, Walton and Euritt 1990). With the widened attention to privatization in its many forms, one may think that private roads are just around the bend, that travelers will soon drive on commercialized streets and highways and eschew public sector arteries. While the archetypal private road may include no public involvement, most recent private efforts in the highway sector to date have either been government contracts or required government assistance. They certainly require government permission and have been subject to extensive government oversight.

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Many elements of the highway transportation system are already private. Drivers and passengers expend their own time in producing highway trips. Drivers generally own their vehicles, so those too are private. Roadside services (gas, food, lodging) are almost always private, and are necessary elements for many kinds of trips. While in some cases these may be on government owned land (rest stops on turnpikes), on most highways they are on private land. The origin and destination of the trip are also generally in the private sector; these trip generators (generation facilities) may be analogous to the generating plants in the electricity sector. What are not private, of course, are the roads themselves. These network components are at issue in the discussion of private roads. The perceived incentives for the public and the politicians they elect differ from those of economists and free marketeers. The recent (partial) deregulation fiasco in California's electricity sector will serve as cold water (an electric shock) on efforts to quickly and radically restructure the road sector. The burden of proof falls on those trying to change the status quo. Private roads must offer a significant and apparent advantage over public control. The case must be compelling, and for most places to try it, it must have been done somewhere else first. Churchill is attributed the quote, "Indeed, it has been said that democracy is the 'worst' form of Government except all those others that have been tried from time to time." Substitute "government control of roads" for "democracy" and you have the general perception that proponents of private control must challenge.

Much discussion about private roads focuses on the flexibility and choices provided to travelers (who would have the alternative of taking an expensive fast road or an inexpensive slow one). A network with largely or entirely private elements would be very different than the one we face on a daily basis. Just as deregulation of communications created radically new products and services that were unimagined at the time, divestiture of highways may do similar things. However, unlike the American telecommunications sector, streets and highways are government owned. Furthermore, highways are presently financed through gas taxes and general revenue, rather than priced according to use or a contract between service provider and consumer.

There is clearly reluctance to privatize—otherwise we would already be living in a world with private streets and highways. This chapter explores the mechanisms of privatization and the political issues that underlie our current state of affairs and a shift to a new one. While an economist would argue that *if* the total welfare gained exceeds the cost of privatization, it is a good thing and everyone wins, the more politically astute will recognize those gains will be distributed among winners and losers. The losers in particular are a difficulty, as unless they are compensated, they have no reason to lend political support to a privatization proposal, and much reason to act as a roadblock.

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This chapter first briefly reviews the history of private roads. Then the functional and economic classification of roadways is presented. This section notes the three different classes of roads will need to be treated in very different ways. The ideology of private roads is then presented. The political factors constraining this ideology from taking root are then discussed. Distributional effects associated with privatization are described, and means for using the proceeds from the sale of roads to compensate losers are shown. Prospects for the future of private roads are discussed in the conclusions.

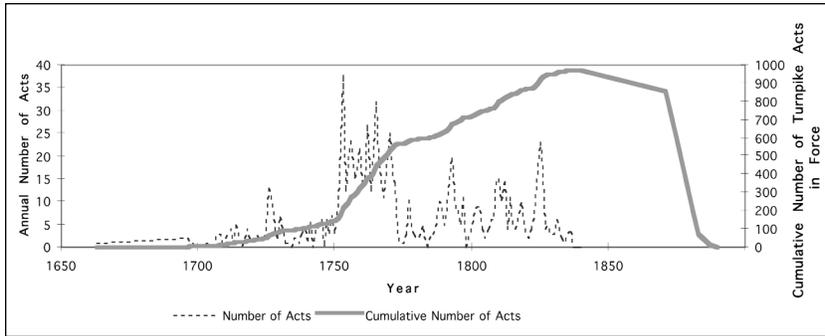
History

Two private roads garnering much publicity are SR91 in Orange County, California (discussed elsewhere in this volume) and the Dulles Greenway in Loudoun County, Virginia. Though the Dulles Greenway had some early financial difficulties, it has recently added a lane and has seen traffic levels rise significantly in the past few years. These roads may be blips in a state-owned roads sector or a harbinger of a new transportation property rights paradigm. Although building significant new private roads is clearly difficult, as illustrated by their small numbers in the United States, and new private roads are more difficult than new public ones, there are many possible models for private involvement in new roads. Building new private roads is relatively simple compared with the privatization of existing roads. Given that roads in developed countries have largely saturated the market given current technologies, it is the privatization of existing roads that promises the greatest challenges and rewards in terms of serious highway reform. However, private roads are far scarcer in the United States in the early twenty-first century than they are elsewhere in the world, and even in the United States of the early nineteenth century.

Private and public toll roads have a long history, from Greek myth (paying Charon the ferryman to cross the River Styx), to historical evidence in the ancient world. Aristotle's *Oeconomicus* notes tolls in Asian kingdoms (Pritchett 1980). *The Arthashastra*, an Indian text that presents the ideas of Kautilya, India's earliest known political philosopher, mentions tolls prior to the fourth century BC (Lay 1992). At the time of Augustus, Strabo's *Geographies* reports tolls on the Little St. Bernard's Pass maintained by the Salassi Tribe. More recently, in 1364, tolling rights were established on the Great North Road from London. In the 1650s tolls began to be established more systematically in Britain as roads in the non-toll system began to decay (Figure 4.1). This quasi-private financing system peaked in the 1840s and began to decline to almost no toll roads by 1900. The financial system evolved into a quite intricate system, with toll farmers who paid a lump sum to the turnpike trust for the right to collect

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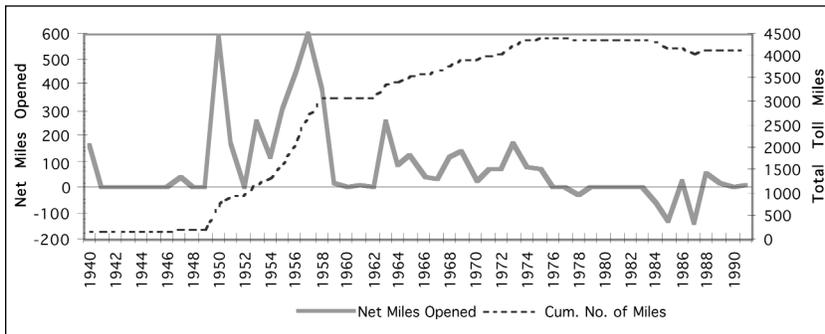
Figure 4.1
Turnpikes in Great Britain: 1650–1900



tolls on a turnpike. In the United States, turnpikes began in the late eighteenth century and lasted through the nineteenth century, but were all but eliminated by the early twentieth century. A second turnpike boom, this time entirely public sector, lasted from 1940, with the advent of the limited access highway, to 1956, when the Interstate Act was passed (Figure 4.2).

Several Western European countries (e.g., Spain, France, and Italy) established private concession to operate toll roads in the post-World War II era, though many of these were either consolidated or taken over by the national government. Eastern European Countries have followed in the post-Cold War era. Many developing countries in Asia and Latin America have also experimented with private toll roads (Gomez-Ibañez and Meyer 1993).

Figure 4.2
Toll Roads in the United States: 1940–91



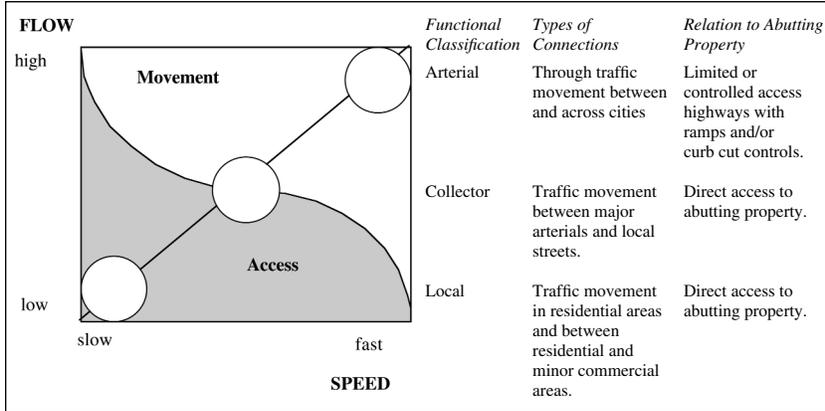
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Not all private roads are limited access highways. The oldest private street in the United States is Benton Place in St. Louis, named for Thomas Hart Benton (Lafayette Square Marquis 1998). This road was laid out across private lots, and was designed intentionally to permit property owners to control traffic and to use the road space for public activity such as children's play. Every property owner is required to belong to an association (Benton Place Association) that regulates annual assessments for maintenance of the street. This objective of local control of streets and limiting their traffic is very much in keeping with modern urban design, the Dutch Woonerf or slow street concept, and traffic calming retrofits that many neighborhoods petition their government for. The difference of course is that in this St. Louis neighborhood, the residents can choose how to use the roads themselves, rather than depend on the proclivities of a remote government. Many other private places exist in St. Louis, including Westmoreland and Portland Places. (Hunter 1988) Though this arrangement can be thought of in two ways, either as a private road or as a very local form of government (the homeowner's association), the effects are the same: local control by only the abutting property owners. However, another viewpoint holds that these private "places" are simply an attempt to barricade residents from less desirable elements (St. Louis 2001).

The Functional and Economic Classification of Roads

Roads serve two purposes: allowing individuals to access their property, and allowing them to move between places. Engineers and planners describe a hierarchy that separates the access and movement functions of a road, illustrated in Figure 4.3. At the top of the hierarchy are major roads (called arterials) that connect and cross cities, serving only the movement function. At the bottom of the hierarchy are local streets that allow residential neighborhoods to access other areas, functioning as little more than driveways. Of course, the actual network does not adhere strictly to the idealized hierarchy, but new roads, built to formalized engineering standards, do so much more than old. Developing a hierarchy of roads is not unlike other networks (airlines, electricity, natural gas, water, telecommunications) or systems of places that are built hierarchically. A hierarchy of roads has a number of advantages, including cost savings by enabling economies of scale in construction, operations, and maintenance, the aggregation of traffic (enabling economies of consumption by spreading their total cost over more travelers), reducing the number of vehicle conflicts, and contributing to the desired quiet character of residential neighborhoods.

Figure 4.3
Functional Highway Classification and Type of Service Provided



Two criteria can help classify a good as public or private: excludability and rivalry. Excludability implies that the provider of a good or service can prevent a user from obtaining it without charge. Rivalry implies that one person’s consumption of a particular good prevents another individual from consuming it. Table 4.1 summarizes the goods by type.

The properties of the hierarchy of roads are such that a road’s suitability for privatization depends very much on its position on the hierarchy. There are three different models that are appropriate to examine further: private, “congesting,” and club. Roads should be considered public goods only if they are neither excludable (either technologically or legally), nor rivalrous. It is clear roads do not continuously constitute such “pure” public goods. While roads may be public for short time periods, when they are non-rivalrous, these same roads exhibit rivalry at other times. Unfortunately, we can’t generalize: Roads at different places on the hierarchy at different times exhibit different characteristics.

Table 4.1
Defining Public, Private, Club and “Congesting” Goods

Excludability			
Rivalry	Yes	Yes	No
	No	Private	“Congesting”
		Club	Public

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At the top of the hierarchy, arterials, such as intercity freeways, can potentially be competitively provided by private firms. Intercity roads can be excludable, because they do not serve land access; they serve only the movement function of roads. As they are limited access, tracking entry and exit is not financially or technically difficult. They are also rivalrous. When there is congestion, my consumption of scarce space at a bottleneck at a given time prevents you from doing so: Only one car can occupy a particular piece of the roadway at a particular time. Economists consider goods that are both rivalrous and excludable to be private goods.

On long distance trips, there are often multiple routes an individual can take. Thus the spatial monopoly aspects of these roads are limited by competition. Further ensuring that there is no price discrimination based on origin or destination (e.g. only allowing prices to vary by distance traveled on the roadway, vehicle type, congestion level, time of day, day of week, or month of year) will help further eradicate monopoly powers. Many countries have private intercity roads, and in the United States, many states have turnpikes, which while publicly owned, are more readily privatized than other roads. This layer of the road hierarchy is analogous to the long distance telephone providers, national airlines, Internet backbone, and natural gas pipeline companies, all of which competitively provide network services.

In the middle of the hierarchy, the collectors, usually controlled by local governments, and still serving a land access function for commercial and some residential properties, are the trickiest problem. These roads are not easily excludable, as there are frequent intersections and access points. On the other hand, they are rivalrous, as they are subject to congestion; hence the need for traffic lights. They can thus be considered “congesting” goods. Because of economies of scale, it is not likely that each road segment (each block) could be separately franchised, or even that the full length of a collector road could easily be franchised given the amount of overlap with other cross-streets it would face. However, a community could divest itself of all collector roads as a franchise. Thus, a utility model may be appropriate to consider here. Under this scheme, collector class roads could be converted to publicly or privately owned utilities subject to significant government regulation or oversight (Kahn 1988, Train 1991).

At the bottom of the hierarchy are local streets, the equivalent in scope and distance to the “last mile” discussions often facing local telephony and cable TV companies. Local streets are excludable—witness the gated community—but are seldom rivalrous, as there is little congestion. Thus they may be subject to privatization as a club (Cornes and Sandler 1996, Buchanan 2001). The example presented earlier of the private streets in St. Louis may serve as a model. Many multi-family and townhouse complexes already manage local

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streets, though they are called driveways. The implications of a club model are extensive, but in particular control would be localized and use of those roads would be limited to trips beginning or ending with the club's domain. Thus some non-local traffic would need to switch to collector roads.

These three models are instances of a broad spectrum of possible private involvement. The degree of private versus public involvement is described in detail in Table 4.2. The level of private responsibility in roadways ranges from private sector contracting to provide specific services (design, operations, and maintenance) for a publicly owned roadway to full private ownership of the road.

The Ideology of Privatization

The full gamut of public and private involvement in roads suggests broad legal flexibility. Early U.S. federal involvement in transportation was based on the idea of *post roads* to improve domestic communication, and later involvement, particularly the interstate highway system, was justified on national defense grounds (its official name is the National System of Inter-

Table 4.2
Realms of Public and Private Involvement

Public  Private	Government	Federal Government State Government	Arterial Roads Collector Roads Collector Roads Local Roads	
	Utility	Local Government Homeowners Association Transfer to Quasi-Public Authority	<i>Local Roads</i> <i>Collector Roads</i>	
	Outsourcing	Service Contract Management Contract	Operations and Maintenance Design, Build Design, Build, Major Maintenance Design, Build, Operate	<i>All Publicly Owned Roads</i> <i>New Arterial Roads</i> <i>(in areas unwilling to give up full control)</i>
	Franchise	Project Franchise	Lease, Develop, Operate Build, Lease, Operate, Transfer Build, Transfer, Operate Build, Operate, Transfer Build, Own, Operate, Transfer Build, Own, Operate	<i>New Arterial Roads</i>
	Divestiture	Private Entrepreneurship	Buy, Build, Operate Buy, Operate	<i>Existing Arterial Roads</i>

Note: *Italics* indicates suggested ownership/management structure.

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state and Defense Highways). Article 1, Section 8 of the Constitution gives the federal government an explicit role in highway transportation:

The Congress shall have power to lay and collect taxes, duties, imposts and excises, to pay the debts and provide for the common defense and general welfare of the United States; but all duties, imposts and excises shall be uniform throughout the United States; . . . To establish post offices and post roads; . . .

Of course, just because the federal government has the constitutional power to do something does not require it to do so. Madison, Monroe, and Jackson all vetoed road bills. From a legal-constitutional perspective, one can argue that at a minimum, there exists no constitutional prohibition on private roads, and perhaps there should be some government reticence to be involved in this sector. The Ninth and Tenth Amendments support this view:

Amendment IX

The enumeration in the Constitution, of certain rights, shall not be construed to deny or disparage others retained by the people.

Amendment X

The powers not delegated to the United States by the Constitution, nor prohibited by it to the states, are reserved to the states respectively, or to the people.

The Libertarian Party platform (2000), for instance, states: “Government interference in transportation is characterized by monopolistic restriction, corruption and gross inefficiency. We therefore call for the dissolution of all government agencies concerned with transportation. . . . We call for the privatization of . . . public roads, and the national highway system. . . .” This assertion of monopolistic restriction, corruption, and gross inefficiency is a thesis that requires empirical corroboration or refutation. It also begs the question of whether private sector control would also be similarly characterized by monopoly, corruption, and/or inefficiency. Because the advocacy of the dissolution of government involvement in transportation is not a widely held belief, significant work will be required before the libertarian position, or even a more moderate privatization argument, becomes mainstream.

The first claim is that government interference in transportation is characterized by *monopolistic restriction*. Certainly, just as there used to be one phone company there is only one state road agency. Different layers of government may be responsible for different layers of the hierarchy of roads, but there is an almost seamless transition between those layers, and no incentive for competition between roads or layers of government to attract traffic or revenue.

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Local governments are rather keen, for good reason, to minimize traffic on their local streets and push it to roads that are under the management of a different layer of government. While traffic on commercial streets is not viewed as a problem (it aids local merchants), traffic on residential streets is undesired.

The viewpoint government agencies hold is that of managing the flows on the network centrally as much as possible to even out traffic and mitigate congestion. Traffic signals and other control devices on collector roads are common, and are often centrally managed to the benefit of most travelers. The case demonstrating the success of freeway management is still open. Nevertheless this evidence of central management further corroborates the claim that roads are monopolies. That only two private roads of significance have been built in the United States in the last century supports this claim. Given that roads are monopolies, we must then ask if this is a problem or a requirement.

Is road transportation a “natural monopoly” at some level? On local streets, only one road provides access to a particular origin or destination. Roads have a physical and undeniable monopoly. The issue becomes who can best own and manage that monopoly. On collectors, there may be some alternative routes, but the tight integration of streets, the difficulty of excluding traffic, and economies of scale probably suggest that those streets too are a natural monopoly. But again, it may not require government ownership—simply oversight. Arterials have the most potential for independent competition, and the framework for privatizing these highways has already been established internationally.

The second libertarian claim is that government interference is characterized by *corruption*. While, as with any sector, there are the occasional illegal activities, the question is whether transportation is exceptional. Perhaps the place it is most exceptional is in terms of what are called “pork barrel” projects. The earmarking and special projects in the federal surface transportation bill, a transportation reauthorization bill, are well documented. But TEA-21 constitutes only a small portion of total earmarks, which are further made by the Transportation Appropriations Subcommittees (Utt 1999). The ethics controversy surrounding the recently retired chairman of the House Transportation and Infrastructure Committee, Bud Shuster, have also been well documented, and led to a rebuke by a House Ethics panel (Washington Post 2001). Whether, as Lord Acton (1887) says, “Power tends to corrupt and absolute power corrupts absolutely” will be left to the reader’s judgment and understanding of human behavior.

The third claim is that government involvement leads to *gross inefficiency*. The strongest case for gross inefficiency in the highway sector is the daily congestion seen on limited access roads in large cities, and its rise over time. Because people’s individual private cost of traveling on unpriced roads is less

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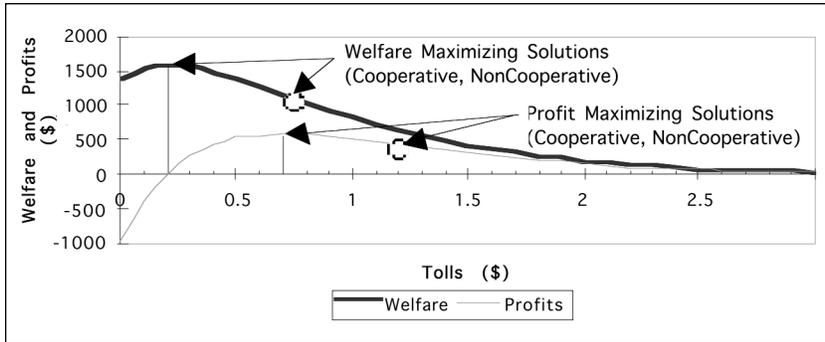
than the cost they impose on others, people don't bear the full cost of their trip, and rather make decisions based on the subsidized price. Travel in the peak hours is over-consumed, as is the case with many subsidized goods. The solution advocated by most transportation economists is road pricing. Road pricing may be a necessary prerequisite for full privatization, but it may be that privatization is also a prerequisite for widespread pricing on existing roads. The degree of inefficiency varies from place to place; perceptions are relative. Intolerable congestion levels in one city may be a pleasant drive to the park in another.

However, for the case to change from public to private control to be compelling, the argument must be made that private control would not be characterized by Monopoly, Corruption, or Inefficiency. Starting with inefficiency, a private firm has the incentive to maximize profits. So while public control may be characterized by under-pricing and over-consumption (congestion), the fear is that private control would be subject to over-pricing (and under-consumption), particularly if there is imperfect competition. We can call over- or under-pricing a short run inefficiency, in that it is an inefficiency in price, given the size of the network. Short run inefficiency does not depend on whether the network is optimally sized or not. The opportunity for firms to price discriminate (much as airlines do) is an important element here. The related issue is thus monopoly power. If local and collector roads are natural monopolies, the same complaint against the public sector holds on the private sector. Competition must be safeguarded through antitrust and other pro-competitive laws and regulations. Adam Smith (1776) wrote, "People of the same trade seldom meet together, even for merriment and diversion, but the conversation ends in a conspiracy against the public, or in some contrivance to raise prices." Whether such collusion is explicit, or implicit and never spoken, clearly there is some cause for concern. Markets function best when no producer or consumer is sufficiently sized, or can collude, to affect the price.

The corruption argument, or long run inefficiency in the construction of pork-barrel projects, is probably the easiest case to make in favor of private control. While government may be over-building in some places (due to pork) and under-building elsewhere due to a lack of a price signal or market incentives, firms have the incentive to add capacity so long as their marginal benefit exceeds marginal cost. This incentive is further enforced by the discipline of financial markets. However, monopolies will not necessarily result in an appropriately sized road network. So the long run efficiency benefits associated with private control depend on there being competition, or at least potential competition.

Private, unregulated toll roads will charge profit maximizing prices (otherwise what is the incentive for private investors?). In the absence of strong competition, those prices will be higher than optimal "welfare maximizing" prices. This is shown in Figure 4.4, adapted from Levinson (2001). There are two

Figure 4.4
Welfare, Profit, and Tolls



curves, one that shows the welfare resulting from various tolls posted at a frontier between two jurisdictions (for instance a bridge at the state line), the other showing the profits from those tolls. The profit maximizing toll is higher than the welfare maximizing toll. However both welfare and profits depend not only on the decisions that the toll agency or private road make, but also on the decisions made by the adjacent toll road. If the adjacent road charges more, demand, and thus welfare and profits decline. However with cooperation between the two agencies or between the firms (or between an agency and a firm), everyone can benefit. This problem is the classic case of the serial monopolists discussed by Chamberlin (1933).

The issue of profit maximization and monopoly has another aspect as well. A firm building a new private road, or buying a road from the government, will want to maintain a monopoly position and discourage competition. They may try to insert non-compete clauses into their contracts with government agencies, ensuring the government won't build a competing road or allow other firms to do similarly. The absence of a clause may mean the new road is not built (or an existing road can't be privatized), but the presence of the clause diminishes the benefits to the public of private involvement, the creative dynamism and price and service competition, in the roads sector. In fact, this has become an issue with SR91 in Southern California, where the public sector prohibition from expanding the congested parallel road led to a public takeover of the private toll road. Patents may be a useful analog here: Some monopoly profits are awarded to inventors to encourage high-risk ventures; a non-compete clause of a finite duration may have a similar effect. But similar controversies may arise: For instance, people in poor countries cannot afford

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needed medicines still under patent protection. Some mechanism for buying out the non-compete clause or compensating the private firm for lost revenue if the clause is canceled may be necessary so that the government does not resort to eminent domain and reverse the privatization cycle.

However, such pricing is not necessarily the sole province of private roads. Publicly held toll roads with monopoly power may also charge more than welfare maximizing prices. Public toll authorities have an obligation to maximize the benefits for their owners—the taxpayers in their home jurisdiction—much as private toll roads must satisfy shareholders. While there are principal agent problems all around (do bureaucrats or managers really serve their organization’s mission or their own?), the nominal motivations are the same. However, the implications are that to maximize the welfare for its own residents, a jurisdiction must, in a sense, exploit the residents of other states. The more revenue that can be garnered from non-residents, the higher the welfare of residents (a real instance of Monty Python’s ideal policy of “taxing foreigners living abroad”)¹ This suggests that jurisdictions are not much different from private firms. Empirical evidence supports this hypothesis of jurisdictions playing “beggar thy neighbor” games. Levinson (2001) finds that the more workers a state imports daily, the more revenue it collects from tolls as opposed to taxes.

Unless and until the arguments in favor of private roads are convincing to a large majority, government interference in and ownership of major highway facilities is unlikely to change. It will not simply be sufficient to argue that private control would be more efficient than public control. Politically significant distributional issues must be addressed.

Identifying and Managing the Distribution of Gains and Losses

A number of actors fill the stage when considering the privatization of roads. Three or more layers of government have a say in the matter, depending on the rank of the road in the hierarchy. The federal government will definitely have opinions on the privatization (or even the tolling) of any interstate highway built with federally collected gas taxes. The federal government may argue under current law that states selling such roads would have to compensate the federal government for their financial contribution. The valuation of that contribution will inevitably be a political decision. Smaller jurisdictions might also be concerned that the access prized by their residents would be reduced if the cost of using a facility were to rise, or if a private firm could delete (or add) interchanges affecting local travel patterns. Similarly, states would have a say should a locality decide to privatize collector roads that received any assistance from state based revenue sources. The group with the most at stake however

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is the traveling public. And the impact on travelers depends very much on the kind of road privatization that is undertaken.

As noted earlier, there are different stages of privatization. Contracting out highway services, while maintaining government ownership and a no-toll status, has little apparent impact on travelers, although will certainly be resisted by the government agency whose services are no longer required. However there are three more significant stages of privatization of limited access arterial class highways that need to be addressed.

The first case is *building a new private road*. The implications for this type of private involvement depend in large part on the alternatives. Would the road have been provided by the public if not by the private sector, or is the road above and beyond what the public sector would have produced? If the public sector were not going to produce the road, there are few grounds for complaints by either the public sector agencies or by travelers, who can now save time, and it would appear that all travelers are winners. Environmental groups may still have differences with the road, especially if the road does not fully internalize its environmental impacts or increases pollution, and neighbors may be annoyed with the noise from the new road. Landowners may support the road if they voluntarily enter an agreement to sell their land, or are given access to the road, but not if the land was taken by the government and then resold to the private sector.

Case 2, *privatizing (and tolling) an existing (congested) free road*, has the most pronounced effects. Because the road had been under-priced, there was congestion, thus privatization that imposes tolls and thus congestion relief should benefit travelers with a high value of time, even if there is over-tolling

Table 4.3
Distributional Effects of Three Privatization Schemes
for Limited Access Arterials

Value of Time	Case 1: Construction of New Private Road	Case 2: Privatization of Existing (Congested) Free Road (Tolls from 0 to Profit Max.)	Case 3: Privatization of Existing (Uncongested) Toll Road (Tolls from Welfare Max. to Profit Max.)
High	Winner	Winner	Loser
Medium	Winner	?	Loser
Low	Winner	Loser	Loser

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and under-consumption after the price imposition. This case also leads to the argument of “double taxation.” Travelers will feel that they paid for roads with gas taxes and now they are being asked to pay again with tolls. Properly informing travelers of the benefits, for instance by distributing shares in the private toll companies, is likely to be important in overcoming this perception.

Oddly, the easiest case to implement, Case 3, the *privatization of an existing toll road*, has primarily negative effects on travelers. Assuming tolls were previously set at or near welfare maximizing levels, the road would be relatively uncongested. Privatization would result in the objective switching to profit maximizing, and thus higher toll levels, as shown in Figure 4.4. Because there is little if any congestion reduction for the additional toll, most travelers are worse off (except those with a very high value of time). The state, or the public, would gain revenue from the sale of the road, which could be redistributed.

If losers can be identified, a community has two choices: compensate them or not. Many economists oppose compensation because it provides incentives for inefficient behavior (rather than avoid or prevent an externality, a compensated individual may choose to embrace the externality and the associated compensation). Politically it may be necessary to create a working consensus. Compensation may be achieved in a number of ways. First, the remedy may occur on an everyday basis, through subsidies for other transportation modes, or by discounts, or some other daily mechanism. Alternatively, the compensation may be undertaken as a one-off expense, by ensuring that the classes of losers on a daily basis from privatization are compensated by being given a greater share of the private road concern, or by being given a larger share of the proceeds from such a privatization.

Suppose the political will has been gathered in favor of privatization. There remains a complex decision tree regarding the means for this program. The public can choose to (A) sell shares in the company to investors, or (B) distribute shares in the company to residents. If it decides to sell shares there are several choices to concerning the proceeds. The public may (1) keep the proceeds to pay off debt, (2) keep the proceeds to provide some other public services, or (3) return the proceeds to taxpayers. If proceeds are returned to taxpayers, then the question is how? Proceeds can be redistributed in accordance with payment for the roads (try to rebate the gas tax somehow), or in accordance with income, or as a lump sum to current residents.

Similarly, if it chooses (B), to distribute shares, rules must be established that are not necessarily going to be universally agreed upon. Because interstate roads were paid for with gas taxes, it can be argued that those who paid those taxes have the greatest claim on the share in the road, while a transit user, who paid no gas taxes, has little claim. Alternatively, it may be fairer just to give

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1 share per person, or 1 share per household, or 1 share per taxpayer, or 1 share per year in the state, or some other formula only a politician can imagine.

The point is not that there is some right formula, but rather that there is no formula that will be universally agreed to. Any formula will have to address a number of political issues, including compensation of the clear losers from road privatization. This may not prove a fatal flaw in privatization efforts; certainly privatization has occurred in other countries and other sectors. However, it is a political hurdle that must be thought through before any successful privatization effort will take place.

Conclusions

Private roads will be more popular for expansion of the existing highway network than as privatization of public roads. This is because of the distributional issues involved, and who perceives themselves as winners and who as losers. Though revolutionary shocks have been known to happen in history, privatization is unlikely to be wholesale or rapid. There are many vested interests in the way between the current state ownership and privatization. Privatization will probably occur in steps: continued devolution of powers from higher to lower levels of government (ultimately down to the homeowner's association), competitive contracting out for services previously provided by government agencies, allowing new roads to be built with private money, and converting existing toll roads to electronic toll collection. While tolling is often considered a congestion reduction mechanism, many people who still see or recall excessive placement of manually operated toll plazas view tolling as a cause of congestion. This old image, needlessly fostered by agencies slow to change to electronic toll collection, will need to be eradicated before there is even lukewarm support for the idea. With a new view of how tolls operate, selling shares in existing toll road agencies, rather than removing those tolls, becomes a realistic possibility.

Once all of these preliminary steps are undertaken, we are still left with the vast network of roads under state control. An important stage in the commercialization of roads will be the replacement of the gas tax with tolls or similar user fees. Why would states or the federal government do this? Several scenarios jump to mind, relating to environment, technology, financing, and congestion. Environmentalists and economists have long advocated internalizing the social costs of the automobile (in particular, the costs of air pollution). Environmentalists have also advocated replacing the internal combustion engine with low or "zero" emission vehicles, that is, replacing the vehicle powerplant from one that is fueled by gasoline to one fueled by other sources (or fueled on much less gasoline than conventional engines), which would greatly

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crimp the revenue available from the gas tax. Finally, congestion does not appear to be getting any better in the absence of tolling. These all argue in favor of usage fees such as place and time specific electronic tolls. By the time this tolling framework is in place, privatization is not such a large leap.

Note

1. The reference was suggested by Brian Taylor of UCLA.

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