

# Congestion Pricing: Traffic and the Market

by John Semmens

## What is Congestion Pricing?

**T**raffic congestion is a serious problem in cities today. Road capacities that are more than adequate for most of the day become inadequate during peak periods. Vehicles pile up in lengthy queues. Fuel and time are wasted.

In Southern California an additional 70 million gallons of gasoline is wasted every year due to congestion. According to the Reason Foundation, 500,000 person-hours per day are consumed while vehicles are stuck in traffic. The Brookings Institution puts the national cost for the time wasted in traffic at \$5 billion per year. Further, vehicles stuck in traffic contribute to air pollution.

With congestion pricing, vehicles using the roads during the peak periods would be charged a fee. The prospect of having to pay a higher price should dissuade some drivers from using the roads during those periods. In addition, the revenues raised could be employed to fund added roadway capacity.

## Why Should We Use Congestion Pricing?

Putting a price on the scarce peak period roadway capacity allows individuals to evaluate the benefit of using the roadway and then to choose whether to pay the cost. Use of a pricing mechanism promotes efficiency. Roads will be used by those who place the highest value on them. Use of a pricing mechanism also promotes equity. Those who benefit will be required to pay in proportion to their benefit. None of the other congestion mitigation alternatives is as efficient or equitable as this simple one — charge a fee for peak period use.

Let us look at some of the most frequently invoked alternatives. Most of them focus on work trips, because peak traffic periods are typically times when a lot of people are headed to or from their

jobs. So we are urged to carpool, etc. But not all peak period trips are work commutes. In Southern California, for example, over 60% of peak period trips are NOT work related. The numbers from Phoenix, AZ show that non-work-related travel is roughly 60% in the AM peak and 70% in the PM peak. Since congestion fees would relate to all peak period traffic they would retain their deterrent effect for non-work trips.

Government-mandated trip-reduction measures make no allowance for the different values of different trips. Congestion pricing, on the other hand, would allow each prospective road user to determine for himself the relative value of his planned use of the roadway compared to the size of the congestion fee he would have to pay. Congestion pricing, consequently, would tend to encourage the higher-valued uses, which would prevail over the lower-valued uses.

When access to roadways during peak periods is not priced it is a scarce resource which is consumed in large quantities by people who have a low value of time. Those most able to endure the costs of wasted time are enticed into the traffic stream. This cost in wasted time, unfortunately, cannot be converted to any useful end. But the wasted time would be saved were congestion pricing employed, and the fees paid for use of the roadway could be invested in useful products or services.

There is a name for enterprises that generate a large surplus of revenues over costs. It is "profitable". If roadways were profitable, that fact would encourage the creation of new roadways, increasing competition for the patronage of drivers and gradually forcing the congestion price down.

Anybody who uses the roadway during the peak period is imposing a considerably higher cost both on the highway agency and on society than someone who uses the roads during an

uncongested hour. He is demanding additional expensive capacity and maintenance from the highway agency, and he is delaying other drivers while imposing air pollution upon society at large. Congestion prices place the larger burden for paying for highways on those users who cause the need for expensive peak period capacity. That is why we can safely say it is the most equitable means for funding an expansion of that capacity.

Economists are virtually unanimous in their support of pricing as the most effective approach to the problem of congestion. They recognize the limits of non-pricing methods, in terms of the percentage reduction in traffic each approach would produce. The maximum impact of ALL non-pricing methods combined may be no more than a 5% reduction in peak-period traffic volume. In contrast, says the Brookings Institution, congestion pricing could easily reduce traffic by 25%.

## Who Uses Congestion Pricing?

The highway agency, usually in the public sector, is not the only business that faces capacity constraints. Movie theatres, for example, have a large investment in a fixed amount of space. The value of any seat left empty for any performance is highly perishable, yet the demand to see movies (like the demand to drive on the road) varies from hour to hour over the course of the business day. Most people prefer to see movies in the evening. A uniform pricing policy for all times of the day would produce heavy evening congestion and a resultant loss of sales. Meanwhile, seats would remain empty for the afternoon and dinner-time showings. The remedy private business always employs in this situation is to vary the price by the time of day. Those who shift their demand, who are willing to take in the matinee, are rewarded with a discount. Looked at another way,

*continued on page 6*

continued from page 3

those who insist on seeing the movie in the evening pay the premium price. The eater becomes a profitable enterprise and the interests of the largest possible number of consumers are served.

Essentially, then, the argument in favor of congestion pricing for highway use is the argument in favor of prices as such. At a somewhat lower level of abstraction, it is the argument in favor of the peak/off-peak pricing strategies employed by airlines, motels, car rental firms, and truckers as a matter of routine. So the answer to the question "who uses congestion pricing?" is that a lot of businesses do. It is a time-tested market strategy for maximizing business revenues and expanding the customer base by making the best possible use of fixed assets.

### Where Has Congestion Pricing Been Tried?

Perhaps the best known and longest running congestion-pricing program has been the one in Singapore. In 1975 the government there instituted a central business district (CBD) congestion pricing policy. All vehicles wishing to enter the CBD during the hours of 7:30 to 10:15 AM were required to pay a monthly fee of about \$50. Data suggest that the program has been successful. Traffic entering the CBD during its peak has fallen by 65%.

Hong Kong conducted an experiment with electronic road pricing for a two-year period beginning in 1983. The equipment used was judged to be 99.7% reliable — authorities estimated that only one in 10 million vehicles would be wrongly identified. The highway users were issued transponders, projected to have a failure-free useful life in excess of 12 years. This electronic tolling was never fully implemented, not because the trial was a failure, but for reasons of politics. On the one hand, there was some fear that the electronic tracking of vehicles would be an unacceptable invasion of privacy. Any day now, as you read this, Hong Kong will pass from its old status as a British colony to its new status as a province of China. As much as a significant portion of the population of Hong Kong came to the city as refugees from the oppression of the government in China, their fears

on the subject of privacy ought to be taken seriously.

A second objection was the suspicion that electronic pricing would help raise taxes. That is, taxpayers feared the tolls would merely be added to existing levels of taxation. This fear, too, was not unwarranted given the colonial government's enthusiasm for the augmentation of its revenues.

In Bergen, Norway, the government has established what it calls a toll ring — any vehicle entering that city on a weekday pays a toll. France has a Sunday toll on the A1 route into Paris due to heavy weekend traffic. These are variations of a common theme. In California, the privatized segment of state Route 91 is using congestion pricing.

It seems likely that congestion pricing will be tried in more locations, since privatization seems to be taking hold as the governmental response to fiscal difficulties. The Intermodal Surface Transportation Efficiency Act of 1991 called for more innovative solutions to traffic congestion problems. Previous regulations prohibiting tolls on federally aided highways were relaxed. More recently, President Clinton has called for adding tolls to federally funded highways.

### How Can Congestion Pricing Be Implemented?

This proposal might be implemented by electronic or automated means. The technology involved in the Hong Kong experiment proved both technically feasible and cost effective. It involved on-board transponders, roadside toll readers, video recorders, and computerized billing. The toll readers were installed on major arteries into the city. Each time a transponder-equipped vehicle passed one of these readers a transaction was recorded. Vehicles without transponders or with expired or otherwise invalid accounts were recorded by the video cameras.

The significance of such devices is that they eliminate one great objection to old-fashioned toll plazas — the queue lined up waiting for the chance to pay and pass through — and the risk of injuries as vehicles have to stop or even just slow down while passing through these locations.

The opponents of toll roads have extolled the comparative virtues of "free" roads for many years. (Some of these folks are spokesman for the highway agencies that now would like the option of considering congestion tolls.) It may be exceedingly difficult to undo the effects of this propaganda and to convince drivers that they ought to pay for something that they have come, wrongly, to believe is their right — something they now get "free" of charge. Advocates of congestion pricing will have to be innovative on the matter of political strategy.

Perhaps the difficulties that some urban "non-attainment" areas have encountered, in meeting air quality standards, will supply a sufficient motivating crisis. Not only does air pollution threaten public health, non-attainment threatens communities with the loss of federal aid. Much as readers of *The Pragmatist* may disapprove of the thought — in this instance the fear on the part of state and local decision makers that they will lose federal "pork" may motivate rational, market-oriented, policy.

Some congestion pricing proponents have suggested that one way to move toward a tolling system would be to apply the idea during a period of transition only to *new* highway facilities. Drivers could continue to use all the old roads they had been using without having to pay any tolls. Only those who drove on the new facilities would be charged congestion prices during the peak traffic hours. Eventually, as more and more new highways get built in the congested area, more of the road mileage will be subject to congestion fees. This approach is better than nothing. But it would still commit the highway authorities to expensive capacity additions before the benefits of congestion pricing could be achieved. It would also leave many of the existing roadways mired in the wasteful rationing-via-queuing in which drivers lose, but nobody gains.

Hong Kong's experience suggests that proponents of congestion pricing should tie their project to the reduction of other highway user taxes. One of the keys to making any sale, after all, is the conviction (on the part of the buyer) that he is getting something for his money. If other taxes are reduced so

that the reform is revenue neutral some of the suspicion with which the idea of congestion pricing is customarily greeted may be reduced as well.

Market psychology is also important. Businesses that employ peak/off-peak pricing do not describe their price differential as a "premium" on those who accept the peak price. They describe the differential as a "discount"

for those who pay the off-peak price. If we could use the same terminology in marketing our idea (which is that the highway authorities ought to sell highway access), the gain in political viability could be enormous.

Remember, one of the great advantages of congestion pricing is that it is self-financing. Rather than going to the taxpayers periodically to get money

to build more roads, or subsidize transit, or enforce trip reductions, or no-drive days, the highway agency can live off its own revenue, the voluntary payments of willing customers, in the manner of a private business. Compared to the serious financial difficulties and inequities embedded in the traditional tax financing of highways, congestion pricing has much to recommend it!

*continued from front page*

What does the City think he ought to do? — father some children and live off the mom's AFDC checks?

I don't mean to be flippant with that last question. I mean to raise a real point between two issues often considered separate, welfare dependency and economic liberty. If there is a new national consensus that welfare has to be replaced with policies that help recipients find gainful employment, then government-sponsored monopolists had better damn well get out of the way of those portions of the urban minority population who have and want to continue to employ themselves and

others, offering valuable goods and services to the public.

If you want to help the Institute for Justice fight the good fight, give them a call, (202) 955-1300, make a pledge, get their address, and mail out your check.

The stranglehold on van service is not the only instance in which the City does its best to saw off the bottom rungs of the economic ladder, the better to keep the poor dependent upon the largess of the powerful. Incredibly, New York also requires that anyone receiving pay for braiding hair first receive *nine hundred hours of instruction in cosmetology!* If any of the readers of this article under-

stands the public-interest reasoning behind that requirement, please explain it to me. Maybe there are a lot of fraudulent hairbraiders in New York who need to be kept off the streets (or out of the salons) lest they harm the innocent and trusting in some way that does not immediately occur to me. But unless someone sets me straight, I'll probably draw the way-too-cynical inference that here, again, an established industry has a cozy relationship with politicians and bureaucrats and has bought protection for itself against potential competitors.

That couldn't be right, could it? ❧

*Letters continued from page 2*

## Issues Unaddressed?

Sonja Hanson disagrees with my article about the right to land. In my article I described how Thomas Paine and Henry George used libertarian arguments to advocate sharing the rent from land, since no person made the land. But in her response, Hanson did not address the basic issues I raised.

For example, by referring to the Paine/George proposal as a "tax", Hanson dodges the whole issue of who is the rightful owner of the land. If the Paine/George view is right, then displacement rent is a proper payment to the rightful owners, and not a tax at all, contrary to Hanson.

Furthermore, she claims that owners who pay displacement rent would pass the cost onto tenants. But she does not explain how they could do so when in fact the landlord would be rebating the land rent to the tenants. In order to save a step, many landlords would simply not charge any land rent, and would just collect building rent.

Hanson also claims that the Paine/George policy would not give landowners enough incentive to free up more land, or put land to better use. Yet, as any free market economist agrees, in spite of time lags, this does eventually lead to more efficient use. So, with more land on the market, and more efficient use of the land, the cost of renting land will go down. Only economic growth would make land rent rise. This is also verified from empirical evidence from 700 cities around the world.

I also discussed how those who own valuable land use it as collateral, for loans, to buy up more land and to buy up industry, producing an over-concentrated economy. Similarly, when a company owns the best locations (e.g. the best corners for gas stations, or the best oil deposits) companies who want equally good locations have to negotiate with their own competitor. Hanson avoids this whole issue.

Hanson worries that Tideman's proposal for assessment of land value will allow competing free market assessors to single out certain plots for high assessments. But in Tideman's article he explains that there would be a minimum number of lots required for any assessor who entered the market (e.g. 200) and that each assessor would be required to specify a distance function.

Hanson claims that some absentee landlords would default and not pay the displacement rent. By her same argument, no one should rent anything, because some people won't pay their debts. Also, contrary to Hanson, many assessors endorse this proposal, and its economic effects are supported by many in the building industry, along with eight Nobel Prize economists.

Mike O'Mara  
Baltimore, MD  
romike@hermesnet.net