



Credit where it's due

BERN GRUSH addresses of the inequities of some of the world's congestion pricing programs

Congestion of roads and parking spaces harms the commercial and personal productivity of the businesses and people living in congested areas.

It raises the levels of noxious automotive emissions with known health consequences. It increases the risk of personal injury, death, or property damage due to crashes for those vehicles that are moving on congested facilities. The litany of its negative consequences is legion. No one has yet discovered a benefit.

The ability of fuel taxes to financially support road building, operation and maintenance is waning as vehicles become more fuel efficient or use alternate fuels. Moreover, fuel taxation does not distinguish between congested and uncongested roads and times, hence offering road authorities no ability to design pricing signals that could be used to control congestion. (Properly designed pricing signals are used to tell motorists that it is more costly to drive in congested areas or at congested times.)

For all these reasons governments are either studying or preparing for an impending reduction in free access to roads, i.e., a comprehensive increase in road and parking pricing programs. Since the beginning of this century it has become increasingly clear that jurisdictions ranging from municipal to national will begin engaging in large area transportation and parking demand management specifically via market pricing mechanisms. This will be done for purposes of controlling automotive congestion, automotive emissions and/or to raise revenue.

At the current time there are several related social issues garnering attention in the popular press. Often these revolve around issues of entitlement, privacy, and the taxation vs user-fees debate. Most of the commentary that ensues is comprised of a combination of technical misunderstanding, self-serving political communication and outdated habits of mind.

Fair access to mobility

A critical concern that is not as readily dismissed is the potential for unfairness to those motorists who may have poor access to public transit or who may otherwise have little choice but to use a private vehicle and may be especially disadvantaged when subjected to these usage fees.

Suggestions to address inequitable access range from rebates to discounts and from more transit to two-tier road systems such as High Occupancy/Toll (HOT) or Fast and Intertwined Regular lanes (FAIR) in the US. Each of these solutions has weaknesses.

- Rebates and discounts will be costly and will serve to diminish the pricing signals that we so badly need to

manage demand. This idea should be rejected. Their only advantage is to give politicians an escape from the harder issue at hand, while robbing a pricing system of its core value. I will shortly describe a better way to reduce the risk of "political-suicide".

- More transit – a no-brainer and a must – will not resolve the problem for all people. Not only is it unreasonable to expect all motorists who can ill afford new charges to convert to transit

use, but we cannot expect the ones that are willing to switch to do so exclusively.

- HOT and FAIR are useful to a degree. HOT is getting us started and so should continue to be deployed. But this is a limited solution that will provide only temporary, local relief. It is limited in that while highly suited to some inter-urban highways, it is unworkable for most urban circumstances.

To convert our relatively few urban HOV lanes is currently impractical and would have only isolated, local effects. The message "enough roads are still free" as is required by politicians who do not understand the full range, structure or value of congestion pricing programs conflicts with the message "we need to modulate

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Cover Story

Consider the current 90 per cent discount provided to motorists living within the London Congestion Charging Zone. While recognizing the unfairness of suddenly becoming a captive in a pricing zone, as these motorists have become, this discount not only encourages driving by reversing the pricing signals, it is fundamentally inequitable to all non-motorists in the zone including transit users, bicyclists and pedestrians. It is also unfair to motorists from outside the zone who have paid a handsome fee to drive on less congested streets in the zone, only to have the locals be offered an incentive to drive! Far fairer and more effective would be to grant access credits to all legal residents of both congestion zones and allow trading among all users. This would allow all legal residents to become vendors of the streets in the congestion zone to motorists who live outside the zone. This provides motivation for motorists to accept the pricing program, motivation for motorists not to drive and greater fairness to non-motorists

our use of private vehicles” that is required to manage congestion. HOT helps keep the fuel-tax in place by providing one more barrier to the desired conversation from fuel-tax based to user-fee based finance. HOT while a useful stopgap for now, bears the political and structural seeds of our next undoing – especially as many projects will be tied up in long-term PPP agreements that may be expensive to re-configure.

Price it all. Give some away.

One thing we all agree on is that road space is an increasingly scarce resource – a resource to which most governments currently provide copious amounts of free access. If a New York or London, or a Michigan or Netherlands wished to charge motorists for road use on some or all of its roadways it is possible to ease the political impact and related social transition of such a charge while still preserving – actually amplifying – the full effect of the pricing signals.

To promote fairness, to subsidize less advantaged motorists, and to increment the incentive to select alternative transportation modes, a road authority that prices all roads could provide users with a grant of free or highly discounted access units. (After all, until now these governments have been providing unlimited access grants, anyway.) These units would be consumed by accessing miles (or kilometers, or other unit of consumption) of priced roadway on demand. These would be measured in access units is because a distance unit will have a different access cost depending on location or time of day that distance is consumed.

For example, a city that wished to charge a fee of $\text{€}x$ or $\text{US}\$x$ or $\text{£}x$ per access unit might grant to each user 1000 free access units and another 2000 units at $\text{€}0.5x$ (let's stick with Euros) , with additional units available at the stated $\text{€}x$. If that same city permitted a credit exchange amongst those users, then any of those users could sell those credits at a net value approaching $2000x$ and any other user could purchase them.



“Some commuters who could find alternative travel modes would sell their credits to finance that alternative”

Moving from a direct distance charge to distance access credits provides another means to address the need for congestion charging to be sensitive to the ebb and flow of demand. The ideal mechanism for pricing – one that is impractical – is to provide for real-time pricing, i.e., prices that change in direct response to congestion levels in realtime (SR91 in California operates this way).

A government can choose fixed access unit counts for each pricing zone, but alter the cost of a unit as congestion levels rise. This would not be in real time, rather it might be changed in small increments weekly or monthly, hopefully more gradually than petrol prices, recently!

This implies that pricing maps and street signage would remain stable, but prices would fluctuate as they would in any free market.

Side effects and otherwise

Some of the intended effects of such a credit exchange program would be:

1. Disadvantaged motorists would be granted some immediate relief, especially as they may need time to adapt their commuting habits to the new charges. This would blunt social criticism regarding unfairness or entitlement and reduce the expected political liability of supporting road-pricing programs.

2. Some commuters who could find alternative travel modes would sell their credits or discounts to finance that alternative. In a percentage of these cases, users might decide not to drive their vehicle on priced roads, or at priced times; a few other users might decide to sell their vehicle altogether. For this effect to be sustained, a road authority would need to distribute annual credits to all legal residents of driving age within the appropriate jurisdiction and surrounds.

Furthermore, to be fair to caregivers of dependent children or adults, the authority could distribute tradable credits to all legal residents within the appropriate jurisdiction and surrounds, *regardless of their status as a motorist*. The administrative cost of such a distribution program could be self-financing via transaction charges or borne by the road-pricing scheme.

3. Such a credit exchange market would compound the market effect of the intended “pricing signals”.

4. If a road authority put a ceiling on the number of units available to the entire pool of users, that market would exactly measure the value of access for that population of motorists at any particular time. This would tell a road authority what it needs to know regarding setting of prices, i.e., the “pricing map” for that particular program or area. This in turn would further elasticize the value of the access units making controlled price fluctuations possible.

If correctly controlled, these would provide the ability to maximize infrastructure load without generating congestion.

Implementation

This form of credit exchange, wherein the value of credits might even fluctuate in the freest possible market means that it is best deployed in a way that allows a direct accounting link between the credits a motorist is given or purchases to the access units she consumes – i.e., the credits go directly into her mobility account which is subsequently directly debited by the payment service used for road pricing. They can only be turned to cash when they are sold to another’s mobility account. They have no cash value otherwise – a government only redeems their value by providing access to roads.

A road authority would provide a grant of unpriced or discounted access credits to all members of a target population. These are paid into a *credit accounting and exchange system*, structurally similar, for example, to the type used by eBay, providing accounts and account balances, an auction mechanism (which will be even more fully automated in this case), a method of placing puts and buys, methods of accepting payments from a purchaser, payment clearance and payment to the seller.

Bids and offers (if it is to be an auction) can be anonymous and would appear to the users that they were buying credits from and selling previously granted credits back to the government. In reality, all cash in the system originates from motorists buying credits from a government agent or another motorist.

While some motorists may sell or buy credits via an

on-line (web) interface, such a credit exchange system can be accessed in any of the other ways commodities are sold or purchased today (automated phone system, phone with human agent at other end, bank teller, agent in person or snail mail based on a form available from a post office) and may be centralized or distributed via a network of local merchants in the same manner as transit tickets or lottery tickets are currently distributed at kiosks and convenience stores in many cities.

The technology for metering and consumption of the access credits is any electronic toll collection system or GNSS-based vehicle positioning system. All the technology for implementation of the exchange system is available and the cost of the latter can be absorbed in transaction fees or buried in the mobility access fees at zero cost to tax payers – a great candidate for a PPP application. The only missing element, albeit an important one, is a new body of policies negotiated by government(s) that establishes the formulation for access grants, road-use prices by location and time (the pricing map), access unit prices, and provisioning of additional access units.

There is already a default policy for this, called: “If you have a valid driver’s license and a tank of gas, you’re in.” That policy is no longer working. ■

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