Intelligence MEMOS

From: Benjamin Dachis

To: Metro Vancouver Mobility Pricing Independent Commission

Date: October 26, 2017

Re: **MOBILITY PRICING AND TRANSPORTATION INVESTMENT GO HAND-IN-HAND**

Your Commission has quite the task to submit your recommendation of how to tackle congestion in the Vancouver region by next April. You'll need a way to think about balancing the economic cost of congestion caused by a lack of road pricing versus the wider benefit – not to mention public demands – of subsidizing transportation.

Here's how to start.

The standard approach to identifying an economic problem is to compare the market outcome to the socially optimal outcome. The market outcome comes when travellers only take into account their private costs and their own demand. Market versus optimal outcomes differ when there are 'externalities.' Regional transportation involves two externalities: agglomeration and congestion.

When a person lives in an urban area, that person has a positive benefit on others living in the same region without even realizing it. Studies around the world have found that doubling the size of an urban area tends to increase incomes between 3 and 8 percent. This is known as a positive agglomeration externality. Publicly financed transportation infrastructure makes it easier for people to get around and enables more people in an area to connect than otherwise, and enhances that agglomeration effect.

However that subsidy will induce an increase in travel demand which, without a price on road use, will result in a return in congestion on the newly built transportation infrastructure. When a driver enters a roadway, she bases her travel decision on the private cost (such as her time, parking and vehicle operating costs) of driving a car. She does not take into account that her choice may prevent others from using that road, or slow them down. Other drivers on the road impose the same cost on her. The same story applies if she gets on a crowded bus, for example. The result is congestion, which is a negative externality.

How do the positive agglomeration externality and the negative congestion externality interact? Introducing a congestion charge, be it a toll or other levy, will result in a lower amount of travel, reducing the agglomeration benefit. However, using the funds raised by the charge to subsidize transportation infrastructure will result in an increase in demand. If the relative size of the positive agglomeration externality is the same as the negative congestion externality, the optimal amount of travel is the current amount at the current net private cost.

Your report should recommend that the government take the revenue from any congestion charge and put it back into transportation infrastructure. This framework (more details are available here) suggests that some cross-subsidization between areas in which agglomeration and congestion externalities interact will make the region better off. How large a cross-subsidy will depend on the relative strength of the externalities in the region, which you should calculate.

Earmarking money from congestion pricing to pay for transit infrastructure doesn't just have an economic benefit. It can help make the deal more palatable for drivers. If the managers of the regional transit agency make sure that money delivers the right kinds of projects in the right places, drivers will know they'll have other transportation options in exchange for paying more.

With a framework in place of how to think about the economic costs and benefits of transportation, your recommendations will be on a solid footing.

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