

From: Jean-Thomas Bernard and Maral Kichian  
To: Canada's Energy Policymakers  
Date: March 7, 2018  
Re: **THE EFFECTS OF THE B.C. CARBON TAX ON DIESEL DEMAND**

---

By signing the Paris agreement on climate change three years ago, Canada committed to reducing greenhouse gas (GHG) emissions to 30 percent below 2005 levels by 2030. To reach this target, the pricing of carbon emissions from fossil fuel use is underway. Some provinces already apply carbon taxes, and the federal government is enacting a carbon price backstop for provinces that may lack satisfactory pricing schemes by year-end. The initial tax rate will be set at \$10 per tonne of CO<sup>2</sup> in 2018, increasing annually to reach \$50 in 2022. Each \$10 adds about 2 cents per litre of gasoline.

Most economists support carbon pricing as the most efficient instrument for tackling GHG emissions. The question is how effective this policy is. Policymakers and researchers have been turning to the unique case of British Columbia for answers. The province introduced a carbon tax on fossil fuel use in July 2008, setting the price at \$10 a tonne of CO<sup>2</sup>. The rate increased \$5 annually until 2012 and it is currently at \$30 a tonne. The tax is revenue-neutral, and proceeds are returned to residents through lower income tax rates and via subsidies to low-income earners. To explore carbon pricing effectiveness, thus far researchers have focused on gasoline. This implies that the studied impacts pertain to households, given that gasoline is largely associated with this sector.

Our [work](#) dealt with the impact of carbon tax on industry. We focused on diesel, which is used mostly in commercial activities including transportation, heavy machinery, and agriculture. In 2010, diesel GHG emissions amounted to 18.2 percent of B.C. energy emissions. We pay particular attention to the time dimension of user reaction to the successive carbon tax increases; annual impacts may have varied according to the speed with which different businesses adapted to the announced rises. Our results indicate that there is indeed evidence of time-variation in carbon tax impacts. On average, we find that a one-cent increase in the tax induces a one-time decrease of 6.7 percent in diesel demand in the short run. In addition, we find that a 1 percent increase in diesel price due to carbon taxation also generates a long-run impact of minus 0.52 percent.

The objective of the B.C. revenue-neutral carbon tax is to reduce GHG emissions. An obvious question concerns the effectiveness of the tax in light of this objective. We estimate that the \$30 per tonne carbon tax will bring about a 3.43 percent permanent reduction in B.C. emissions from diesel use by the year 2030. However, this doesn't come close to Canada's Paris commitment. Under the assumption that model parameter estimates remain constant and that they are applicable to other provinces, the tax rate on diesel use would need to jump to \$262 per tonne (or by 67 cents per litre) in order for Canada to meet its announced target. Are Canadian voters ready for such a rise?

*Jean-Thomas Bernard, is Visiting Professor, Department of Economics, University of Ottawa and Maral Kichian, is Associate Professor at the university's Graduate School of Public and International Affairs.*

To send a comment or leave feedback, email us at [blog@cdhowe.org](mailto:blog@cdhowe.org).