# Pipes, Trains and Automobiles: Explaining British Columbia's High Wholesale Gasoline Prices

*G. Kent Fellows*[a]

Starting in mid-2015 gasoline prices in British Columbia Canada began increasing relative to cites in neighboring regions (specifically Edmonton Alberta and Seattle Washington). This eventually prompted a formal investigation by the British Columbia Utilities Commission and a two-part report wherein the Commission identified an "unexplained difference of approximately 13 cpl [cents per liter]" between Vancouver and Seattle prices. The British Columbia Utilities Commission investigation and report strongly imply suspicion of anti-competitive conduct (collusion and price fixing) in the wholesale fuel market.

Elsewhere in North America the combination of a changing geographic pattern of North American crude oil production (the "U.S. shale-boom") and a lack of new investment in pipeline capacity has led to increased interest in inter-regional price differences and arbitrage conditions in crude and refined petroleum product markets. But existing work in the area has been primarily empirical, focusing on relationships between regional price series, with little or no attention paid to individual firm conduct. This level of abstraction is appropriate in investigating general regional pricing patterns, but insights on production and transportation cost pass through, refinery market power and potential competition policy issues require a more detailed examination of firm level conduct.

In this paper I examine the effect of transportation constraints on imperfectly competitive regional wholesale fuel and crude oil markets. I pair a general theoretical model (an extension of the workhorse Cournot oligopoly model) with an empirical analysis focused on the recent western Canadian experience of diverging relative wholesale gasoline prices in British Columbia and Alberta. The empirical analysis makes use of a natural experiment that occurred in 2015 when a regulatory rule modification caused a reduction in capacity for refined product shipments on the Trans Mountain Pipeline which connects Edmonton Alberta (the western Canadian refining hub) to cites in British Columbia.

The results of this exercise suggest that the pass-through rate of marginal transportation costs is not one-to-one due to the imperfectly competitive nature of regional markets. The analysis also shows that reductions in pipeline capacity may reduce the rate of pass-through of other marginal cost components (i.e.- those associated with production rather than transportation) if the supply curve for alternative transportation modes is upward sloping (i.e.- not perfectly elastic).

It is apparent from the British Columbia Utilities Commission report that the combination of increased wholesale prices and reduced pass through of production costs can give the appearance of anti-competitive conduct (collusion and price fixing) even though firms' competitive strategies (response functions) remain unchanged. This is an important insight for regulators and competition policy authorities.

The theoretical model and empirical analysis indicate that insufficient pipeline capacity for refined product shipping from Edmonton to cities in BC caused an additional wholesale gasoline price increase in Vancouver of 10 cents per liter (assuming perfectly elastic supply of non-pipeline transportation options) or up to 18 cents per liter (assuming an upward sloping supply of non-pipe-

a University of Calgary, (Calgary Alberta, Canada). Email: GKFellow@ucalgary.ca

line transportation). These price increases occur due to normal competitive oligopoly conditions (that is, all firms are making quantity choices consistent with a Cournot best response function).

While the empirical analysis is specific to western Canada, the analytical results can be extended to other regional markets for liquid or gaseous hydrocarbons as the analysis follows from a generalized extension of an otherwise standard Cournot oligopoly model. Applications beyond hydrocarbon markets are possible as well given that the model is general enough to apply to any oligopoly market wherein competitors face a common but discontinuous supply curve for an input good required to produce and deliver an output good.