



Understanding gasoline prices

Mark McGinley

As gas prices continue their meteoric rise, more and more Canadians are left baffled as to why. In the last year alone, average Canadian retail gasoline prices have increased by over 30% and now hover around 130 cents per litre (c.p.l.) (Natural Resources Canada, 2011). With inflation for that same period amounting to 3.3% (Statistics Canada, 2011), questions abound regarding the underlying reasons for this dramatic increase. As bewilderment turns into suspicion, Canadians are searching for someone to blame for these outrageous prices. The usual suspects have

UNLEADED GAS

Regular

ONE ARM $\frac{9}{10}$

Plus

ONE LEG $\frac{9}{10}$

Premium

FIRST BORN

been lined up and the traditional accusations levied: oil companies in collusion with one another, governments' insatiable appetite for taxation revenue, or the tried and true—yet unpalatable—argument of supply and demand. But what is really causing the marked increase in gas prices? This article seeks to demystify the various components of retail gasoline prices, and attempts to offer some explanations as to what is causing the volatility in the gasoline market. The first examination is of the smallest component of retail gas prices: marketing and distribution costs.

Marketing and distribution

Marketing and distribution costs include all of the costs associated with distribution of the gasoline to wholesalers and retailers, the costs of marketing the gasoline to consumers, and the profit margins for retailers and wholesalers. Much of the public ire has been directed towards retail stations, likely because they are the most obvious targets. Gas is one of, if not the only, commodity in the world where consumers can easily observe real-time prices from a moving vehicle. Given consumers' ease of observing gas prices among competi-

tors, and the extreme degree of correlation between prices set by competing stations, it is not surprising that Canadians see collusion in the marketplace. However, it is doubtful that collusion is the reason for the similarity in retail gas prices between competitors. The visibility of gas prices serves to make consumers highly price sensitive, and with the low switching costs incurred by changing from one station to another, they will take advantage of even small differences in price between competitors. This consumer price sensitivity forces competitors to match each other's prices to avoid losing market share, or risk entering a mutually detrimental price war. Hypothetically, even if collusion were to exist in the marketplace, the effect on prices would be minimal—marketing and distribution costs are by far the smallest

component of retail gas prices and accounted for roughly 7 c.p.l. of the total retail price of gas in Canada in 2010 (Natural Resources Canada, 2011).

Refining

Refining costs include all of the material, labour, and energy required to convert crude oil into gasoline as well as any profits made by the refiner.

Like marketing and distribution costs, refining is composed of a small portion of the retail cost of gasoline, averaging 15 c.p.l. across Canada (Natural Resources Canada, 2011). But could collusion among refiners artificially inflate the price of gas? It would seem that even if refineries were to collude in order to artificially inflate gas prices they would be unable to do so. Canada produces only 3% of the world's oil supply, which makes Canada's impact on world oil prices negligible (Natural Resources Canada, 2005). Interestingly, even Canada's largest integrated refiners (meaning refiners who both produce and refine oil) purchase more crude oil than they produce domestically, essentially making them price takers with no control over oil prices (Natural Resources Canada, 2011). Further, market collusion seems unlikely given the fact that there

are 16 refineries in Canada with 7 of them independently owned—making collusion difficult (Natural Resources Canada, 2005). Additionally, retail gas stations would also have the ability to import gas from US refineries, further reducing any potential effect of Canadian refiner collusion on retail gas prices.

Taxes

One of the largest components of retail gas prices is taxes. Gasoline is taxed at a minimum of two, and in some cases three, levels: federal, provincial, and municipal. Federally, there is a 10 c.p.l. excise tax, and, in all but the five provinces with harmonized sales tax (HST) (Newfoundland & Labrador, Nova Scotia, New Brunswick, Ontario, and British Columbia), an additional 5% goods and services tax (GST) (Natural Resources Canada, 2011). Provincial taxes include a provincial excise tax, and any applicable sales or carbon taxes. Provincial taxes account for anywhere from 16.5 c.p.l. in Newfoundland and Labrador to 9 c.p.l. in Alberta, and, on average, amount to approximately 13 c.p.l. of the total retail gas price (Natural Resources Canada, 2011). Overall, in 2010, federal and provincial taxes accounted for 34 c.p.l. at the pump (Natural Resources Canada, 2011). Only three municipalities charge a transportation tax (Vancouver, Montreal, and Victoria), amounting to an additional 4.8 c.p.l. (Natural Resources Canada, 2011).

In 2010, gas prices across Canada averaged out to 103.6 c.p.l. (Natural Resources Canada, 2011). Tallying up marketing and distribution costs, refining costs, and taxes, we have accounted for just over half of the retail price of gasoline. That leaves the remaining amount for the largest component of retail gas prices: crude oil.

Crude oil

Crude oil is by far the largest ingredient in gasoline, and correspondingly the largest component of retail gas prices (Pirog, 2008). Basically, the price of crude oil can be explained through two main mechanisms: supply versus demand and financial speculation. Where problems arise is in trying to determine and quantify the individual impact of these mechanisms on the price of oil.

Supply and demand should account for the vast majority of the price of oil, and should also explain oil's price volatility. However, upon closer inspection, it becomes clear that supply and demand alone is unable to provide a clear justification for the price of oil. Today, OPEC's spare production capacity sits at more than 3 billion barrels of oil per day (Davidson, 2008). To explain why OPEC doesn't just increase production to meet demand, the Qatari oil minister stated on May 2nd, 2008, that despite spare production capacity, "OPEC will not increase production of crude oil because what is

Supply and demand alone is unable to provide a clear justification for the price of oil



happening now is not an increase in oil demand, but heavy speculation on oil futures. That's what's making oil prices so high" (Davidson, 2008). Nor does the problem rest with US or Canadian refinery capacity, as utilization rates for refineries in Canada and the US sit at 73% and 79.8% respectively—well below the maximum utilization rate of 95%. In fact, such rates constitute the lowest utilization rates

seen in over a decade (Hall and Rankin, 2011; Natural Resources Canada, 2011). At a May 2011 US senate hearing on oil prices, flustered Exxon chief executive Rex Tillerson stated that current market fundamentals and production costs would set the price of oil in the \$60–\$70 per barrel range (Hall and Rankin, 2011), which is \$43 cheaper than the highs of \$113 per barrel reached on April 29th and May 2nd, 2011 (Hall and Rankin, 2011).

An overview of the crude oil futures market helps to explain this discrepancy. The crude oil futures market is composed of two main exchanges: the New York Mercantile Exchange (NYMEX) and the Intercontinental Exchange (ICE) based in London (Pirog, 2008). Both of these exchanges are regulated, and both are primarily financial in nature, meaning that no oil is actually traded. Instead, positions are settled in cash (Jickling and Cunningham, 2008). There are also over-the-counter (OTC) contracts, which consist of futures contracts drawn up between two parties outside of the exchanges. Since such contracts are intended to govern the relationship between two private parties, they are subjected to substantially fewer regulations than contracts exchanged on the NYMEX and the ICE.

Traditionally, futures contracts are entered into by two kinds of parties: a “hedging” party and a “speculating” party. The hedging party is seeking to lock in the price of a commodity it

will require in the future (thereby hedging its risk against future price increases), while the speculating party is seeking to profit by providing such security. Here is an example of how a futures contract operates: Air Canada (the

hedging party) notices that its current supply of jet fuel will run out in one year. Concerned that the price of jet fuel may increase in the interim, Air Canada decides to enter into a futures contract with a hedge fund (the specu-





What is the effect of speculation on gas prices?

lating party) whereby the hedge fund agrees to sell the company a specified quantity of jet fuel a year from now at a specified price—the “spot” price. At this point, Air Canada is happy because it knows exactly how much it will have to spend on jet fuel in the following year, allowing it to budget accordingly. The hedge fund is also happy because it has entered into a contract that could provide huge returns for little upfront capital. Once the year has passed, if the market price of jet fuel is more than the spot price, Air Canada will have profited because the hedge fund has to sell it the agreed amount of jet fuel at a price below market value. However, if the spot price is above the market price, the

hedge fund will have profited because Air Canada is obligated to buy the specified amount of jet fuel at a price above market value.

The market for futures contracts has expanded so that contracts are now also traded between speculators, with neither party seeking to hedge against the risk of an increase in price for the targeted commodity. In these situations neither party needs, nor wants, the underlying commodity, in this case oil. When the contract is set to expire, the losing party simply settles the amount it owes in cash. In the early 1990s, 70% of oil futures contracts were entered into by producers and consumers hedging their risk, while 30% of the contracts were entered into by speculators with no desire to actually sell or purchase oil; today, these numbers are reversed (Tankersley, 2008). According to Barclay’s Capital, commodity investments by “institutional” investors, e.g., hedge funds, investment banks, sovereign wealth funds, and pension funds with no interest in the underlying commodity, hit \$283 billion in 2010 (Sheppard, 2010).

Compounding the effect of these institutional investors on the oil futures market is a 10% margin requirement on futures contracts (Davidson, 2008). A margin requirement is the amount that regulators stipulate must be placed in an account to cover off any potential losses arising from the futures contract. A 10% margin requirement effectively allows a specu-

lator to place a billion-dollar bet with only \$100 million, giving the speculator more market influence than is actually warranted. This inflated level of influence on the part of speculators has historically contributed to the futures price of oil, which increased by 86% in 2008 while world demand for oil rose by only 2% (Davidson, 2008). This price escalation has led some, including Gorge Soros, one of the world’s most successful speculators, to believe that institutional investors are creating a commodities bubble akin to the housing or dotcom bubble that is driving up oil prices and, by extension, the cost of other commodities like basic food stuffs that are transported using fossil fuels (Jickling and Cunningham, 2008).

Theoretically, the futures market should not have any impact on the physical market for oil. Indeed, no physical oil is actually being traded, only shuffled around on paper. However, in the real world, the spot market, the market for the delivery of real crude oil, bases its prices off of the futures market (Pirog, 2008). In fact, data suggests that the difference in the price of oil between the spot and future markets never varies by more than a few cents (Pirog, 2008). Given this connection it is clear that financial speculation does play a role in the price of oil, though its exact contribution is difficult to quantify.

There continues to be significant debate around the effect of speculation on oil prices,

and there is little consensus as to the extent of the impact as measured in monetary terms. Conservative estimates range from \$10 to \$30 per barrel. However, even if speculation adds only \$10 to the price generated by simple supply and demand, oil producers would be earning an extra \$6 billion a week globally, or more than \$300 billion dollars a year (Sheppard, 2010).

Conclusion

As retail gas prices continue to climb Canadian consumers are left increasingly confused as to the reasons why. The components that contribute to the retail price of gas are highly obscure, and even when carefully examined, it is difficult to get an accurate picture of exactly how much each component is responsible for the stomach-turning number displayed at the pumps. However, if nothing else, understanding the major components of gasoline prices should help inform debate around gasoline pricing, and the role of speculation in the crude oil market.

While speculation in oil futures markets may be inflating prices, it also plays a critical role in providing liquidity in the market, allowing hedgers to easily enter into and exit out of futures contracts. Without a substantial amount of speculative volume in the oil futures market, hedgers may not be able to enter into contracts on favourable terms, thereby exposing their businesses to significant commodity price

risk. In this sense, speculation may be thought of as a double-edged sword: it allows hedgers to mitigate risk, which is good for business, but may affect prices, taking them out of the realm of simple supply and demand. Ultimately, whether the benefits of speculation outweigh the potential costs is a question that only the market can decide.

References

- Davidson, P. (2008). Crude Oil Prices: "Market Fundamentals" Or Speculation? *Challenge*, 51 (4), 110–118.
- Hall, K. and A. Rankin (2011, May 13). *Speculation Explains More About Oil Prices Than Anything Else*. <<http://www.mcclatchydc.com/2011/05/13/114190/speculationexplainsmore-about.html#ixzz1Mnsx8Gla>> as of June 10, 2011.
- Hayes, C. (2011, March 28). *Can Oil Speculation Be Stopped?* <<http://www.thenation.com/article/159166/noted>>, as of June 10, 2011.
- Jickling, M., and L. Cunningham. (2008). *Speculation and Energy Prices: Legislative Responses* (RL34555). Congressional Research Service. <<http://fpc.state.gov/documents/organization/107210.pdf>>, as of June 10, 2011.
- Natural Resources Canada (2005). *Understanding Gasoline Prices: An Examination Of Recent Gasoline Price Increases*. <<http://www.nrcan.gc.ca/eneene/sources/petpet/reprap/200507/undcom/indexeng.php>>, as of June 2011.
- Natural Resources Canada (2011). *Understanding Gasoline Markets in Canada and Economic Drivers*
- Influencing Prices*. <http://www.nrcan.gc.ca/eneene/sources/pripri/reprap/2010annual/issue_annual_e.pdf>, as of June 10, 2011.
- Pirog, R. (2008). *Gasoline And Oil Prices* RL34625). Congressional Research Service. <<http://www.ncseonline.org/nle/crsreports/08Oct/RL34625.pdf>>, as of June 10, 2011.
- Sheppard, D. (2010, April 27). *Financial Speculation Seen Boosting Oil Price*. <<http://www.reuters.com/article/2010/04/27/>>
- Statistics Canada (2011, May 20). *Latest Release From The Consumer Price Index*. <<http://www.statcan.gc.ca/subjectssujets/cpiipc/cpiipceng.htm>>, as of June 10, 2011.
- Tankersley, J. (2008, April 28). Traders' Effect on Oil Prices: It's All Speculation. *National Journal*. <<http://proquest.umi.com.ezproxy.library.dal.ca/pqdweb?did=2334468001&sid=1&Fmt=3&clientId=15814&RQT=309&VName=PQD>>, as of June 10, 2011.
- United States Government Accountability Office (2005). *Understanding The Factors That Influence The Price Of Retail Gasoline* (GAO05525SP). <<http://www.gao.gov/new.items/d05525sp.pdf>>, as of June 10, 2011.



Mark McGinley holds a bachelor of commerce from the University of Calgary, and is currently in his second year of a combined JD/MBA program at Dalhousie University.

Past presentations:



The myths and realities of the HST

Charles Lammam

Senior Policy Analyst,
Fiscal Studies



Fiscal advice for the new government

Niels Veldhuis

Vice-President, Research
and Director, Fiscal Studies

We are excited to announce **Ask the Expert**—a new live-streaming video and audio broadcast that will be featured on our website every couple of months.

Fraser Institute research staff will give a short presentation on a topic that examines economics, political theory, or philosophical issues. You can then join the discussion by asking questions and having them answered live!

Topics could include:

- **HST**
- **Globalization**
- **Education**
- **Economic stimulus**
- **Health care reform**

Details about upcoming events and previous presentations can be found on our website:

www.AskTheExpertInfo.org

