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## Debunking the Myth That Gas Price Regulation Robs From Consumers

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A recent Atlantic Institute for Market Studies (AIMS) report concludes that regulation of prices at the gas pump ‘robs from consumers’. But does it really? The conclusions in the AIMS study depend on only two numbers: the average revenues/litre of gasoline sold that were received by wholesalers and retailers before regulation and after regulation. The AIMS report claims that the difference between these two averages shows the effects of regulation. A look at what’s missing from the analysis in the AIMS report refutes that claim.

### **The following factors were missing in the AIMS analysis:**

**Adjustment for Inflation** — When inflation is brought into the analysis, we find that the average real revenues per litre of gasoline that wholesaler and retailers receive **was lower after regulation** in New Brunswick, Prince Edward Island and Newfoundland & Labrador.

**Other factors that influence retail prices** — These include changes in labour costs, productivity, and wholesale prices, as well as tacit price collusion. The possibility of *tacit price collusion* means that in the absence of regulation the market for gasoline is not necessarily as competitive as AIMS assumes.

**Looking at the whole picture: Trends vs. Simple Averages** — Taking an average over time may be useful, but it is also important to see what is going on behind the average price. For example, in Nova Scotia the average



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real revenues per litre received by wholesalers and retailers trended upwards prior to regulation, and then trended down after regulation — even though the average is higher after regulation.

**Accuracy** — The AIMS report claims that retail gasoline price regulation began in Prince Edward Island in February 1991, when it really began at the end of March 1988. As a result, the calculations it offers for PEI are wrong. As well, the AIMS calculations for Newfoundland and Labrador are wrong. Correcting for errors in the exchange rate data used by AIMS produces radically different results.

**A correct analysis of sales taxes** — The AIMS analysis claims that consumers have also paid millions more in extra sales taxes as a result of higher prices for gasoline. Yet even if gasoline prices had actually been higher, extra taxes on

gasoline would most likely just be replacing taxes on other goods and services as consumers spend more on gas and less on other things. The AIMS analysis also implicitly assumes that citizens get no benefits from the taxes they pay.

**An analysis of who really benefits from deregulation** — Canadian Petroleum Products Institute and the oil companies themselves oppose retail gas price regulation **because they claim that it benefits them** through higher prices and reduced competition. Is it plausible to assume that the oil and gas industry support deregulation because it favours the consumer?

Given all of the critical factors that were missing from their analysis, it is clear that the claim by AIMS that gas price regulation has ‘robbed from consumers’ has no foundation in fact. Its statements have misled the public.

# Debunking the Myth That Gas Price Regulation Robs From Consumers

## Introduction

On February 2, 2009, the Atlantic Institute for Market Studies (AIMS) released a report by its research manager Bobby O’Keefe entitled, *What’s missing from your wallet? How gas price regulation robs from consumers*. It offers estimates of how regulation has increased retail gasoline prices. Based on this, AIMS has developed a ‘Gouged at the pumps!’ tool on its website for consumers to calculate how much gas price regulation costs them. This commentary considers what’s missing from AIMS’ report as well as the view of gas price regulation expressed by AIMS in the past. It debunks the claims AIMS makes about gas price regulation.

I first briefly review the official objectives of gas price regulation and the mechanics of how regulation works in the different provinces in Atlantic Canada. I then consider the arguments that have been made by AIMS that regulation cannot lower prices. I argue that regulation may raise or lower prices; the question has to be addressed by examining the facts, as O’Keefe’s study attempts to do.

I then examine the method O’Keefe used to calculate the effects of gas price regulation. Setting aside the errors in some of the calculations themselves, I show that the method is fundamentally flawed by replicating his method for each province and then examining the factors that he failed to take into account.

## Gas Price Regulation in Atlantic Canada

### Regulatory Objectives

Gas price regulation has a variety of objectives. In Prince Edward Island, the *Petroleum Products Pricing Act* requires regulators to “ensure at all times a just and reasonable price for heating fuel and motor fuel to consumers and licensees within the province”.<sup>1</sup> In New Brunswick, the *Act* similarly requires regulators to “consider the fact that consumers should benefit from the lowest possible price without jeopardizing the continuity of supply”.<sup>2</sup> In Newfoundland and Labrador, the regulations required regulators to set the initial maximum allowed margin based on historical margins, but also to consider their reasonableness in light of the various costs borne by wholesalers and retailers.<sup>3</sup> All of these rationales hint

TABLE 1 Retail gas price regulation in Atlantic Canada

|  | New Brunswick  | Nova Scotia  | Prince Edward Island  | Newfoundland & Labrador   |
|--|--|--|---|---|
| <b>When Current Regulation Began</b>     | 1 July 2006  | 1 July 2006  | 31 March 1988   | 15 October 2001   |
| <b>Benchmark</b>                         | 7-day average NYH price in previous week, Friday values used for weekend days. | 5-day average NYH price in business days of previous week. Discretionary adjustments for extended rising or declining markets. | Change in average NYH price in business days of previous two weeks sets change in before-tax price. | 14-day average NYH price in previous 2 weeks, Friday values used for weekend days.      |
| <b>Wholesale + retail margin</b>         | 11 cents/litre in total, maximum. No minimum.                                  | 6+5.5 cents/litre maximum; 6+4 cents minimum.  | Maximum with minimum set 2 cents below it. No specific maximum is set in regulation.                | 14.83 cents/litre in total, maximum. No minimum.  |
| <b>Pricing by region?</b>                | No. Actual delivery cost to maximum of 2.5 cents/litre.                        | Yes. 6 zones with delivery costs set from 0.3 to 2 cents/litre.  | No.   | Yes. 26 zones and sub-zones, differences based on estimated storage and delivery costs. |
| <b>Normal frequency of price changes</b> | Weekly, unless interrupted.  | Weekly, unless interrupted.  | Twice monthly, unless interrupted.  | Every two weeks, unless interrupted.  |

at the possibility that in an unregulated market, prices could be set higher than the competitive price. However, establishing lower prices than what prevailed before regulation has not been an explicit goal.

Regulation increases the predictability of price changes, which adds an element of day-to-day stability in prices. It also makes the setting of prices more transparent, by basing them directly on prices in the competitive New York market.<sup>4</sup> Regulation can also have the goal of maintaining greater supply in rural areas. In Nova Scotia, for example, one of the objectives of regulation is to “slow or halt the decline in the dealer network, particularly in rural areas, by improving viability through regulated margins”.<sup>5</sup>

#### How regulated prices are determined

In all provinces, regulators set an initial ‘benchmark’ price using an average of recent spot prices in the New York Mercantile Exchange where contracts for large volumes of gasoline are traded. Historically, the market in eastern North America has been strongly influenced by this ‘New York

Harbour’ (NYH) price, given the possibility of moving gasoline throughout the region.<sup>6</sup> After conversion of daily prices to Canadian dollars per litre, regulators establish a maximum retail price by adding a further amount to cover additional costs incurred by wholesalers and retailers. This reflects the ‘wholesale margin’ and the ‘retail margin’ that must ultimately cover the costs of enough wholesalers and retailers to maintain the supply of gasoline. The sum of these margins is the ‘marketing margin’. Regulators may allow additional charges for differences in storage and transportation costs in different regions. Table 1 summarizes the basic features of current regulation of regular gasoline in each province.

#### What effect might regulation have on prices?

##### The AIMS view

Even prior to O’Keefe’s study, AIMS had adopted a dogmatic position that gas price regulation *cannot* result in lower prices. AIMS president Brian Lee Crowley writes: “prices are set by willing buyers

and sellers. In the case of gasoline, for example, if consumers use the government to seize the power to set prices, but don't control the resource itself, oil companies simply won't supply enough." They will just sell their oil elsewhere. "Owners of oil in Saudi Arabia or Texas or Alberta have lots of people who want their product. The thought that tiny New Brunswick or PEI or Nova Scotia could beat up the oil companies and make them accept our local price — Or Else — would be hilarious if it weren't so pathetic."<sup>7</sup>

Unfortunately, Crowley has confused retail gas price regulation with crude oil price regulation. Of course, it would be impossible to regulate crude oil prices, but that is not the objective of regulation.

In another article, Crowley writes: "regulation cannot lower prices for gasoline. The price to get gasoline into our local markets is set internationally and we have no control over it whatsoever. We either pay the going rate or we don't get what we need."<sup>8</sup> He is now confusing retail price regulation with regulation of the price at which wholesalers buy their product. The latter is also a price effectively set outside any individual province and could not be regulated by a province, but then no province has ever proposed to do that. Crowley seems to be following the advice given by statistician Darrell Huff in his classic book, *How to Lie with Statistics*: "If you can't prove what you want to prove, prove something else and pretend they are the same thing."<sup>9</sup>

Another argument, put forward by Bobby O'Keefe, is that "if wholesalers or retailers are worse off because of regulation, they would be struggling or going out of business."<sup>10</sup> This assumes, however, that before regulation they were just covering their costs. That would be the case in the long run in a competitive market, but that assumes the market actually is competitive. But, if many sellers had a cushion of 'excess profits' to begin with, some reduction in margins would not cause them to go out of business. They would still be covering their costs.

AIMS commentaries never acknowledge the validity of the idea that sellers in an unregulated market can tacitly collude with one another in setting prices. They always assume that markets are competitive, not oligopolistic. Crowley mocks this kind of analysis as "conspiracy theories" and writes that Competition Bureau investigations have found charges against the oil companies groundless.<sup>11</sup> The Competition Bureau does indeed state that price fixing and other illegal anti-competitive practices are confined to "local markets and isolated incidents. To date, no inquiry has ever produced evidence suggesting that there is a national or regional conspiracy to limit competition."<sup>12</sup> The uncovering of a gasoline-pricing cartel in four Quebec cities in June 2008 was the most recent case. Before that, there had only been nine such convictions since 1972.<sup>13</sup>

#### **Tacit collusion in regulated and unregulated markets**

However, the absence of overt collusion doesn't mean that tacit collusion is rare. One retailer, for example, can raise prices (or fail to reduce them when conditions would otherwise warrant it) and others in the locality, taking the signal, can follow suit. The difference between tacit collusion and covert agreements to fix prices is that tacit collusion is perfectly legal. Competition Bureau investigators would come away empty-handed; the retailers have not talked to each other and there is no written agreement, but prices and profits would be higher nonetheless.

Whether or not retailers can and do cooperate with each other in this way depends on the specific nature of the local market and the participants in it. The outcomes can range from the competitive (where, on average, revenues just cover all costs) to the monopolistic (where marketing margins could reflect monopoly profits). What evidence do we have about what actually happens?

The two preminent researchers on retail pricing of gasoline in Canada, Andrew Eckert

and Douglas West of the University of Alberta, examined gasoline pricing in Vancouver. They write that “the empirical results lead us to reject the competitive model as the explanation for gasoline station pricing in Vancouver. The results are more consistent with tacitly collusive pricing behavior.”<sup>14</sup> In a separate study of the Toronto market from 1991–2002, they conclude that “the tacit collusion hypothesis is consistent with the observed stylized facts.”<sup>15</sup>

Tacit collusion can also be a problem in a regulated market. In a recent unpublished study, Anindya Sen, Dennis Lu and Anthony Clemente examine monthly average retail gasoline prices in selected centres east of Manitoba for 1987–2004.<sup>16</sup> Their central idea is to compare prices in places with regulation with prices elsewhere where there is no regulation, while trying to account for other factors that could affect prices besides regulation. Their preliminary conclusion is that prices were higher with regulation in PEI, Newfoundland and Labrador, and Nova Scotia, which had regulation up until 1991 in the period included in their study. They suggest that regulation can facilitate tacit collusion by retailers through ‘focal point pricing’: the announcement of the regulated price co-ordinates the timing and the level of price setting by retailers. In its absence, it would be more difficult to find a way to co-operate to keep prices above competitive levels.

This is plausible, but it is important to realize, as Sen, Lu and Clemente do, that this does not mean that regulation *must* result in higher prices. While it makes collusion easier, the setting of a maximum price also limits the profits from collusion.

Further work will be required to see if Sen *et al.*’s preliminary results are robust. For example, they assume that regulation affects prices in the same way in all three provinces that had regulation in 1987–2004, though their regulatory regimes are not the same. The current draft of this

paper also incorrectly assumes that regulation in PEI began in 1990.<sup>17</sup>

Still, it is possible that if regulation sets the maximum retail price ‘too high’, the result could indeed be an increase in retail prices compared with a situation without regulation. Unlike the textbook case of a competitive market, where a maximum price that is set above the equilibrium price has no effect, when the market is not competitive, it can have an effect.

Whether regulation raises or lowers prices depends on how the maximum price is determined and how that compares with what prices otherwise would have been. This is an empirical question. O’Keefe attempts to examine the evidence for each province, but, as we will see, his method cannot determine the effects of regulation on prices.

### The AIMS method of estimating the effects of gas price regulation

The wholesale and retail margins actually experienced by gasoline sellers can vary from those set out in the determination of regulated maximum prices. The benchmark that regulators use to govern retail prices over the following week or two reflects prices in the New York market in the previous one or two weeks, but not current prices. However, these more recent prices influence the price at which wholesalers can buy their gasoline. If that price is higher than prices in the previous weeks, then retailers will not be able to pass on the higher price to consumers because of the maximum price set by regulation. Wholesalers and retailers combined will have to make do with a smaller marketing margin.

Similarly, if the most recent prices in New York have fallen relative to the benchmark price, then wholesalers and retailers will enjoy a larger actual marketing margin than the notional margins used by regulators to determine the maximum price. If the ups and downs of gasoline prices average out over time, then the actual

marketing margin will, on average, be the same as the value used by the regulators if retailers sell at the maximum price.

It is these actual marketing margins that are calculated by Bobby O’Keefe in the AIMS study and that are used to determine the effects of regulation on prices. He does this by comparing a survey of retail prices taken on Tuesdays with the average of New York prices from the previous Wednesday to the Tuesday of the survey. The difference between the two is the nominal marketing margin, in other words the margin in dollar terms, unadjusted for inflation.

The AIMS estimate of the effect of regulation on gas prices focuses on just two numbers: the averages of nominal marketing margins before and after regulation began. The difference between them is compared and attributed to the effects of regulation.

Thus, O’Keefe writes: “So how do we determine what makes us better off between unregulated and regulated prices? With the NYH benchmark in place, we simply examine the gap between the NYH price and the retail price — what is termed the marketing margin. If the gap between the NYH price and the price we pay on average widens, then regulation is costing us money. If it narrows, then regulation is saving us money.”<sup>18</sup> For each province, he then uses the average gap in a period before regulation and in a period of equal length after regulation and compares the two to infer the effect of regulation.

This method did not originate with AIMS. O’Keefe cites its previous use by the Canadian Petroleum Products Institute (CPPI) in a critique of regulation in Newfoundland and Labrador. This may be the basis of the CPPI’s claim on its website that “Regulated markets have cost consumers on average 1.5 cents per litre more for gasoline”, although it provides no further details of where this number comes from. The CPPI, whose members include corporations such as Chevron, Esso, Petro-Canada, Shell Canada and Ultramar, selflessly opposes gas price reg-

ulation because (in its words) “consumers pay a higher price” and “competition is diminished.”<sup>19</sup> This method was also used by Gardner Pinfold Consulting Economists in a recent report on gas price regulation for the Nova Scotia government.<sup>20</sup> Despite these earlier origins, for brevity I will refer to this method of estimating the effects of price regulation as ‘the AIMS method’ because this has been its most recent and most prominent use.

### Why marketing margins can change

Because the AIMS calculations of the effect of gas price regulation revolve around changes in the marketing margin, it is worth considering first the various factors besides regulation that can do that. O’Keefe does not discuss these because, as we will see, he implicitly assumes that *only* regulation changes margins. But the observed marketing margin can change for a variety of reasons.

#### **Inflation**

One reason the dollar value of marketing margins can change is general inflation, reflected in the current dollar costs of wholesalers and retailers. The Bank of Canada’s inflation target has been 2 percent for many years, and on average, it has met that target. Therefore, we could expect some underlying trend in the dollar value of marketing margins from that source.

When the price level changes, it’s important to distinguish between *nominal* values measured in dollars and *real* values, measured in dollars of constant purchasing power. Typically, a consumer price index (CPI) is used to adjust nominal dollar values to get real values. In this case, the result would be a real marketing margin that would be part of the real price of gasoline.

What matters to consumers is the real cost of gasoline, that is, what a litre of gas costs in terms of other goods and services. Similarly, sellers are concerned about their real incomes, and thus the

TABLE 2 Marketing operating margins (cents/litre), Toronto, 2003–2008

| Year           | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 |
|----------------|------|------|------|------|------|------|
| Margin         | 5    | 3.8  | 4.9  | 4.5  | 4.6  | 6.1  |
| 3-year Average |      |      | 4.57 |      |      | 5.07 |

SOURCE M.J. Ervin and Associates.<sup>23</sup>

real value of the marketing margin. A 10.5-cent marketing margin in one period of time could have the same real value as an 11-cent margin in some later period of time if the price level has risen. Its real value would be unchanged, but if one forgets about inflation (as the AIMS method does), it looks higher.

If nominal costs rise with inflation, they will be passed through to consumers. If this did not happen, sellers' profits would be continually squeezed by rising costs, something which cannot go on indefinitely. In this case, the real value of marketing margins would not change over time once adjusted for inflation, nor would the price of gasoline change relative to the price of other goods.

#### Real cost increases or decreases

Wholesalers and retailers can experience cost changes that are higher or lower than the inflation rate, which, in turn, can lead to changes in real margins and in the real price of gasoline. For example, real margins could fall through productivity improvements that are passed on to consumers through lower retail prices. If instead real costs and real margins rose because of the rising prices of some inputs, consumers would see higher prices.

Economics textbooks claim that the profit-maximizing firm sets its price by applying an optimal mark-up to its marginal costs, that is, the cost of selling an extra litre of gasoline. For the retailer, that cost includes both the wholesale cost of the gasoline itself (which reflects wholesalers' costs) as well as the additional costs faced by the retailer.<sup>21</sup> As costs change, so do prices.

These considerations do not figure into the AIMS' method, which implicitly assumes that sellers' real costs are constant.

#### The changing degree of collusion or competition in the market

If sellers find themselves increasingly able to cooperate to raise prices, real marketing margins and thus real gasoline prices would rise over time, setting aside all the other influences on prices. Conversely, real margins would fall if such cooperation broke down and the market became more competitive. Such movements could occur in local markets; gasoline markets are localized — the market in Halifax is distinctly different from the market in Truro, for example. If high cost sellers who charge relatively high prices leave the market due to increased competition, this change in the composition of sellers could also change observed margins.<sup>22</sup> Understanding local markets should also figure into any assessment of gas price regulation.

To sum up: we could expect nominal margins to increase roughly with the rate of inflation, but other influences are also possible that could cause real margins to rise or fall over time in unregulated markets. Now let's examine how the AIMS method interprets changing marketing margins.

#### Why the AIMS method does not measure the effects of gas price regulation

To better understand the fundamental problems with the AIMS method, it may help to consider marketing margins in an unregulated market.



TABLE 3 Prince Edward Island (Charlottetown), Marketing margins (cents/litre)

|  | Average weekly margin | Average real weekly margin |
|--|-----------------------|----------------------------|
| Before regulation: January 1987–March 1988 | 17.6                  | 25.3                       |
| After regulation: April 1988–June 1989     | 15.2                  | 20.9                       |
| Difference                                 | -2.4                  | -4.4                       |

Table 2 shows annual average marketing operating margins in Toronto. Applying the AIMS method, we can compare the average margins before and after regulation. How can O’Keefe propose to interpret such numbers as the effect of regulation in provinces that have regulation, but then presumably interpret them in some different way in provinces without regulation? He does not explain, because he did not examine data for provinces without regulation.

This example highlights two implicit assumptions that the AIMS method makes. First, for this method to be valid, the price level must be constant. With a constant price level, comparing the nominal marketing margins in the two periods is the same as comparing the real margins. Inflation, however, is almost never zero in reality. Second, it assumes that the change in the real margins is due *solely* to the introduction of regulation. The other influences on real margins discussed earlier that could create an upward or downward trend are assumed not to exist. This is an empirical question, but is unlikely to be true as a general proposition.

I will show later how this method misinterprets the evidence if there is such a trend. For now, it is important to bear in mind that simply adjusting for inflation is not enough to allow us to infer the effects of regulation. But first let’s see the effect of adjusting for inflation.

### Replicating the AIMS calculations and adjusting for inflation

In this section, I first use O’Keefe’s method to reproduce his results while making some minor

changes.<sup>24</sup> For each province, I then calculate the marketing margins in constant 2002 dollars using the provincial Consumer Price Index.<sup>25</sup> Where weighted averages are required, I use O’Keefe’s weights, but note if using census populations as weights makes any significant difference.<sup>26</sup>

### Prince Edward Island

Table 3 summarizes the results in cents/litre for Charlottetown, Prince Edward Island. O’Keefe reports calculating a 1.54 cent/litre difference of average margins two and one half years before and after regulation began February 1991. However, in reality, retail price regulation in Prince Edward Island began on 31 March 1988, almost three years before he thinks it did.<sup>27</sup> If we repeat the AIMS method using the retail survey data that begins in January 1987 and calculate averages for five quarters before and after regulation really began, we get the results shown in Table 3. The nominal margin was significantly lower in the period after regulation. When the nominal values of the margin in each week are adjusted using the P.E.I. consumer price index to convert them into 2002 dollars, the decline in the average real margin can be seen.

Clearly, not correcting for inflation exaggerates the apparent difference in margins before and after regulation. The nominal dollars of earlier years have a higher purchasing power than the dollars of later years. When this is corrected to express values in units of constant purchasing power, the gap between the earlier years and the later years must narrow. Comparing the nominal values, as the AIMS method does, systematically overstates the real difference between the

TABLE 4 Newfoundland and Labrador, Marketing margins (cents/litre)

|  | St. John's | Gander | Corner Brook | Weighted Average |
|--|------------|--------|--------------|------------------|
| Pre-regulation average (AIMS)          | 11.2       | 13.1   | 12.8         | Not reported     |
| Post-regulation average (AIMS)         | 12.7       | 14.3   | 12.6         | Not reported     |
| <i>Difference</i>                      | 1.5        | 1.2    | -0.2         | 1.31             |
| Pre-regulation average (Hill)          | 11.3       | 13.2   | 13.0         | 11.7             |
| Post-regulation average (Hill)         | 11.7       | 13.3   | 12.2         | 11.9             |
| <i>Difference</i>                      | 0.4        | 0.1    | -0.8         | 0.2              |
| Pre-regulation average (2002 dollars)  | 11.8       | 13.7   | 13.5         | 12.1             |
| Post-regulation average (2002 dollars) | 11.6       | 13.2   | 12.1         | 11.7             |
| <i>Difference in real margins</i>      | -0.2       | -0.5   | -1.4         | -0.4             |

**NOTE** Data for the pre-regulation period is for Tuesdays from 20 April 1999 to 9 October 2001; the post-regulation period is from 16 October 2001 to 13 April 2004.

period before and after regulation whenever the price level is rising.

On the AIMS website, a 'Gouged at the Pumps!' meter claims (as of 1 April 2009) that Prince Edward Islanders have paid more than \$63,640,900 as a result of higher post-regulation prices. Even the calculation in Table 3 using AIMS's own method provides no support for this spuriously precise claim.

While the values shown in Table 3 cast some light on what happened in P.E.I. in the late 1980s just before and after regulation, they provide no evidence about whether prices today in P.E.I. are higher or lower than what they would have been in the absence of regulation. For example, have the regulations governing price setting changed in the subsequent two decades? If regulation had not been in place, would the structure of the market — the degree of competition, the number of sellers, and so on — be different from what it is today? If so, what effect would that have on what prices would be today in the absence of regulation? O'Keefe fails to mention such issues, while at the same time using the wrong date for the onset of regulation and failing to take inflation into account in his analysis.<sup>28</sup>

### Newfoundland and Labrador

Table 4 reports results for Newfoundland and Labrador, where the setting of base prices went into effect on 15 October 2001. O'Keefe calculated two and one half year averages for each city using data from April 1999 to April 2004, a total of 61 months. (October 2001 was split between the pre- and post-regulation periods.) I was unable to replicate his reported results because of errors in his exchange rate data. As seen in the table, the differences are significant.

The actual average change was a small fraction of what O'Keefe claimed (an increase of 0.2 cents/litre compared with his claim of 1.3 cents/litre). Adjusting for price level changes to express the margins in constant dollars we see that real margins fell in all three areas surveyed after regulation compared to before regulation. The data here offer no support for the AIMS claim on its 'Gouged at the Pumps!' meter that regulation has cost Newfoundlanders more than \$68 million in higher gas prices.

### Nova Scotia

Table 5 reports results for Nova Scotia. The values reported by O'Keefe are two-year averages before and after regulation began on 1 July 2006 that were originally stated in a 2008 Gardner Pinfold Consulting Economists report.<sup>29</sup> I have

TABLE 5 Nova Scotia, Marketing margins (cents/litre)

|   | Halifax | Sydney | Yarmouth | Truro | Weighted Average |
|---|---------|--------|----------|-------|------------------|
| Pre-regulation 2 year average, July 2004–June 2006 (Gardner Pinfold)  | 10.3    | 11.8   | 11.7     | 10.7  | 10.85            |
| Post-regulation 2 year average, July 2006–June 2008 (Gardner Pinfold) | 10.5    | 12.4   | 12.5     | 11.6  | 11.36            |
| <i>Difference</i>   | 0.2     | 0.6    | 0.8      | 0.9   | 0.51             |
| Pre-regulation 2.5 year average (January 2004–June 2006)              | 10.2    | 11.2   | 11.5     | 10.4  | 10.6             |
| Post-regulation 2.5 year average (July 2006–December 2008)            | 10.8    | 12.7   | 13.0     | 11.4  | 11.6             |
| <i>Difference</i>   | 0.6     | 1.5    | 1.5      | 1.0   | 1.0              |
| Pre-regulation 2.5 year average (2002 dollars)                        | 9.5     | 10.4   | 10.7     | 9.7   | 9.9              |
| Post-regulation 2.5 year average (2002 dollars)                       | 9.5     | 11.2   | 11.4     | 10.1  | 10.2             |
| <i>Difference in real margins</i>                                     | 0.0     | 0.8    | 0.7      | 0.4   | 0.3              |

**NOTE** Weights used by O’Keefe in the weighted average: Halifax, 0.47; Sydney, 0.15; Yarmouth, 0.18; Truro, 0.2. Population weights based on the 2006 census are: Halifax, 0.70; Sydney, 0.20; Yarmouth, 0.02; Truro, 0.08. With these weights, the provincial average real margin after regulation is 0.2 cents/litre higher than the pre-regulation average.

TABLE 6 New Brunswick, Marketing margins (cents/litre)

|   | Saint John | Fredericton | Moncton | Bathurst | Weighted Average |
|---|------------|-------------|---------|----------|------------------|
| Pre-regulation average (January 2004–June 2006)   | 11.4       | 11.4        | 11.5    | 11.5     | 11.5             |
| Post-regulation average (July 2006–December 2008) | 11.5       | 11.9        | 11.8    | 12.0     | 11.7             |
| <i>Difference</i>                                 | 0.1        | 0.5         | 0.3     | 0.4      | 0.3              |
| Pre-regulation average (2002 dollars)             | 10.7       | 10.7        | 10.7    | 10.8     | 10.6             |
| Post-regulation average (2002 dollars)            | 10.3       | 10.7        | 10.6    | 10.7     | 10.6             |
| <i>Difference in real margins</i>                 | -0.4       | 0.0         | -0.2    | -0.1     | -0.2             |

**NOTE** All values are rounded to the nearest decimal point.

been unable to replicate their results because they were produced using private data obtained directly from the companies, not the M.J. Ervin weekly survey data. My own results (not reported in the table) show a somewhat larger increase in nominal margins after regulation, averaging 0.6–0.7 cents/litre depending on the weights used.

The values I report are for two and one half year averages before and after regulation.<sup>30</sup> After correcting for changes in the price level, we can see that the real marketing margins after regulation were unchanged in Halifax and increased elsewhere.

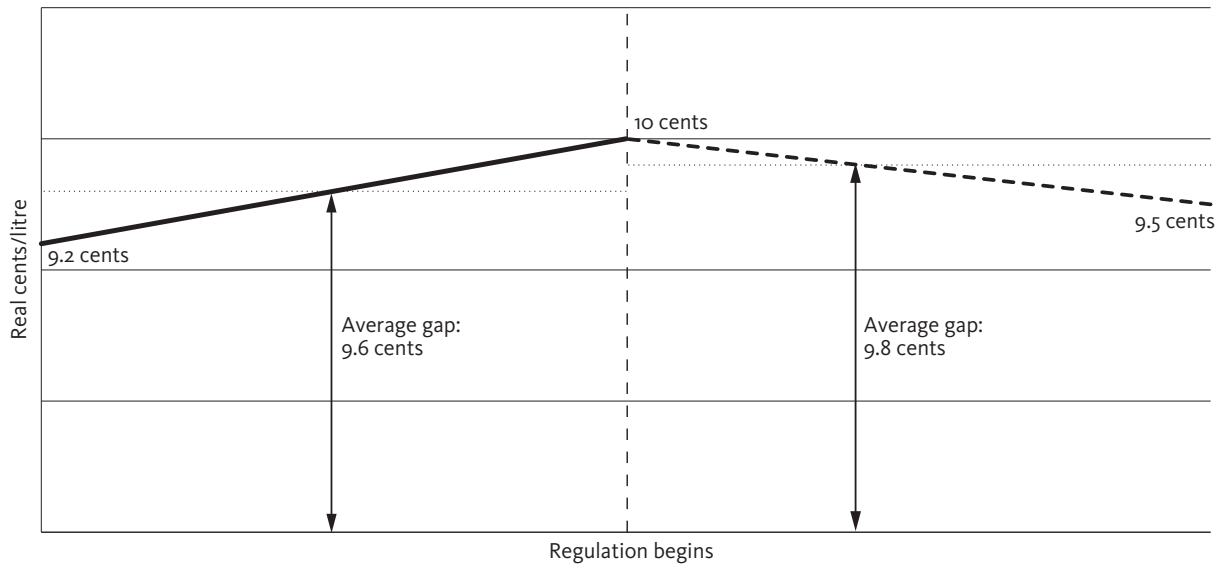
A further unsatisfactory feature of the AIMS method is the arbitrary nature of the time period

selected. The results differ significantly depending on the length of time examined. As seen in Table 5, the increase in the two-year weighted average marketing margin after regulation is half that of the 2.5-year average, but there are no criteria for selecting which time period is ‘best’. The arbitrary choice of time period can determine the results. (The next section considers a further problem with these conclusions about Nova Scotia stemming from the neglect of price trends in the AIMS method.)

#### New Brunswick

For New Brunswick, O’Keefe reported results for a two and one half year average around the

FIGURE 1 Real Marketing Margins Before and After Regulation



start of regulation on 1 July 2006, which I successfully replicated. However, as seen in Table 6, adjusting for changes in the price level shows that average real margins after regulation were lower in three of the four cities (notably so in Saint John) and unchanged in Fredericton. The weighted average is a small decline of 0.2 cents/litre in 2002 dollars. This contrasts with the increase of 0.3 cents/litre when values are not adjusted for inflation.

### Misinterpreting trends in the marketing margin

Yet another weakness of this simple approach of comparing pre- and post-regulation averages is its failure to take account of trends in margins. Calculating a simple average value ignores the information about how marketing margins have been changing over time. Such information could be used to get some hint about how prices would have behaved in the absence of regulation.

To see this, consider Figure 1 which shows hypothetical values of real margins during a particular period of time before and after regulation

begins. Suppose that before regulation, margins were constant at 9.6 cents/litre (as shown by the dashed horizontal line). Then after regulation, suppose margins were constant at 9.8 cents/litre (also shown by a dashed horizontal line). If we had no reason to suppose that anything else except the introduction of regulation had happened during this time, then the AIMS method would seem to give a reasonable assessment of the effects of regulation. It would conclude that regulation raised margins by 0.2 cents/litre.

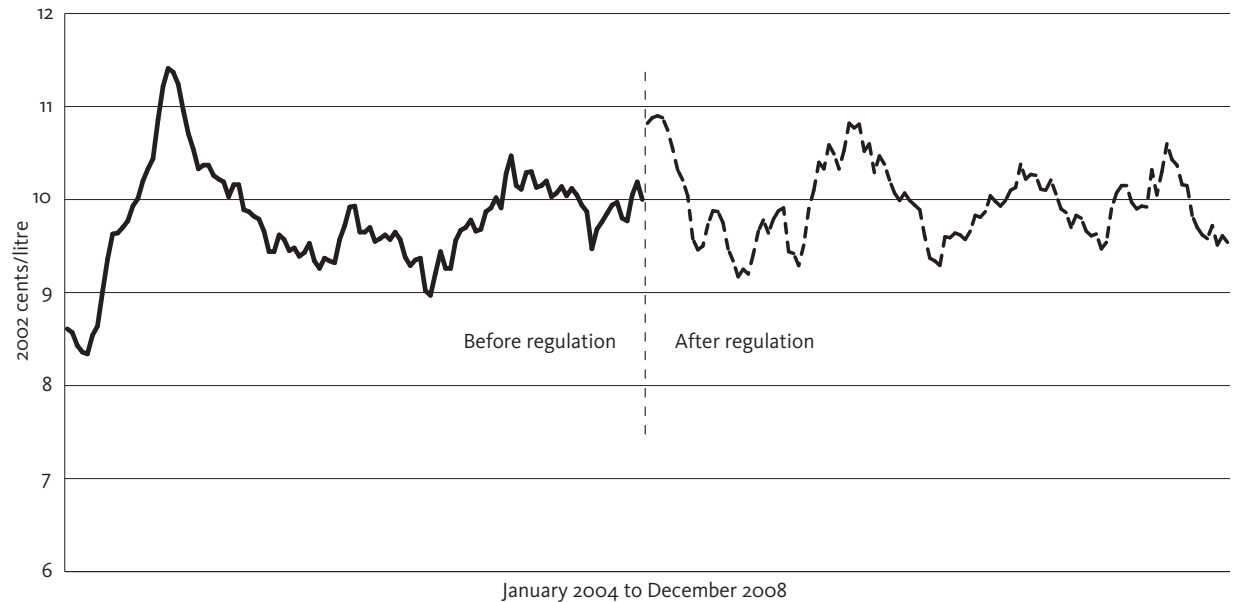
Now, instead, suppose that in the period before regulation, there was an upward trend in real margins, rising from 9.2 cents/litre to 10 cents/litre at the time regulation begins, as shown by the upward-sloping line. This gives a pre-regulation average of 9.6 cents. Then, suppose that after regulation the upward trend is reversed and the real margin declines from 10 cents/litre to 9.5 cents/litre, giving a post-regulation average margin of 9.8 cents. Now if we apply the AIMS method to these inflation-adjusted marketing margins, we would still conclude that regulation raised the real marketing margin by  $(9.8 - 9.6)$  or 0.2 cents/litre.

**TABLE 7 Trends in real marketing margins in Nova Scotia (Percent per year)**

|                           | Halifax | Sydney | Yarmouth | Truro | Weighted Average |
|---------------------------|---------|--------|----------|-------|------------------|
| 2.5 years pre-regulation  | 3.1%    | 4.4%   | 6.0%     | 2.8%  | 3.4%             |
| 2.5 years post-regulation | -2.0%   | -4.1%  | 1.8%     | -1.3% | -2.4%            |

**SOURCE** Author's estimates. Weighted average uses population weights.

**FIGURE 2 Real Marketing Margins in Nova Scotia Before and After Regulation (16 week moving averages)**



Yet if after regulation real margins stopped rising and started falling, it seems implausible to conclude that regulation raised margins. While we can't be sure that regulation caused the change in the trend without further information, it is a possible explanation. We could only argue that regulation raised prices if we could argue that margins would have fallen even further, were it not for regulation.

By calculating a simple pre- and post-regulation average, the AIMS method throws away potentially useful information about how margins are changing over time. This example is intended to show that information about such trends may be relevant in assessing the effect of regulation on prices.

To sum up: implicit in the AIMS method is the assumption that there is no trend in nominal margins (i.e. inflation is zero) and that there is no trend in real margins. It assumes that had regulation not been in place, the average margin after regulation would remain the same as it was before regulation. This is the reason for comparing the average margins before and after regulation and claiming that any difference must be due to regulation. That would be reasonable if the implicit assumptions held; but given that inflation is not zero and there could well be trends in real margins, this approach in practice gives fundamentally misleading results.

### Estimates of trends in marketing margins:

#### The case of Nova Scotia

The earlier review of O’Keefe’s results showed only one province in which average real marketing margins were higher after regulation than before regulation: Nova Scotia. Does this mean that regulation could be responsible for higher prices there? The numerical example contained in Figure 1 suggests that this would be an unwarranted conclusion unless we examine marketing margins more closely.

In fact, I chose the numbers in Figure 1 because they are approximately the actual ones I found for Nova Scotia when I estimated the trend in real margins before and after regulation. I took real marketing margins for each city and a weighted average of these margins and for each I estimated the time trend in the data before and after regulation. Table 7 shows the results.<sup>31</sup>

The trend in real margins was clearly upwards before regulation in all of these places in the province. In three of the four communities, the trend was downward after regulation. The only exception was Yarmouth, which had the highest pre-regulation growth rate. There, the post-regulation growth rate fell sharply.

Figure 2 shows the four-community weighted average.<sup>32</sup> Even here, where the data have been smoothed, there are significant ups and downs. The time trends cannot be estimated with any great precision.

Still, the results are consistent with those presented in last year’s review of Nova Scotia’s gas price regulation.<sup>33</sup> The consultants show a four-month moving average for the nominal marketing margin in Halifax to give an indication of long-term trends. It rose from about 8 cents/litre at the beginning of 1999 to about 10.8 cents/litre just before the introduction of regulation in July 2006. This is a rise of just over 4 percent a year, higher than the average core inflation rate of 2.1 percent a year.

The consultants explain that there are two possible explanations for this rise: “a less com-

petitive environment and/or rising costs”.<sup>34</sup> While they attribute it to rising costs, it’s not obvious that reduced competition can be ruled out either. One thing is particularly striking about the evidence they present: their estimate of the long term trend in the nominal marketing margin flattens out immediately after the introduction of regulation. The subsequent 2 percent annual inflation would give the result shown in Table 7, as real margins in Halifax fell at 2 percent per year.

Further supporting the view that in Halifax real marketing margins were lower after regulation than they would have been in its absence, the consultants write: “Prices in most major centres in Canada have risen relative to those in Halifax since July 2006. The relative increase is attributable to differences in competitive conditions, including the ability to pass on higher operating costs through higher margins. *Regulation in Nova Scotia has fixed margins, serving to constrain the ability to pass on the rising costs the industry faces.*”<sup>35</sup> O’Keefe does not cite this conclusion, yet it is clearly at odds with the earlier Gardner-Pinfold interpretation of the differences in average nominal margins that he does cite.<sup>36</sup>

This examination of real marketing margins in Nova Scotia before and after regulation has found no grounds to conclude that regulation in Nova Scotia raised real margins and thus the real price of gasoline. However, it should be added that for Nova Scotia and for the other provinces, the only retail price data available are for towns and cities, not rural areas. However, these are the data on which the AIMS study is based as well.

#### The AIMS treatment of sales taxes

In calculating the cost to consumers of supposedly higher gasoline prices, O’Keefe includes the additional federal and provincial sales taxes that the higher prices would produce. For all four provinces, he estimates that this totals \$20.9 million.<sup>37</sup>

If O’Keefe’s claims about higher gas prices were correct, the additional amount spent on gasoline would come largely at the expense of spending on other goods and services. To the extent that those other goods would also have been taxed, people would simply be paying more tax on gasoline and less tax on other goods. Higher gas prices would just shift taxes from one class of goods and services to another.

This view would be reinforced if governments set taxes and fees with an eye to attaining a target for total revenues. Higher expected revenues from one source such as sales taxes could be used to reduce revenues from other sources.

Finally, suppose that O’Keefe’s assumption that people pay more taxes in total were actually true. According to him, this “robs from consumers” in the same way that a higher before-tax price of gasoline does. If the real, before-tax price of a litre of gas goes up, you pay more and get the same thing — a litre of gas. You must be worse off. But, if you pay more taxes, you don’t just get the same thing as you did before. If governments use the higher taxes to produce more publicly-provided goods and services or transfers of cash to individuals, that would provide benefits that O’Keefe does not consider.<sup>38</sup> He implicitly assumes that all taxes paid to the government disappear into a black hole that provides no benefits.

## Concluding remarks

Whether regulation in a particular province has raised prices, lowered them, or kept them about the same as they would have otherwise been, is a question that can be answered only by examining the evidence with a method that makes sense. Such a method would have to adjust for changes in price levels when comparing values over time, to avoid subtracting apples from oranges. It would have to use all available information (such as considering how and why real marketing margins were changing over time)

rather than ignoring information by just calculating simple averages.

What is particularly disturbing about the AIMS study is the juxtaposition of faulty logic, sloppy calculation, and misinterpretation of simple numbers with strong claims about the precision of the results. For example, O’Keefe writes that “gas price regulation costs New Brunswickers \$428 per hour”.<sup>39</sup>

Unfortunately, the media has extensively reported the claims of AIMS writers, and in some cases taken them at face value. Thus, Roger Taylor, business columnist for *The Halifax Chronicle Herald* writes that the Nova Scotia government “cannot argue with the facts” that AIMS presents. Taylor could argue with the misinterpretation of the facts, but he doesn’t. Instead, he implies that the researchers at AIMS are courageous and principled because while “several oil companies are helping to fund the organization” they criticize regulation despite the alleged fact that “oil companies are the biggest beneficiaries of regulation”.<sup>40</sup> Taylor fails to note that the Canadian Petroleum Products Institute and the oil companies themselves also oppose retail gas price regulation — on the grounds that they would benefit from it through higher prices and reduced competition.

The AIMS ‘guzzling gas regulation gauge’ currently claims that drivers in Atlantic Canada have paid more than \$162 million in higher prices for gasoline as a result of regulation. Yet, as this paper has shown, AIMS has yet to provide any evidence that regulation raised prices. When one adjusts for changes in the price level, the average real revenues per litre of gas that were received by wholesalers and retailers were lower in New Brunswick, Prince Edward Island and Newfoundland & Labrador after regulation than before it. In Nova Scotia, the apparent rise in real revenues per litre for wholesalers and retailers is the product of the failure of O’Keefe’s method to consider trends in marketing margins. As a result, his method concludes that regulation

increases sellers' margins even if margins began a downward trend after regulation, as was the case for three of the four communities in Nova Scotia where data exist. Finally, O'Keefe includes in his estimate of costs to consumers the additional taxes paid because of higher prices under regulation. I show why this is incorrect.

I can only conclude that the claims made by AIMS that gas price regulation has 'robbed from

consumers' have no foundation in fact. Its statements have simply misled the public. The aim of this commentary has been to set the record straight as well as to contribute to a better understanding of gas price regulation and its possible effects.



# References

- CBC News. 2009 (9 February). "Think tank denies oil money influences gas regulation report". Available at: [www.cbc.ca/new-brunswick/story/2009/06/nb-aims-gas.html](http://www.cbc.ca/new-brunswick/story/2009/06/nb-aims-gas.html).
- Competition Bureau 2008a (12 March). "Discontinued inquiries concerning Canada's gasoline industry." News Release.
- Competition Bureau 2008b (12 June). "Competition Bureau uncovers gasoline cartel in Quebec." News Release.
- Crowley, Brian Lee. 2004 (5 August). "Gas and politics: a volatile mixture." *National Post*.
- Crowley, Brian Lee. 2005 (15 June). "Gas price regulation one pricey fix." *Halifax Chronicle Herald*.
- Crowley, Brian Lee. 2006 (5 April). "The bad idea that will not die: gas price regulation", *Halifax Chronicle Herald* and *The Moncton Times & Transcript*.
- Eckert, Andrew and Douglas S. West. 2005a. "Price uniformity and competition in a retail gasoline market." *Journal of Economic Behavior and Organization*, Vol. 56, 219–237.
- Eckert, Andrew and Douglas S. West. 2005b. "Rationalization of retail gasoline station networks in Canada." *Review of Industrial Organization*, Vol. 26, 1–25.
- Gardner Pinfold Consulting Economists. 2008. "Evaluation of Petroleum Products Pricing Regulation in Nova Scotia: A Two Year Review", November. Prepared for Service Nova Scotia and Municipal Relations.
- Huff, Darrell. 1954. *How to lie with statistics*. New York: W.W. Norton.
- New Brunswick. 2006. *Petroleum Products Pricing Act*. Chapter P-8.05. 22 June.
- Newfoundland and Labrador. *Newfoundland and Labrador Regulation 79/01. Petroleum Products Regulations under the Petroleum Products Act* (O.C. 2001-705)
- O'Keefe, Bobby. 2009a (2 February). *What's missing from your wallet? How gas price regulation robs from consumers*. Halifax: Atlantic Institute for Market Studies.
- O'Keefe, Bobby. 2009b (18 February). "We pay for gas pricing", *New Brunswick Telegraph Journal*.

- Prince Edward Island. 2003. *Petroleum Products Pricing Act*. Chapter P-5-1. 20 February.
- Sen, Anindya, Dennis Lu and Anthony Clemente. 2008. "Do price ceilings result in lower gasoline prices? Evidence from Canada", unpublished manuscript, University of Waterloo.
- Service Nova Scotia and Municipal Relations. 2006. (27 June) "Gasoline Price Regulation in Effect 1 July", Press Release.
- Taylor, Roger. 2009 (3 February). "The steep price of gas stability", *Halifax Chronicle Herald*.

# Notes

**1** Prince Edward Island, 2003, Section 2.

**2** New Brunswick 2006, Section 1.1.

**3** Newfoundland and Labrador, 2001.

**4** For example, see Service Nova Scotia and Municipal Relations 2006.

**5** Gardner Pinfold, 2008, p.i.

**6** The term 'New York Harbour' comes from one location for delivery of the gasoline, as specified in contracts.

**7** Crowley 2005.

**8** Crowley 2006.

**9** Huff 1954, p.74.

**10** O'Keefe 2009b.

**11** Crowley 2004.

**12** Competition Bureau 2008a.

**13** Competition Bureau 2008b. Information on the number of previous cases comes from Competition Bureau 2008a.

**14** Eckert and West 2005a, p.235.

**15** Eckert and West 2005b, p.24.

**16** Sen, Lu and Clemente 2008.

**17** Their central estimate relies on information about the political party in power at the time regulation is introduced. Liberal governments introduced gas price regulation in PEI in 1990 and Newfoundland and Labrador in 2001. Conservatives were in power in Nova Scotia in 1930. However, if their sample included 2006, when Progressive Conservative governments introduced regulation in Nova Scotia and New Brunswick, their results would surely be affected.

**18** O'Keefe 2009a, p.3.

**19** O'Keefe 2009a, p.5. For the CPPI position on regulation, see [www.cppei.ca/Regulated\\_Markets\\_Review.html](http://www.cppei.ca/Regulated_Markets_Review.html). Accessed 7 February 2009.

**20** Gardner Pinfold 2008.

**21**  $P = \frac{e}{(1+e)}MC$  is the profit-maximizing price, where  $e$  is the price elasticity of demand and  $MC$  is the marginal cost, i.e. the cost of selling another litre of gas, the sum of the wholesale price and the other marginal costs. For example, if  $e = -10$ , the 'markup' is  $(-10/-9)$  or 1.11 or 11 percent over marginal costs. If wholesalers' and retailers' real costs rise (or fall), this is passed through to retail prices and (given the NYH price), the real marketing margin rises (or falls).

22 If low volume, high cost sellers are predominately located in rural areas, this might not be observed in the retail price data available, which pertain only to towns and cities.

23 The data are available at [http://mjervin.com/other\\_resources.htm](http://mjervin.com/other_resources.htm). Accessed 28 May 2009.

24 O'Keefe used a 5-day average of NYH prices from Wednesdays through to the following Tuesday, multiplied by the average exchange rate during that same period and then converted from U.S. gallons to litres. My values are calculated using the weekly average of each day's NYH price converted to Canadian dollars per litre. The two are not the same, although they do not differ by much in this case. For  $N$  observations, where  $e$  is the exchange rate and  $P$  is the NYH price,  $(1/N)\sum eP \neq [(1/N)\sum e] (1/N)\sum P$ . In my calculations, in the case of holidays in one or both of the countries, I used the previous trading day's value for  $e$  or  $P$ . I also checked the alternative calculation where Friday values are used for Saturday and Sunday in calculating the average NYH prices, as is done in some provinces when determining benchmark prices. The results were not greatly different from using 5-day averages in most cases, so I have not reported them here.

25 Daily values for the NYH price of regular gasoline were obtained from the U.S. Energy Information Administration: <http://tonto.eia.doe.gov/dnav/pet/hist/rrunyh.htm>. Daily values of noon spot US dollar exchange rate are from CANSIM series V121716. Weekly average before-tax retail prices for regular self-serve gasoline are from M.J. Ervin and Associates historical data, available at [http://mjervin.com/gasoline\\_prices.htm](http://mjervin.com/gasoline_prices.htm). The CANSIM series numbers of the monthly consumer price indices for 'all items' are V41691648 for New Brunswick; V41691513 for Nova Scotia; V41691244 for Newfoundland and Labrador; V41691379 for Prince Edward Island. All series use a 2002 base year, but a 2005 basket of goods and services. Weighted averages use O'Keefe's weights, based on his estimates of the relative volumes of gasoline sold in each city. I also calculated alternative weights using city population data from the 2001 Census in the case of Newfoundland and Labrador, and the 2006

Census for the New Brunswick and Nova Scotia data. For the most part, these do not give significantly different averages than O'Keefe's weights unless otherwise reported. The full spreadsheet is available from the author ([rhill@unb.ca](mailto:rhill@unb.ca)) on request.

26 O'Keefe estimated relative volumes of gasoline sold in each city for use as weights. In personal correspondence, he reports that the estimates were based on average throughput data and numbers of service stations in each area.

27 I am grateful to Mr. Allison MacEwen, Assistant Director, Petroleum, Island Regulatory and Appeals Commission, for providing me with the details. The Commission's order that brought retail price regulation into effect was Order P.880331.

28 Yet O'Keefe acknowledges the issue of whether a result in the distant past is still relevant when considering the 2001 start of regulation in Newfoundland (O'Keefe 2009a, p.5).

29 Gardner Pinfold 2008, p.39. Bobby O'Keefe provided me with the actual numbers which he had obtained from Mr. Michael Gardner.

30 These replicate what O'Keefe found in his own calculations, unreported in his study, but which he shared with me.

31 In each case, I estimated a linear regression of the form:  $\ln M = a + bT + e$ , where  $\ln M$  is the natural logarithm of the real margin,  $T$  is a time trend,  $e$  is the error term and  $a$  and  $b$  are coefficients to be estimated. The coefficient 'b' is interpreted as a weekly growth rate and the annual growth rates ( $g$ ) reported in Table 7 are found from  $g=(1+b)^{52}-1$ . The details of the results are available on request.

32 The data are smoothed using a 16-week moving average, i.e. the value shown for each week is the average marketing margin over the previous 16 weeks.

33 Gardner Pinfold 2008, p.19.

34 Ibid.

35 Gardner Pinfold 2008, p.48 (my emphasis).

36 Gardner Pinfold 2008, p.39.

37 O'Keefe 2009a, p.6.

38 Governments could also use the extra revenue to pay down debt or to borrow less, which provides other benefits to the public.

39 O'Keefe 2009b.

40 Taylor 2009. On oil company funding, see also CBC News 2009.

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By Roderick Hill

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