Producer Compensation under Government Programs: What Should the Magnitude Be?

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ABSTRACT

When policies are changed it is not uncommon for losers to be compensated. Economic theory and quantitative analysis are useful in determining the efficiency gains/losses associated with a policy change, but are little help in deciding what the approach to compensation should be. The amount of compensation varies, depending on, in part, the political clout of the parties being negatively affected by a policy change—compensation is what politicians and the sector demanding compensation can agree on. We formulate four approaches to producer compensation within the context of the Ontario Tobacco Transition Program where producers would have suffered losses in the absence of compensation. The approaches range from providing zero-compensation to providing compensation based on the entire value of the tobacco quota. The Canadian government chose to compensate producers for the termination of the tobacco quota program based on an approach that far exceeded other possible compensation approaches. Importantly, efficiency is not affected by the compensation approach.

RÉSUMÉ

Key Words: Ontario tobacco, producer compensation, production quota buyout
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INTRODUCTION

Compensation plays an important role in policy design. Often, policies are changed, but only if losers from the change are compensated. The following cases are illustrative of policy changes that incorporated producer compensation for the termination of supply management programs.

In the United States (U.S.), two historic farm programs ended in the early 2000s. The U.S. peanut program was terminated in 2002 and farmers were compensated USD 1.32 billion (USD represents United States dollars) (Schmitz and Schmitz 2010). The U.S. tobacco program ended in 2004 and tobacco producers were compensated USD 9.6 billion (Schmitz et al. 2013).

In Canada, farmers received an indirect transportation subsidy for exporting grain (referred to as the “CROW” subsidy) since 1897, as the federal government paid the railway the losses from moving grain from outside the prairie region. However, in 1995, the federal government abandoned these payments in favor of “pay the producer” approach (Schmitz et al. 2002). The total compensation was CAD 1.6 billion (CAD represents Canadian dollars), which was far less than the value of the subsidy to farmers that totaled in the neighborhood of CAD 11.5 billion (Schmitz et al. 2002).

Our paper highlights various government approaches to compensation that are available to compensate producers for losses that they may incur given policy change. We focus on the Ontario tobacco quota program that was terminated in 2009, wherein producers were compensated CAD 286 million (Schmitz et al. 2013). We show both
theoretically and empirically, within an *ex ante context*, several approaches to compensation including the one used in the actual buyout. If the government would have selected a different approach to compensation, the efficiency impacts of the buyout would not have been affected; however, both the distributional impacts and the magnitude of producer compensation would have been drastically different.

TOBACCO TRANSITION PROGRAM (TTP)

Due, in part, to falling income from tobacco farming, the Canadian government introduced the Tobacco Transition Program (TTP) in 2009.¹ Three key goals of the TTP were: (1) removal of the 30 year old quota system and replacement with a licensing system; (2) provision of an easy transition for producers out of the tobacco industry; and (3) improvement of the viability of the remaining tobacco producers.² By way of the Ontario Flue-cured Tobacco Marketing Board (OFCTMB), producers collectively negotiated a deal with the Canadian government regarding the buyout amount.³ In total,

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¹ The funds for the buyout came from the settlement of a lawsuit wherein the Canadian government sued Imperial Tobacco and Rothman’s Benson & Hedges for smuggling contraband tobacco into Canada. The total settlement was for CAD 1.1 billion (Canadianbusiness.com 2013).

² There were loopholes in the buyout contract, as there was a lack of enforceability in the TTP. More specifically, while producers accepting the compensation package could not produce tobacco anymore, there was nothing written in the legislation prohibiting close friends and/or relatives from producing tobacco on the same land. In fact, as a result of the buyout, tobacco production actually increased. After the TTP, tobacco production totaled 48 million pounds in 2010, 50 million pounds in 2011, and 54 million pounds in 2012. Also, questions arise as to the legality of the licensing system introduced to replace the quota system.

³ The 2011 Fall Report of the Auditor General of Canada (Auditor General 2011) noted that the Tobacco Marketing Board was a regulatory body of the Province of Ontario and represents the interests of all Ontario flue-cured tobacco producers. For the purposes of the TTP, that could be seen as being a conflict of interest. Additionally, there was significant confusion regarding the objectives of the TTP. For example, a main objective of the buyout legislation was to ensure that those producers who chose to accept the compensation package would agree to a zero-production mandate and forfeit the right to grow tobacco in the future (this was strongly supported by health groups in Canada), while another objective was to increase profitability and the viability of tobacco production (Auditor General 2011). It was also unclear on how to arrive at the level of producer compensation. This is due in part to the two marketing quotas: the total Marketing Quota (TMQ) of 22 million pounds) versus the Basic Marketing Quota (BMQ) of 271.5 million pounds).
the TTP cost the Canadian government CAD 301 million, with CAD 286 million given to producers (based on a BPQ of 271.5 pounds at CAD 1.05 per pound) and CAD 15 million given to communities where growing and selling tobacco was traditionally the main source of income. Producers agreed to accept the CAD 286 million, and in exchange vowed to forfeit their right to produce tobacco.

THEORY

Quota Removal

In our model framework, there are two possible outcomes to a buyout. Under the first, as per the negotiated deal, producers no longer produce tobacco. Under the second, competitive equilibrium is restored and producers continue producing tobacco. Regardless of either outcome, there are at least four approaches of compensation that the Canadian government could have selected when it terminated the tobacco quota program. However, the government chose the value of quota approach (using the basic production quota as the basis of compensation) which, as we show later, provided producers with the most compensation. The four approaches to compensation are as follows: 1) Zero compensation—the government does not compensate producers for the loss of the quota, 2) Equivalent compensation—the government compensates producers exactly what they would lose from the termination of the quota program (this could be considered “just compensation”), 3) value of the total marketing quota (TMQ)—the government compensates producers based on the amount of tobacco that can legally be sold in the market, and 4) value of the basic production quota (BPQ)—the government provides

pounds. The theory, along with the actual production amounts of tobacco, would imply that the TMQ could have been used as the basis of compensation even though it was nowhere near the BMQ.
compensation to producers based on the amount of tobacco that can legally be produced. The latter generates the largest dollar amount of compensation to producers. These possible outcomes are presented in Figure 1.

[INSERT FIGURE 1 HERE]

Figure 1. The economic effects of a government-funded production quota buyout under various approaches to compensation

The theory on which Figure 1 is based is discussed with reference to Figure 2. In Figure 2, \(S\) is the domestic tobacco supply curve, \(D_D\) is domestic demand, and \(D_T\) is total demand. The competitive equilibrium tobacco price is \(P_0\) and quantity is \(Q_0\). An expanded version of this model would include the demand and supply for cigarettes. Since this is not done, the area under the tobacco demand curve is referred to as user surplus. In a complete benefit-cost analysis of the tobacco buyout, the consumer surplus effects would far exceed the user effects. Even so, two of the main conclusions are not affected by excluding the cigarette market. The effect on producer welfare for alternative compensation approaches does not depend on a more general equilibrium model, nor do the efficiency impacts of alternative approaches to compensation.

[INSERT FIGURE 2 HERE]

Figure 2. Theoretical buyout

Under a production quota of \(Q_1\), the tobacco price faced by the processor is \(P_1\) and the producer price is \(P_2\). In this case, the value of the production quota (TMQ) is \(P_1P_2ca\),
while the value of BPQ is \( P_3P_{2wn} \). Note that in Figure 2, the quantity \( Q_3 \) that corresponds to the BPQ far exceeds the binding quota amount of \( Q_1 \).\(^4\)

Models and Approaches to Compensation

At first glance, in light of the zero-production mandate, it appeared as if the elimination of the Ontario tobacco quota program would have resulted in zero tobacco production. But this did not happen. As we show below, under the zero-production model (given a BPQ compensation basis), producers would have gained even if they had exited the industry (as was the design), but that gain would have paled in comparison to the amount that they would have gained by staying in the industry.

From Figure 2 and Table 1, in the case of zero production, output decreases from \( Q_1 \) to \( O \). Depending on the approach to compensation, the impact on producers varies from a loss of \( (P_{1kca}) \) to a gain of \( [(P_3P_{2wn}) - (P_{2kc})] \). Domestic users lose \( (uP_Ir) \), and foreign users lose \( (xra) \). The net welfare loss in the domestic country is \( [(P_{1kca}) + (uP_Ir)] \), and the total net welfare effect is a loss of \( (uxack) \).

[INSERT TABLE 1 HERE]

Table 2 provides the results for various approaches to compensation where competitive equilibrium is restored and tobacco production increases. Under the BPQ, producers gain 
\[-\{[(P_{1}P_{0}da) - (dcb)] + (P_{1}P_{2}wn)\} - \{[(P_{1}P_{2}ca) - (P_{1}P_{0}da) + (dcb) = P_{1}P_{2}cb]\}, \text{ which is far greater than if the TMQ had been used} \]

\[^{4}\text{The BPQ was used as a basis for compensation even though the production levels were around the TMQ for decades because the BPQ was the quantity of tobacco that the producers had a right to produce.}\]
foreign users gain ($ribatext{iba}$). Like the above model, the efficiency effects do not depend on the approaches to compensation.

[INSERT TABLE 2 HERE]

Note an important theoretical result from Table 1 and 2—the net efficiency/welfare effects do not depend on the approach to compensation, once the model has been specified. This is the case even though the distributional effects are dependent on the approach to compensation.

RESULTS

The results of the models and approaches to compensation are shown in Table 3 and Table 4. We provide within a, “small country” trade model framework, two cases (1) a total demand elasticity of $-5.6$, a domestic demand elasticity of $-1.2$, and supply elasticity of $1.9$; and (2) given a total demand elasticity of $-8.0$, a domestic demand elasticity of $-1.2$, and supply elasticity of $1.8$.

Table 3 includes results from the zero-output model. Since the producers were compensated by a dollar amount based on the value of the BPQ, their net gain would have been roughly CAD $256$ million if the production of tobacco had ceased. The net total welfare loss is unaffected by the method of compensation and is approximately $44$ million (Table 3).

[INSERT TABLE 3 HERE]

Table 4 includes results under the buyout when competitive equilibrium was restored. The producers gained roughly between CAD $270$ million and CAD $288$ million depending on total demand elasticity estimates. As before, the net efficiency is not
affected by the approach in compensation. However, in this case, the net total welfare gain ranged from CAD 6.3 million to CAD 15.2 million, depending on the total demand elasticity used.

**[INSERT TABLE 4 HERE]**

From the results, it is clear why the Ontario tobacco producers supported, and received, compensation based on the value of the BPQ with no production restrictions. Under this scenario, given a move to competitive equilibrium, as a result of the buyout, and a total demand elasticity of \(-1.5\), net producer compensation is roughly CAD 271 million (Table 4). Given a total demand elasticity of \(-8.0\), ceteris paribus, the net producer compensation is roughly CAD 289 million (Table 4). This compares to a buyout of CAD 256 million under a zero production model. Importantly, in either case, the net compensation to producers was more than 70 percent of the total monetary compensation of CAD 301 million.

From the above, producers and the government agreed to an approach to compensation (value of BPQ) that generated a large compensation package. For example, if the compensation had been based on the value of TMQ, the net producer gain would have ranged between only CAD 9 million and CAD 27 million.

**CONCLUSIONS**

In the case of the Ontario tobacco buyout, the Canadian government had at least four producer compensation options (no compensation, equivalent compensation, compensation based on the TMQ, and compensation based on the BPQ), provided that it was not legally bound to base compensation on the BPQ. In the end, the government
chose the largest of the four compensation packages—one based on the basic production quota. But, as we point out, the approach to compensation does not impact the overall efficiency (welfare impact) of removing the tobacco program.

The argument put forward for compensation was that in the tobacco legislation, producers legally had the right to produce the basic production quantity, and therefore, should have been compensated based on that quantity. This argument isn’t refuted by the Auditor General’s Report (2011). However, based on a Canadian supply management study (Schmitz et al. 1996), one could question the existence of a legal basis for compensation (in the context of the U.S. tobacco buyout, Pasour [2005] argued that compensation for the loss of the quota program was not legally required and tobacco producers have inherently benefited from the quota system for decades).

The removal of the Ontario tobacco program is, in part, due to the effectiveness of producer rent-seeking behavior. The Ontario tobacco marketing board alleged that a thriving contraband tobacco market (indirectly aided by weak government enforcement), and heavy taxes lead to the demise of the tobacco industry. For these reasons, the board pushed for the elimination of the tobacco program, and a package that would compensate producers for their losses.

In the cases where a policy change negatively impacts producers, the amount of government compensation typically involves negotiations between producers and the government. In the case of Ontario tobacco, the negotiations were clouded because of the confusion over what the basis of compensation should have been, given that some believed the government was legally required to compensate based on the BPQ. However, there are many clear cut cases where the amount of compensation paid to
losers depends on the political clout of the parties being negatively affected by a policy change. In this context, the theory of rent-seeking (that falls under the theory of public choice) takes center stage. For example, in the elimination of the CROW subsidy, the level of compensation to producers, was less than the loss suffered from removing the subsidy. This was due to rent-seeking factors such as the alignment of commodity groups in support of removing the CROW subsidy. The Saskatchewan Wheat Pool supported maintaining the “pay the railroad” approach while the Western Wheat Growers supported the “pay the producer” approach. In the U.S. rent-seeking also played a major role in providing compensation to producers in the termination of both the U.S. peanut and tobacco programs (Schmitz et al. 2002 and Rucker et al. 1995). In the U.S. tobacco buyout case, for example, producers were compensated based on an amount that exceeded the true value of the production quota—a handsome compensation indeed.
REFERENCES


**TABLES**

1. **Zero production with varying approaches to compensation**

<table>
<thead>
<tr>
<th>Effects</th>
<th>Zero Compensation</th>
<th>Equivalent Compensation</th>
<th>Value of Quota (TMQ)*</th>
<th>Value of Quota (BPQ)**</th>
</tr>
</thead>
<tbody>
<tr>
<td>Government</td>
<td>0</td>
<td>$-(P_{kca})$</td>
<td>$-(P_{kca})$</td>
<td>$-P_{kca}P_{wn}$</td>
</tr>
<tr>
<td>Producer</td>
<td>$-(P_{kca})$</td>
<td>$[(P_{kca}-(P_{kca})=0]$</td>
<td>$[(P_{P_{ca}}-(P_{kca})$</td>
<td>$[(P_{P_{wn}}-(P_{kca})$</td>
</tr>
<tr>
<td>Domestic Users</td>
<td>$-(uP_{r})$</td>
<td>$-(uP_{r})$</td>
<td>$-(uP_{r})$</td>
<td>$-(uP_{r})$</td>
</tr>
<tr>
<td>Foreign Users</td>
<td>$-(xra)$</td>
<td>$-(xra)$</td>
<td>$-(xra)$</td>
<td>$-(xra)$</td>
</tr>
<tr>
<td>Domestic Net Welfare</td>
<td>$-(P_{kca}-(uP_{r})$]</td>
<td>$-(P_{kca}-(uP_{r})$</td>
<td>$-(P_{kca}-(uP_{r})$</td>
<td>$-(P_{kca}-(uP_{r})$</td>
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<tr>
<td>Total Welfare</td>
<td>$-(uxack)$</td>
<td>$-(uxack)$</td>
<td>$-(uxack)$</td>
<td>$-(uxack)$</td>
</tr>
</tbody>
</table>

*Total Marketing Quota
**Basic Production Quota

2. **Competitive equilibrium with varying approaches to compensation**

<table>
<thead>
<tr>
<th>Effects</th>
<th>Zero Compensation</th>
<th>Equivalent Compensation</th>
<th>Value of Quota (TMQ)*</th>
<th>Value of Quota (BPQ)**</th>
</tr>
</thead>
<tbody>
<tr>
<td>Government</td>
<td>0</td>
<td>$-[(P_{P_{da}}-(dcb)]$</td>
<td>$-(P_{P_{ca}}$</td>
<td>$-P_{P_{wn}}$</td>
</tr>
<tr>
<td>Producer</td>
<td>$-(P_{P_{da}}+dcb)$</td>
<td>$-(P_{P_{da}}-(dcb)]$</td>
<td>$[(P_{P_{ca}}-(P_{P_{da}}$</td>
<td>$-[(P_{P_{da}}-(dcb)]+P_{P_{da}}$</td>
</tr>
<tr>
<td>Domestic Users</td>
<td>$(P_{P_{da}}$</td>
<td>$(P_{P_{da}}$</td>
<td>$(P_{P_{da}}$</td>
<td>$(P_{P_{da}}$</td>
</tr>
<tr>
<td>Foreign Users</td>
<td>$(ribar)$</td>
<td>$(ribar)$</td>
<td>$(ribar)$</td>
<td>$(ribar)$</td>
</tr>
<tr>
<td>Total Welfare</td>
<td>$+P_{P_{da}}dcb$</td>
<td>$+P_{P_{da}}dcb$</td>
<td>$+P_{P_{da}}$</td>
<td>$+P_{P_{da}}$</td>
</tr>
</tbody>
</table>

*Total Marketing Quota
**Basic Production Quota
Table 3. Economic impact of buyout: Zero-output Model (CAD millions)*

<table>
<thead>
<tr>
<th>Effect</th>
<th>Zero Compensation (1)</th>
<th>Equivalent Compensation (2)</th>
<th>Value of TMQ (1)</th>
<th>Value of BPQ (2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Government</td>
<td>0</td>
<td>0</td>
<td>–29.4</td>
<td>–29.4</td>
</tr>
<tr>
<td>Producer</td>
<td>–29.4</td>
<td>0</td>
<td>0.0</td>
<td>0.0</td>
</tr>
<tr>
<td>User Surplus</td>
<td>–14.4</td>
<td>–14.4</td>
<td>–14.4</td>
<td>–14.4</td>
</tr>
<tr>
<td>Total Welfare</td>
<td>–43.8</td>
<td>–43.8</td>
<td>–43.8</td>
<td>–43.8</td>
</tr>
</tbody>
</table>

(1) Total demand elasticity: –1.5, domestic demand elasticity –1.2, and supply elasticity: 1.8
(2) Total demand elasticity: –8.0, domestic demand elasticity –1.2, and supply elasticity: 1.8
*Note: Varying the Total Demand Elasticity has no effect on the economic impact from the buyout given a zero-output model.

Table 4. Economic impact of buyout: Competitive Equilibrium Model

<table>
<thead>
<tr>
<th>Component/Effect</th>
<th>Zero Compensation (1)</th>
<th>Equivalent Compensation (2)</th>
<th>Value of TMQ (1)</th>
<th>Value of BPQ (2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Government</td>
<td>0</td>
<td>–14.4</td>
<td>–23.1</td>
<td>–23.1</td>
</tr>
<tr>
<td>Producer</td>
<td>–14.4</td>
<td>3.5</td>
<td>8.7</td>
<td>26.6</td>
</tr>
<tr>
<td>User Surplus</td>
<td>20.7</td>
<td>11.7</td>
<td>20.7</td>
<td>11.7</td>
</tr>
<tr>
<td>Total Welfare</td>
<td>6.3</td>
<td>15.2</td>
<td>6.3</td>
<td>15.2</td>
</tr>
</tbody>
</table>

(1) Total demand elasticity: –1.5, domestic demand elasticity –1.2, and supply elasticity: 1.8
(2) Total demand elasticity: –8.0, domestic demand elasticity –1.2, and supply elasticity: 1.8
*The reported producer gain is greater than the actual payout due to the use of a relatively elastic total demand. In this case, in the absence of the quota, given a move to competitive equilibrium \( P_e P_d a < d e b \). Adding this gain to the compensation yields an amount of $288.6 million)
Figure 1. The economic effects of a government-funded production quota buyout under various approaches to compensation.

*The four economic effects are on 1) the Government, 2) producers, 3) consumers, and 4) society.
Figure 2. Theoretical buyout