Economic Factors Affecting Marketing Performance for Canadian Wheat

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Introduction
Marketing decisions are a critical component of farm management. Despite this, prevalent ideas about marketing decisions and performance are not always based upon a reliable body of evidence (Hagedorn et al. 2005).

The objective of this Bulletin is to highlight the factors that impact marketing performance in the Canadian wheat market. To do this, a unique data set from the Canadian Wheat Board (CWB) is used; this data offers the opportunity to explore marketing performance from actual farmer transactions given that all wheat produced in Western Canada and sold for human consumption and export had to be marketed through the CWB during the period of the study. Although the CWB’s single-desk structure will cease to exist following the 2011/12 crop year, results from this research can be useful in assessing marketing performance in the open market.

Pool Pricing
Pool pricing was an established marketing system in Western Canada. The pool system means that all marketing of pooled crops is done by the CWB on behalf of the farmer. This system consists of pooling all sales during the crop year, which allows farmers to share risk associated with Board grains. It was designed to ensure that all farmers in the pool receive the same final price at the end of the crop year, regardless of price variation over time. Prior to 2000, pool pricing was the only marketing alternative offered by the CWB.

Marketing Contracts
The CWB introduced alternative marketing options in the 2000/01 crop year to allow farmers the opportunity to price their grain outside of the pool accounts and provide more flexibility to manage their risk, return and cash flow. These new contracts are generally known as Producer Payment Options (PPOs). The marketing contracts of interest for this research include Daily Price Contract (DPC), Fixed Price Contract (FPC), Basis Price Contract (BPC) and FlexPro. The FPC and BPC were the first options offered by the CWB in 2000, and gave farmers the opportunity to price their grain using futures markets. The DPC was introduced as a pilot program in 2005/06, and allowed farmers the opportunity to price their grain year round. That program was terminated following 2007/08 crop year. In 2008/09 the FlexPro—a similar program to the DPC—was introduced. For the purpose of this research, the DPC and FlexPro are combined into one contract and generally referred to as “DPC”.

Research Method
A regression model similar to Cabrini, Irwin and Good (2007) and Cunningham III, Brorsen and Anderson (2007) is used to investigate (1) whether farmers can identify profit opportunities with different marketing contracts; (2) whether they have good enough information or analytical skills to outperform certain benchmarks; and (3) whether price variability and timing affect performance.

It is first necessary to describe the variables adopted in the study. Performance was calculated as the difference between the actual price farmers received and a benchmark. Price received by each farmer is the final amount received for their wheat at the end of each crop year using marketing contracts (DPC, FPC and BPC). If a farmer delivered part of their wheat to the pool, only prices from the three marketing contracts were considered. Therefore, the model only explores farmers’ marketing performance with respect to marketing contracts. The benchmark adopted in this study is the final CWB pool price. Pool prices were $211.14/t in 2003/04, $205.10/t in 2004/05, $195.14/t in 2005/06, $212.89/t in 2006/07, $372.06/t in 2007/08 and $311.06/t in 2008/09.

Marketing contract usage was calculated as the percentage of wheat delivered against each marketing contract (DPC, FPC and BPC) each year, compared to total tonnes. It indicates how much farmers tried to market themselves outside of the pool accounts, and is determined by the proportion of tonnes delivered against each marketing contract of the total tonnes delivered to the CWB. Total tonnes delivered include the whole amount of wheat a farmer
delivered against all marketing contracts and the pool. High values for these variables indicate more tonnes priced with PPOs and less in the pool, suggesting farmers might perceive opportunities to profit from pricing their wheat outside the pool.

*Timing* indicates the month each farmer signed a marketing contract every year. A single marketing window is adopted for all contracts during the crop year. The window is assumed to start when the first contract is available and go until the deadline of the last available contract. For example, in 2006/07 the BPC and FPC were first available in February 2006 and the DPC last available in July 2007. Therefore, farmers had a 17-month window to make their marketing decision. Timing is expressed in relative terms, starting at zero (first month available) and ending at one (last month available). It is calculated by dividing the number of months from the beginning of the window until the moment the contract is signed by total number of month in the marketing window. This procedure was adopted because of varying contract lengths across crop years. If more than one contract is used, weighted-average timing is calculated using tonnes priced on each specific date as weights. Finally, since farmers need to lock in the futures price and the basis when using the BPC, there can be two marketing dates for this contract. As a result, timing for the BPC is a weighted average between the months when each component is priced.

*Marketing activeness* measures how actively farmers try to price their wheat. Its calculation starts by creating a marketing profile for each farm—that is, a series with the amount of wheat marketed in each week of the marketing months when each component is priced.

Timing is defined such that the first month of the marketing window is equal to zero and the last month is equal to one; hence it is a normalized measure of variability. It is used as a time effect, indicating how much the futures price varies during the marketing window each year. A high (low) value for this variable indicates more (less) price variability. This variable helps address possible differences in marketing performance caused by large price changes in recent years. In particular, large variability in prices observed in 2007/08 and 2008/09 might have had a strong influence on marketing performance.

### Data Summary

Data were provided by the CWB and include a summary of actual farmer transactions for Canada Western Red Spring (CWRS) wheat from 2003/04 through 2008/09 (six crop years) in Western Canada. The transactions of each farmer include (i) the marketing alternative they used to market their wheat; (ii) the number of tonnes delivered to each marketing contract and the pool; (iii) exact dates when farmers signed marketing contracts; (iv) final price received by each farmer for each marketing contract used to sell wheat; and (v) province. All data was provided confidentially by the CWB; no identities of the farmers were seen at any time during the research.

This study focused on farmers who priced CWRS wheat using marketing contracts (DPC, FPC or BPC) in at least two of the six crop years in the data set, which led to a sample of 7,400 farmers. A summary of the data used in this research is shown in Table 1. Great variability in performance can be seen across farmers. On average, marketing performance was $16.13/t below the pool, but there were farmers who were able to obtain $335.99/t above the pool (maximum). Conversely, the worst result achieved was $186.68/t below the pool (minimum). The median value ($5.04/t) for performance indicates that half of the farmers in the sample outperformed the pool by more than $5.04/t, while the other half either

![Table 1. Summary Statistics](data:image/png;base64,iVBORw0KGgoAAAANSUhEUgAAAgAAAAAQAABAMAAAIUAAAAAElFTkSuQmCC)

<table>
<thead>
<tr>
<th>Variable</th>
<th>Average</th>
<th>Minimum</th>
<th>Median</th>
<th>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Marketing performance ($/t) a</td>
<td>-16.13</td>
<td>-186.69</td>
<td>5.04</td>
<td>335.99</td>
</tr>
<tr>
<td>FPC usage (% of production)</td>
<td>33.82</td>
<td>0.00</td>
<td>25.57</td>
<td>100.00</td>
</tr>
<tr>
<td>BPC usage (% of production)</td>
<td>12.91</td>
<td>0.00</td>
<td>0.00</td>
<td>100.00</td>
</tr>
<tr>
<td>DPC usage (% of production)</td>
<td>6.37</td>
<td>0.00</td>
<td>0.00</td>
<td>100.00</td>
</tr>
<tr>
<td>Timing b</td>
<td>0.41</td>
<td>0.00</td>
<td>0.43</td>
<td>1.00</td>
</tr>
<tr>
<td>Marketing activeness c</td>
<td>0.01</td>
<td>-2.02</td>
<td>-0.04</td>
<td>5.56</td>
</tr>
<tr>
<td>Price variability d</td>
<td>0.22</td>
<td>0.07</td>
<td>0.13</td>
<td>0.39</td>
</tr>
</tbody>
</table>

*a Marketing performance = price received minus pool price; b Timing is defined such that the first month of the marketing window is equal to zero and the last month is equal to one; c Marketing activeness is standardized for all farmers, hence the average of the whole sample is zero and values represent deviations from the average farmer; d Price variability is given by the coefficient of variation within each crop year.
outperformed by less than $5.04/t or underperformed the pool. In terms of contract usage, the FPC was used more often by farmers in Manitoba, Saskatchewan, Alberta and Peace River area of British Columbia to price their wheat, followed by BPC and DPC. On average, farmers priced 33.82% of their crop with FPC, 12.91% with BPC, and 6.37% with DPC between 2003/04 and 2008/09. The timing variable indicates that farmers tended to price their grain just before the middle of the marketing window (average=0.41, median=0.43). Note that this variable was scaled such that the first month of the marketing window was set to zero and the last month set to one (therefore a value of 0.50 would represent the middle of the marketing window). The indicator of marketing activeness was standardized, meaning that the average across all farmers was set to zero and the values of this variable indicate deviations in activeness from the average farmer. For example, the maximum of 5.56 means the most active farmer in the sample was 5.56 standard deviations more active than the average farmer. Finally, the price variability indicates the volatility in futures prices during the marketing window for each crop year. It shows large differences across years as it ranges from a minimum of 0.07 in 2003/04 to a maximum of 0.39 in 2007/08.

**Key Economic Factors**

Variables included in the estimated model and their influences on performance are presented below. A summary of the estimation using a panel regression model is shown in Table 2, followed by a discussion of the results.

**Marketing Contract Usage**

Marketing contract usage was found to significantly affect performance when using the FPC, BPC and DPC. The negative coefficients of FPC and BPC suggest that pricing larger portions of the crop with these two contracts tended to reduce performance. This result can have a large impact on marketing performance of the sample, especially since some farmers price their entire wheat crop (100%) with FPCs and BPCs. For example, on average a farmer who priced their whole crop with the FPC (BPC) would have performed $21.50/t ($2.00/t) worse than a farmer who priced half of their crop with FPC (BPC) or $43.00/t ($4.00/t) worse than a farmer who did not use FPC (BPC). With respect to DPC usage, its positive relationship with performance suggests that pricing larger portions of the crop with DPC tends to improve performance. On average, a farmer who priced their entire crop (100%) with DPC would have performed $4.00/t better than a farmer who priced half of their crop with DPC or $8.00/t better than a farmer who did not use DPC.

**Timing**

The timing of pricing grain within the marketing window was found to negatively affect performance. This negative relationship suggests that farmers who price earlier in the marketing window perform better compared to those who price later. For example, on average, a farmer who priced in the first month of the marketing window would have performed $63.53/t better than a farmer who priced in the last month or $31.77/t better than a farmer who priced in the middle of the marketing window. Similar results were found in previous studies (Cabrini, Irwin and Good 2007; Cunningham III, Brorsen and Anderson 2007) that suggest timing has a strong impact on performance.

**Marketing Activeness**

The marketing activeness measure was also found to negatively affect performance, implying that farmers adopting more active marketing strategies tend to perform worse compared to those who are less active. For example, the most active farmer in our sample performed $21.07/t worse than the least active farmer or $15.43/t worse than the farmer with average activeness. This suggests that, on average, farmers do not have better information or analytical skills to time the market, since they actually receive lower prices compared to

**Table 2. Estimated Panel Regression Model**

<table>
<thead>
<tr>
<th>Variable</th>
<th>Estimated coefficient</th>
<th>Economic interpretation</th>
</tr>
</thead>
<tbody>
<tr>
<td>FPC usage</td>
<td>-0.43</td>
<td>Pricing whole crop with FPC and BPC decreased performance by $43.00/t and $4.00/t compared to not using FPC or BPC, respectively.</td>
</tr>
<tr>
<td>BPC usage</td>
<td>-0.04</td>
<td></td>
</tr>
<tr>
<td>DPC usage</td>
<td>0.08</td>
<td>Pricing whole crop with DPC increased performance by $8.00/t compared to not using DPC.</td>
</tr>
<tr>
<td>Timing</td>
<td>-63.53</td>
<td>Pricing in the first month of the marketing window increased performance by $63.53/t compared to pricing in the last month of the window.</td>
</tr>
<tr>
<td>Marketing activeness</td>
<td>-2.78</td>
<td>Least active farmer performed $21.07/t better than most active farmer.</td>
</tr>
<tr>
<td>Price variability</td>
<td>-262.32</td>
<td>Marketing performance in the year with the most price variability (2007/08) was $83.16/t worse than in the year with the least price variability (2003/04).</td>
</tr>
<tr>
<td>Number of transactions</td>
<td>19,798</td>
<td></td>
</tr>
<tr>
<td>Number of farmers</td>
<td>7,400</td>
<td></td>
</tr>
</tbody>
</table>
those with more passive strategies.

Note that large contract usage does not automatically indicate active marketing strategies. In fact, the relationship between contract usage and activeness depends on how contracts are used. For instance, if a farmer priced their entire crop with a DPC and made this decision in the same week every year, they would have their entire crop priced with a contract but still show zero activeness. Another situation could be a farmer who priced a small portion of their crop (say, 5%) with contracts but tried to adopt very active marketing strategies. In this example they would have only five percent of their grain priced with contracts but would show a high value for activeness.

Price Variability
Price variability is found to significantly affect farmers’ performance. This negative relationship suggests that it is more difficult to price profitably during periods of high volatility in the market. For example, average marketing performance in the year with the most price variability (2007/08) was $83.16/t worse than in the year with the least price variability (2003/04).

Summary and Conclusions
The research used data from the CWB to analyze the marketing performance of Western Canadian wheat farmers. We focused on farmers who grew CWRS wheat and used marketing contracts between 2003/04 and 2008/09 crop years. Specifically, the study considered farmers’ ability to identify profitable opportunities with marketing contracts, their skills to outperform the pool accounts while using marketing contracts, and the degree of activeness in their marketing strategies.

The empirical analysis found mixed results for the relationship between contract usage and marketing performance, with distinct impacts depending on the type of contract. The differences in the results for the marketing contracts might be a result of the contract characteristics, such as pricing scheme and signing periods. For instance, the BPC is essentially a basis contract, which is more complex and demands more time and effort to follow the market. This may partially explain why it seems harder for farmers to improve marketing performance with this contract.

Findings also show a negative relationship between active marketing strategies and performance, suggesting farmers who change their marketing strategies every year tend to perform worse compared to farmers who always adopt the same strategy. The coefficient for price variability also had a negative relationship with performance, suggesting that more volatility in the market leads to worse performance. Also, timing was found to have a strong effect on performance, with later pricing diminishing performance.

Lastly, discussion of the results of this study should take into account the limitations of the data. For the purpose of this research we needed farmers who used marketing contracts in at least two crop years between 2003/04 and 2008/09, which resulted in 7,400 farmers. This sample is still a relatively small portion (about 10%) of wheat farmers in Canada. As a result, the findings of this study do not necessarily reflect the decisions and performance of a representative Canadian wheat farmer in an open market environment.

This study contributes to the ongoing research regarding marketing performance and its determinants. Results provide new insights on farmers’ ability to use different marketing contracts profitably and how their active marketing strategies impact performance. Findings from this research should be helpful for the design and communication of strategies for farmers. They should also be useful as more discussions emerge regarding the deregulation of the Canadian wheat market and the coming open market environment expected for the next crop year.

References

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