



By Shon Ferguson, Jill Hobbs, Simon Weseen and Gary Storey

Analysis of Organic Wheat Buyers in Saskatchewan:

A Vertical Coordination Approach

This document is based on the preliminary results of a producer survey that was administered as part of the marketing study being conducted by the Project on Organic Agriculture in the Department of Agricultural Economics. In addition to the producer survey, marketers, processors and wholesaler/retailers are also being asked to complete similar surveys. The objective of the study is to examine the issues, opportunities and challenges in organic grain marketing and to provide insight to the organic grain industry on what can be done to improve the organic marketing system for the benefit of all participants. These industry papers are designed to provide industry participants with a brief summary of the type of information that will be analyzed and discussed in the final marketing study document that will be completed at a later date.

1. Introduction

There are several ways that organic grain producers can market their organic wheat. The producer may choose to sell to a grain company, and the grain company can be a handling agent of the Canadian Wheat Board (CWB) or not¹. The producer can choose an agent to market his or her grain on the producer's behalf. Agents typically receive a percentage commission from each sale. In particular, the producer may be a member of a Producer-Owned Firm (POF), which employs an agent to market the producers' grain. The producer can also choose to eliminate the marketer middleman and market his or her grain independently, and sell directly to processors or other companies down the supply chain.

Given the various methods through which organic producers sell their wheat, it is worthwhile to compare these different types of marketing routes. The primary purpose of this report is to discuss and measure the differences in farmgate price, marketing cost and

profit between these different marketing routes for producers. There are also several specific objectives of the report. The report endeavors to provide the reader with a better understanding of the functioning of organic wheat supply chain. The report also seeks to provide a theory and method that can be used to measure the relative performance of different marketing routes. Finally, the report aims to provide an explanation for why prices and costs may differ between different marketing routes.

A survey was undertaken as part of the University of Saskatchewan Project on Organic Agriculture that collected data to allow a comparison between marketing routes. Questionnaires were mailed to 90 organic grain producers randomly picked from across Saskatchewan. The sample included producers from 4 CBs (OCIA, Pro-Cert, COCC and SOCA²). The membership of OCIA is divided into 8 chapters in Saskatchewan, of which 5 participated in the study.³ The sample yielded data on 76 organic Hard Red

¹ The distinction between CWB handling agents is only important for sales of wheat and barley, as these companies have the authority to pay the CWB initial payment themselves. CWB handling agent grain companies are typically much larger companies than grain companies that are not CWB handling agents.

² OCIA – Organic Crop Improvement Association
COCC – Canadian Organic Certification Cooperative
SOCA – Saskatchewan Organic Certification Association
³ Of the three excluded OCIA chapters, one was excluded because it did not certify organic wheat producers, one could not be successfully contacted, and one declined to participate.

Spring Wheat (HRSW) transactions that was used in this analysis.

This report proceeds as follows. A background on the organic HRSW supply chain and the alternative marketing routes for organic HRSW is provided in Part 2. A brief description of the theory that is used to analyze the problem is provided in Part 3 and a description of the methodology is given in Part 4. The results of the analysis follow in Part 5. Discussion of the results and the study's implications in Part 6 conclude the report.

2. Background

There are several components of the organic wheat supply chain, including primary producers, grain cleaners, grain companies, brokers, export buyers, and processors. There were approximately 3134 certified organic producers in Canada in 2003, of which 1049 were located in Saskatchewan, the most of any province (AAFC 2004). The number of certified organic grain producers continues to grow. In that same year, there were 456 certified processors and handlers in Canada, of which 94 were located in Saskatchewan. Saskatchewan had the largest acreage of organic crop production in Canada in 2003, totalling 386,000 acres with an estimated farmgate value of \$92 million. Most certified organic producers in Saskatchewan are involved in growing grains or oilseeds. Saskatchewan producers grew 145,000 acres of organic wheat and durum in 2003.

Organizations in the Organic Wheat Sector

There are several organizations that should be discussed in the context of wheat marketing in the organic grain sector. This section briefly describes these organizations.

The Canadian Wheat Board

The CWB is the single-desk seller of conventional wheat and barley in the prairie region of Canada. The

CWB markets conventional wheat throughout the crop year (August 1 – July 31) and returns the average, "pooled" price to each producer for their given quality of wheat. All producers receive the same "pooled" price for the same quality of wheat in a given crop year. Any producer can opt to market their own wheat, but they are required to perform a Producer Direct Sale (PDS), which protects the CWB from producers competing with the CWB when the market price is above the CWB pooled price⁴. The PDS is completed by performing a transaction where the wheat is sold on paper to the CWB for the pooled price and bought back by the producer for the CWB asking price in the country that the wheat is destined for. Since the CWB does not market organic wheat, all organic wheat must undergo the PDS. Grain companies that are designated as handling agents of the CWB in conventional grains have the authority to issue the CWB pooled price initial payment.

Price Discovery Organizations

There is an absence of organizations in the organic wheat sector that collect, disseminate and distribute market information that aids price discovery. Although transactions of organic wheat are made every day, all of the information is held privately. In conventional grains, there are public and private organizations that provide market information on supply and demand. There is no futures contract for organic wheat, while futures contracts exist for some conventional grain commodities (ex: wheat, canola, flax), which provide information on future and cash prices.

Certification Organizations

Organic producers, organic grain buyers, and other firms that buy and sell organic products must be certified in order to produce or handle organic grains. The organic characteristic is a credence attribute, which means that it cannot be physically verified either before or after consumption. The credence

⁴ If producers could opt out of the CWB in parts of the year where the market price was above the CWB price, this would compete with the farmers that are using the CWB and would erode the pool price.

characteristic of organic foods necessitates certification in order for the organic attribute to be effectively signaled to buyers and ultimately to consumers. Certification Bodies (CBs) are private or public organizations that provide the service of independent third-party certification to firms in the organic food supply chain. CBs ensure that organic producers and handlers comply with standards set out by Standards organizations. A paper trail accompanies all shipments of organic grains in order to authenticate their organic attribute as they move through the supply chain.

Supply Chain Configurations

In general, producers sell organic wheat directly to a processor or foreign importer, or producers sell to a middleman marketer that in turn sells to a processor or foreign importer. Horizontal transactions can also take place between marketers. Marketers include grain companies, brokers and Producer-Owned Firms (POFs). Some grain companies are handling agents of the CWB, while others are not. Figure 1 illustrates the possible supply chain sequences for organic wheat. The supply chain levels that are within the scope of the study are illustrated in dark font in the figure.

Differences between Marketer/Buyer Types

As mentioned earlier, there are four main types of marketers and middleman buyers for organic HRSW: grain companies that are CWB handling agents, grain companies that are not CWB handling agents, brokers and POFs. This section explains differences between these types of marketers.

CWB Agent Grain Companies

CWB agent grain companies do most of their business in conventional grains, but they also purchase much of the organic wheat in Saskatchewan. These firms purchase producers' organic grains and handle them through an elevator

facility, where the grain is cleaned, blended⁵ and loaded into trucks or shipping containers. These firms handle the certification paper trail for the transaction, quality testing, and they arrange and pay for trucking from the farm. CWB agent grain companies tend to buy organic wheat earlier in the year, which allows producers to receive the CWB initial payment earlier compared to selling to other types of wheat buyers. Payment is virtually guaranteed from these companies.

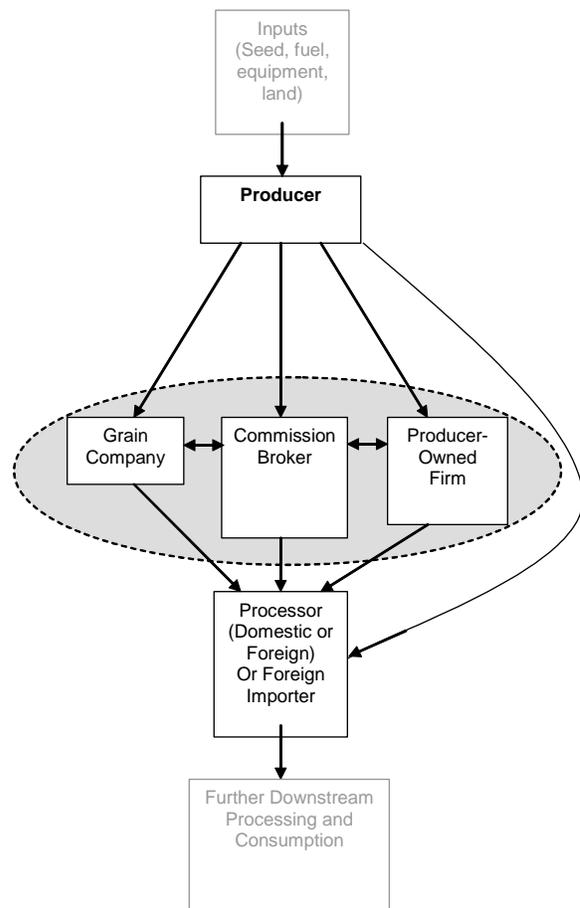


Figure 1 - Organic Wheat Supply Chain

⁵ Grain companies sometimes blend wheat from different deliveries together to achieve a specific quality.

Non-CWB Agent Grain Companies

Grain companies that are not handling agents of the CWB also purchase organic grains from producers.

These companies are smaller than CWB agent companies, and may or may not own an elevator facility. If the company does not own an elevator, they arrange for a fee-for-service company to clean and load the wheat into a shipping container. Non-agent grain companies typically buy from the producer at the same time as they sell to their customer. This is referred to as a “back-to-back” sale, which is necessary to avoid risks of carrying the commodity over time. Non-agent grain companies cannot purchase organic wheat as early in the year from farmers, since they cannot afford to pay the producer until they have received payment themselves from their downstream customer. Payment is thus not guaranteed. Other than differences in infrastructure, size and timing of purchases, non-agents typically perform the same functions as their CWB-agent counterparts.

Brokers and Producer-Owned Firms

Brokers and POFs do not buy grain from the producer, but market it on the producer’s behalf, and receive a commission for their service. These firms therefore do not shoulder any risk of non-payment by the downstream firm and thus cannot guarantee that the producer is paid. Brokers and POFs typically do not own any grain handling facilities, so producers depend on fee-for-service companies to transport, clean and load their grain. Brokers and POFs typically do not pay for quality testing and may partially assist with the completion of the certification paper trail for the shipment.

3. Theory

The previous section described how different types of marketers and middleman buyers perform different types of functions. These marketing routes also exhibit differences in *vertical coordination* between

producers and the marketer or buyer. Vertical coordination is defined by Mighell and Jones (1963) as:

“...all the ways of harmonizing the successive vertical stages of production and marketing. The market-price system, vertical integration, contracting, cooperation singly or in combination are some of the alternative means of coordination” (p.1).

Transactions that producers make with grain companies are characterized by low degrees of vertical coordination. Producers have very little interaction with grain companies beyond arranging single transactions. Transactions with a broker or POF are characterized by more coordination between the producer and their marketing agent. For example, producers that use a POF or broker to market their organic wheat must expend time and effort to monitor the marketer’s performance and share information back and forth. The case of producers selling directly to processors is an example of complete vertical integration between producer and marketer middleman, as the producer carries out all marketing functions.

Selling to or through different types of marketers may entail different transaction costs for the producer. Transaction costs are defined as the costs of using the market mechanism (Coase 1937). Producers typically refer to these costs as “marketing costs”. Marketing costs for producers include searching for a buyer and market prices, negotiating a price and the logistics of the sale with a buyer, and enforcing payment if necessary. Producers will expend marketing costs in order to find a buyer, to find a good price and to avoid being taken advantage of in a sale.

Grain Companies

Selling to CWB agent grain companies usually entails low marketing costs, since these companies are easy to find, they handle most of the logistics of the sale and they require no enforcement of payment. Grain companies that are not CWB agents share these

characteristics, but enforcement of payment may be required more often since they must be paid by the downstream buyer before they pay the producer.

Brokers and Producer-Owned Firms

There are three main advantages that a POF or broker has over grain companies. First, the POF or broker has the incentive to give producers the best possible price (if they work on a percent commission). Second, the arrangement allows for producers to assert control over the agent's actions. Third, producers and the POF marketer may benefit from the ability to share information on producers' supply and customers' demand that improves the marketing ability of the POF.

Selling to a broker or POF may allow producers to save on some marketing costs because the agent performs the task of searching for a buyer and searching for prices. Effective price search through a knowledgeable marketing agent may allow for producers to capture higher prices from downstream buyers. Enforcement of payment is not required for the agent, but may be required if the downstream buyer does not pay.

Direct-to-processor

Selling directly to processors requires that the producer performs all of the tasks of searching, negotiating and enforcing. These transactions may have larger marketing costs because of the increased threat of being taken advantage of by a buyer in this situation. The large distances to some processors and other complications may add to the perceived threat of being taken advantage of by the processor or having a problem making the sale⁶. Producers' potential lack of efficiency in marketing compared to companies that specialize in the task may also lead to greater marketing costs.

⁶ For example, a processor may reject a shipment when it arrives at their plant. It can be very costly for shipments to be returned.

Producers may expend a lot of effort searching for a processor and searching for prices, and the negotiation and logistics costs necessary to sell to a processor may be larger than other marketing routes. Monitoring buyer payment may entail more effort compared to other methods of marketing.

4. Methodology

The goal of this report is to compare the differences and prices received and the costs incurred between different marketing routes for producers of organic HRSW. The theory described several reasons to believe that prices and costs can differ depending on the type of marketer or buyer chosen by the producer. The survey asked organic producers to report the prices they received and the marketing costs that they incurred in their sales of organic HRSW. This data is used to perform the comparison.

Producer prices and average marketing costs can be affected by more than simply the marketing route. Producer price may also depend on the quality, the location of the producer, the location of the buyer, the time of year, farm size and demographic variables such as producer experience and risk aversion. Data on these characteristics was also collected in the organic producer survey. A statistical technique is used to isolate the effect of marketing route from all of the other factors that effect producer price. This statistical technique is called an Ordinary Least Squares (OLS) regression.

Similarly, producer average marketing cost may also be affected by the quantity of the transaction (average costs decrease as quantity increases), farm size, demographic variables and driving distance between producer and buyer (when special trips to visit the buyer are included as a cost). The same statistical technique is used to isolate the effect of marketing route from all of the other factors that affect producer average marketing cost.

The average marketing cost variable in the comparison is defined as the value of time that producers spend searching for prices and buyers, negotiating a sale, performing the PDS, testing quality and arranging the certification paper trail for the shipment, plus the cost of quality testing. These costs are considered “core” marketing costs. Costs such as attending marketing meetings, visiting the marketer, enforcing payment and any driving costs are not included in the average marketing cost variable.

Predictions of each marketing route's farmgate price and core marketing cost are made using the regression results. Other marketing costs and production costs for the producer are then added to each core marketing cost prediction to calculate a producer average cost value for each marketing route⁷. Producer profit is calculated for each marketing route by subtracting its producer average cost from its price prediction. Assuming that different marketers fetch the same price when they sell wheat, the report estimates the marketing margins for each type of marketer and their profit margins.

This methodology does not incorporate differences in timing of sales, risk-shouldering by the buyer, or the initial costs of setting up a POF into the analysis. Since CWB agent grain companies tend to buy earlier in the year and thus shoulder more risk than other marketer types, this analysis may not provide an entirely fair analysis of CWB agent grain companies in particular.

5. Results

The sample contained data on 46 transactions through a CWB agent grain company, 11 transactions through a non agent grain company, 8 transactions

⁷ It is assumed that the non-core marketing costs and production costs are the same for each marketing route. The cost of coordinating the POF (member meetings etc.) are added to the producer cost for the POF marketing route

through a POF and 11 transactions through direct marketing. The regression results are first described, and predictions of price and marketing cost are reported. The resulting producer profit per tonne for each marketing route is also provided.

Regression Results

The regressions of price and core marketing cost yielded results that were expected for several of the variables. In the price regression, the POF marketing route was found to have prices that were significantly greater than CWB agent grain company prices. The coefficients indicated that the POF prices are \$59/tonne higher than the base CWB agent marketing route, non agent prices are \$17/tonne higher and processor prices are \$15/tonne higher. Quality, producer location, buyer location and time of year variables all exhibited the expected effect on farm price. The variables included in the price regression explained about half of the variability in organic HRSW prices.

In the core marketing cost regression, the processor marketing route was found to have core marketing costs that were significantly higher than those of CWB agent grain companies. A regression evaluating search costs was also undertaken. The search cost regression revealed that producer search costs using POF were significantly lower than those of CWB agent grain companies. The search cost regression also showed that producer search costs using the direct-to-processor marketing route were significantly higher than those of CWB agent grain companies. These results indicate that producers save time searching for buyers and prices when selling through a POF, and expend more time when selling direct-to-processors. Another regression using negotiation costs instead of core transaction costs was also undertaken and showed that there are no significant differences in negotiation costs across different marketing routes.

Table 1: Predicted Price and Marketing Costs

Regression	Marketing Route	Prediction (\$/tonne)	90% Confidence Interval (\$/tonne)	
			Lower CI	Upper CI
Price	Nonagent	290.49	266.83	314.14
	POF	332.54	305.76	359.32
	Processor	288.38	270.50	306.27
	CWB agent	273.80	262.78	284.82
Core Marketing Costs	Nonagent	3.35	1.28	7.28
	POF	1.74	1.07	2.62
	Processor	5.76	3.00	10.42
	CWB agent	2.30	1.72	3.00
Search Costs	Nonagent	2.11	0.74	4.55
	POF	0.38	0.62	0.84
	Processor	2.13	1.55	5.00
	CWB agent	0.90	1.12	1.67
Negotiation Costs	Nonagent	1.58	0.83	2.64
	POF	1.40	0.80	2.19
	Processor	3.30	1.52	6.34
	CWB agent	1.46	1.05	1.95

Bold numbers indicates significant difference between marketing routes from the regression analysis

Source: Author's calculations

Prediction Results

The predictions of price and average marketing cost for each marketing route are given in Table 1. The upper and lower intervals for 90% confidence in the estimate are also given. The predictions allow for a more simple interpretation of the regression results.

The POF had the highest price prediction of \$333/tonne⁸. Core marketing costs were low compared to prices, with processor transactions costing \$5.76/tonne. Search costs are also fairly low, ranging from a high of \$2.13/tonne for processor transactions to a low of \$0.38/tonne for POF

transactions. Producers using a POF have very low search costs. All of the marketing cost predictions have wide confidence intervals, which indicates that marketing costs are highly variable. Only the core marketing cost prediction is used throughout the remainder of this analysis.

Cost, Price and Profit Summary

A summary of each marketing route's average cost, price and profit per tonne is reported in Table 2. Average marketing cost (line E)⁹ is calculated by summing core marketing costs, non-core marketing costs, POF member cost and certification cost.

⁸ The confidence interval is plus or minus \$33/tonne (between \$325 and \$391), 9 times out of 10.

⁹ Certification costs are taken from Pro-Cert (2004)

Table 2: Cost, Price and Profit Summary

Average Cost, Price, Profit	Governance Structure			
	CWB agent	Non-agent	POF	Processor
Producer				
A. Core Marketing Cost	2.30	3.34	1.74	5.76
B. Non-Core Marketing Cost	18.67	18.67	18.67	18.67
C. POF Member Cost			0.46	
D. Certification Cost	<u>0.76</u>	<u>0.76</u>	0.76	<u>0.76</u>
E. Average Marketing Cost (A+B+C+D)	21.73	22.77	21.63	25.19
F. Average Production Cost	124.55	124.55	124.55	124.55
G. PRODUCER AVERAGE COST (E+F)	\$146.28	\$147.32	\$146.18	\$149.74
H. PRODUCER PRICE	<u>\$273.80</u>	<u>\$290.49</u>	<u>\$332.54</u>	<u>\$288.38</u>
I. PRODUCER PROFIT (H-G)	\$127.52	\$143.16	\$186.36	\$138.65
Marketer				
J. Marketer Price (H x 1.04)	\$345.84	\$345.84	\$345.84	\$345.84
K. MARKETING MARGIN (J – H)	\$72.04	\$55.36	\$13.30	\$57.46
L. Marketer Average Cost (\$358.30 x 0.04)	\$13.30	\$13.30	\$13.30	\$13.30
M. Marketer Profit (K-L)	\$58.74	\$42.05	\$0	\$44.16

Source: Author's calculations

Average producer marketing costs is about \$22-25/tonne, which is much higher than the marketing cost estimates available from government sources (ex: AAFRD 2001) through crop budgets. Summing this value with average production costs equals producer average cost (line G)¹⁰. The difference between producer average cost and producer price is producer profit (line I). The margin of marketers is not known. Assuming that the downstream price is 104% of the producer price in POF transactions, one can calculate a common marketer price of \$345.84 (line

¹⁰ Production costs taken from Alberta Agriculture, Food and Rural Development (2001).

J)¹¹. The marketing margin and marketer profit is then calculated for each marketing route. Producer profit varies considerably between different marketing routes. The POF marketing route provides the greatest profit per tonne for producers. Differences in prices are far greater than differences in average cost across the marketing routes. Marketing directly to processors did not perform well in the analysis, since prices were similar to grain company sales and their marketing costs were the highest of any marketing route.

¹¹ It is assumed that the POF has a 4% marketing margin.

Given the assumption that marketers receive a common price, the results found that marketing margins were greater when the producer price was lower. The POF marketing route had the lowest margin, and the grain companies had higher margins. Similarly, the POF marketer had the lowest profit per tonne. The costs and profit margins for each marketing route is illustrated graphically in Figure 2.

The results illustrate that the POF marketing route provides the highest prices and the greatest profit per tonne for producers, but the lowest profit per tonne for the marketer. The POF puts more money into the producers' hands at the expense of the marketer. Producers have typically taken the initiative to start POF marketers, since they stand to gain from the arrangement. A marketing agent can also gain by working as a POF if they can increase their quantity enough to compensate for the lower profit per tonne.

Firms that are currently operating as grain companies have little incentive to operate as a POF because they likely would not make as much profit.

6. Discussion and Implications

The results found that there were significant differences in producer price and producer marketing cost between different marketing routes for organic HRSW. The differences in profit between different marketing routes were quite large, and were mostly attributed to differences in price as opposed to differences in marketing costs. Overall, marketing cost predictions were larger than those assumed in government publications (ex: AAFRD 2001). This suggests that crop budgets provided by government publications tend to underestimate marketing costs.

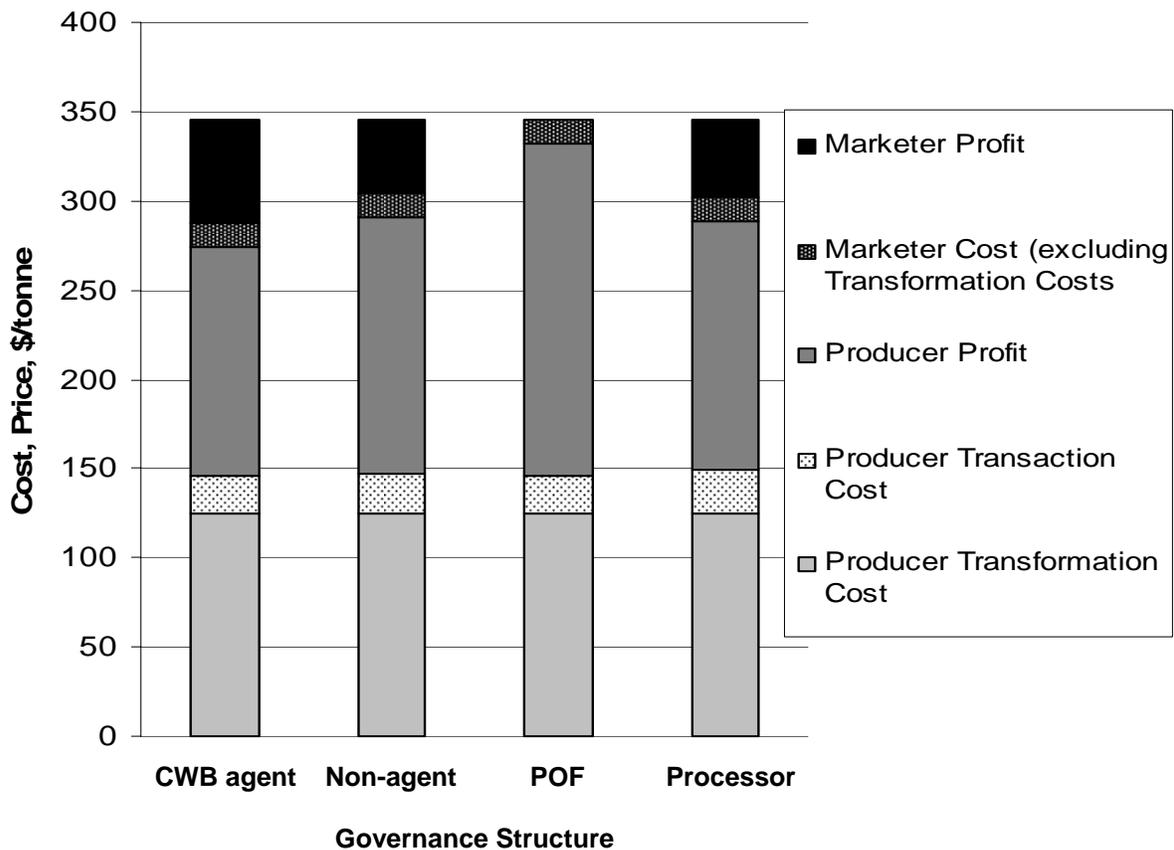


Figure 2: Illustration of Producer and Marketer Costs and Profits

The POF and direct-to-processor marketing routes both employ tighter vertical coordination between producers and marketer. The POF marketing route was found to provide the greatest profit per tonne, while the processor transactions provided little additional profit per tonne compared to grain company sales. This result contradicts the common idea that it is best to “direct market” and eliminate the middleman whenever possible. The marketing middlemen of the organic wheat supply chain perform important functions. This is not to say that marketing skills are unimportant for organic producers, as they must decide on whom to sell to and when to sell. These results suggest, however, that producers that market directly to processors do not always gain a large increase in price in return for their efforts.

One must remember that different marketing routes have several different characteristics which can be considered when choosing a buyer. This analysis examined prices and marketing costs as a method of comparison. Differences in timing of payment, convenience, location, trust, and risk-sharing must also be considered when choosing a buyer. In addition, the start-up cost of a POF must be considered.

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