THE ECONOMIC IMPACTS OF ELEVATED EXPORT BASIS LEVELS ON WESTERN CANADIAN GRAIN PRODUCERS 2012/13, 2013/14 AND 2014/15

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THE ECONOMIC IMPACTS OF ELEVATED EXPORT BASIS LEVELS ON WESTERN CANADIAN GRAIN PRODUCERS

Executive Summary

The objective of this report is provide a summary of the export basis levels for the principal grains in Western Canada over the 2012/13, 2013/14 and the 2014/15 crop years and to provide an estimate of forgone producer revenue due to export capacity constraints.

The report uses an economic framework to explain how constraints in export capacity result in increased export basis and lower prices for grain producers and applies the framework to describe how available exportable supplies impacted export basis levels and prices over the past three crop years. The observed increase in export basis levels in the past two crop years are then used to estimate the impact on producer income. Finally, observed reductions in the Vancouver FOB versus Portland FOB wheat prices, are used to estimate an additional loss in export value. This executive summary provides the main findings of the report.

Western Canadian grain producers are heavily reliant on the grain handling and transportation system to move their product to export markets. All production that is not processed or consumed for domestic use must eventually find a home in export markets. Given the importance of the west coast export market, the price of grains in Western Canada reflects export value minus grain handling and transportation (GH&T) margins. The difference between FOB (Free on Board) Vancouver prices and the Saskatchewan elevator cash bids to producers is referred to as the *export basis*[1].

As discussed in more depth in the report, when there is sufficient capacity in the GH&T system, the export basis approximates rail transportation tariffs plus grain handling tariffs, both of which include a normal profit margin as a return to shareholders. However, when there is insufficient capacity in the GH&T system to move the grain offered for sale by producers, grain handling companies lower their cash bids to discourage producer delivery to the point where deliveries match the limited movement capacity in the system. The resulting increase in export basis is reflected in a lower price paid to producers and reduced farm revenues.

In 2013, Western Canadian grain crop production was far in excess of any previous production level. The record crop, combined with limited early fall deliveries and very low rail performance during the winter months, created a crisis in grain movement. The crisis resulted in record high basis levels, as grain companies lowered their cash bids to deter producer grain deliveries into a congested grain handling and transportation system. Responding to the grain transportation crisis, the Federal Government passed an Order in Council on March 7, 2014, and the *Fair Rail for Grain Farmers Act*, which required both railway companies to ship a minimum number of railcars per week, or face financial penalties for under-performance. As spring arrived, the overall grain movement increased considerably. Despite the increased

[1] Basis can refer to the difference between any two prices. As the largest volume port, Vancouver FOB, minus the elevator bid prices representative measure of the "export" basis for grains in Western Canada.

movement between March and July 31, 2014 and record exports for the crop year, there was a significant carry-over of grain into the 2014 /15 crop year and export basis levels remained high. With a moderately large crop produced in 2014, and the carry-over of stocks from the previous crop year, there was a very large total supply of grain available for export, which exceeded export capacity for the 2014/15 crop year. This capacity constrained export situation resulted in a second year of higher than normal basis levels.

The observed export basis for the past three crop years are reported in Figure 3 (page 6). In the 2012/13 crop year there was adequate GH&T capacity such that the export basis levels were close to average posted tariffs of $72/t. The increase export basis resulting from inadequate grain export capacity was evident in the 2013/2014 and 2014/15 crop years. With the harvest of the record crop, basis levels rapidly increased. By February 2014, the export basis levels for wheat exceeded $250/t and the combined canola basis and crush margins exceeded $270/t. With a record volume of exports in 2013/14, basis levels declined somewhat by the end of the crop year but were still 200% of posted tariffs. With a large carry-over of stocks and large available total supply, higher than normal basis levels persisted for most of the 2014/15 crop year (ranging between $100 and $150 per tonne), with a reduction in basis levels at crop year end, as producers began to anticipate a drought reduced 2015 crop.

The elevated export basis had a very large and significant impact on grain producer income in Western Canada. As grain export companies reduced their cash bids to ration deliveries, producer prices in the region were reduced relative to Vancouver FOB values. While the lack of available data limits the possibility to precisely estimate the income impact of increased export basis, it is possible to estimate and range of plausible impacts to be in the order of $5 to 6.7 billion (all figures in CDN $). As reported in Table 4 (Page 13), if the price of all producer deliveries of wheat, oats, barley, canola and peas was reduced by the excess over normal basis levels, producer income in the region would have been reduced by an estimated $6.69 billion. Alternatively, if it is conservatively assumed that all production was contracted at basis levels 12 weeks prior to delivery and that 20% of production was marketed to avoid any impact of the increased basis, then income reduction from excess basis is estimated to be $5.05 billion. In either case, the reduction in income is tremendously large.

An additional cost of the congested GH&T system was a reduction in the Vancouver FOB price for 13.5% CWRS wheat relative to 13.5% DNS wheat FOB in Portland. In the 2012/13 crop year the Vancouver discount was $7.73/t. In the 2013/14 crop year this discount increased to an average of $29.49/t and in 2014/15 it increased further to an average of $43.04/t. This discount may be indicating that there are Canadian delivery assurance issues in the minds of buyers that makes buyers reluctant to buy at prices equivalent to those at Portland. The sale of grain at a discount is made possible because as the basis widens, exporters who are capturing additional rents from producers will have the latitude to lower their sale price in order to keep market share from other Canadian sellers. These impacts, which are not included in the Saskatchewan-Vancouver FOB export basis calculations, had an additional negative impact on producer incomes. Applying the additional discounts to the volume of Vancouver CWRS

wheat exports, grain export values were further reduced by $550 million and $880 million over the past two crop years, or $1.430 billion for the exports of CWRS wheat.

The lack of GH&T capacity relative to the exceptionally large 2013 grain crop had a multibillion dollar negative impact on the income of Western Canadian grain producers. The lack of export capacity forced prairie elevator bids downward, significantly increasing the export basis over a two year period. Moreover, Vancouver FOB wheat prices became discounted to equivalent quality US wheat at FOB Portland. Combining the conservative estimate of basis impact of $5.05 billion with the $1.43 billion wheat price discounts to Portland, means that the total value of loss to producers is approximately $6.5 billion dollars.

The lack of grain export capacity has come at a very significant cost to producers, to provincial economies and to the Canadian economy as whole. For producers, using the conservative estimate of $6.5 billion, the export capacity constraints reduced their incomes by $63/t sold over the two-year period. For a 5000 acre farmer, producing one tonne per acre per year, this represents a total gross income reduction of $620,000 over the two crop years. Even for a considerably smaller 1000 acre farm, the income reduction would have been in the order of $120,000. Given the diversity in location, production levels and marketing strategies, each producer would have been impacted differently but the average impacts were very large and economically important.

Policy Implications

The longer term upward trend in Western Canadian grain production combined with the growth in Asian markets suggests that grain export capacity is likely to be a longer-term issue. The impact will be particularly acute whenever there is an unexpected large crop or unanticipated disruptions to export capacity.

Given the potential costs to the economy and the projections for growth in exports of other commodities that will compete with grain, there may be a need for a more strategic national approach to the development of export capacity. This strategic approach must include a comprehensive analysis of future export needs and a full economic exploration of options to expand export capacity, including publically supported infrastructure investment, improved logistics, regulatory structures and transportation policy.

Taking action will require leadership from the federal and provincial governments working with primary industry to achieve economic growth in the national interest. Going forward it is vitally important to have an efficient grain handling and transportation system with the capacity to meet the needs of the industry.

THE ECONOMIC IMPACTS OF ELEVATED EXPORT BASIS LEVELS ON WESTERN CANADIAN GRAIN PRODUCERS

Introduction

The objective of this report is provide a summary of the export basis levels for the principal grains in Western Canada over the 2012/13, 2013/14 and the 2014/15 crop years and to provide an estimate of forgone producer revenue due to export capacity constraints.

The report begins with a brief description of economic forces that create higher basis levels when GH&T system capacity becomes limited relative to potential export demand. This is followed by a brief review of the grain supply and disposition for the last two crop years and a general description of the basis changes over the past three crop years. This description is followed by an analysis of basis levels, including a discussion of the various sources of price data that are currently available. The recent export basis levels are then compared to estimates of average export basis levels for the 2002/03 to 2012/13 time period based on Canadian Grain Commission (CGC) filed maximum tariffs. Using this 2002/03 – 2012/13 average as a benchmark, and the Agriculture and Agri-Food Canada (AAFC) reported estimates of production and exportable supplies, the impact of elevated basis levels on producer revenue is calculated. This analysis is followed by a summary and conclusions.

How Capacity Constraints Impact the Market for Grain Handling and Transportation

The *export basis* is the difference between the cash prices paid to farmers and the export price received FOB (free on board) in Vancouver. Export basis is an approximate measure of the per tonne revenue or gross margin earned by grain companies for purchasing grain from producers in Saskatchewan and placing it on board a vessel in Vancouver. To earn this gross margin, grain companies must incur the cost of primary elevation, cleaning and storage, rail freights costs, terminal elevation and fobbing costs. The opportunity for profitable arbitrage occurs when the price paid to producers plus all costs incurred in getting the grain to FOB position is less than the FOB price paid by the buyer.

Grain companies have to compete with one another to purchase grain from producers. Typically, grain producers have more than one company that they can deliver their grain to and will deliver to the firm paying the highest net farm-gate price. When there is adequate GH&T capacity to move the available farm supply, the export basis will closely reflect handling and transportation costs because any export basis over costs will be an attractive transaction for the grain marketing firms.

Given the large investments and fixed costs involved in grain handling, it is not easy to directly observe the costs of each component on grain handing and transportation. However, the industry does file the maximum tariffs that they charge third parties for specific services, including primary elevation, removal of dockage, terminal elevation, etc. Both major railways also file freight rates. These filed tariffs include variable costs plus a contribution to fixed costs, which means that when export basis is equal to the filed grain handling and transportation tariffs, the firms are covering all costs and earning a profit for shareholders.

To examine the impact of an export capacity constraint, it is useful to place the grain handling and transportation services in a *derived demand* framework, which is illustrated figure 1.

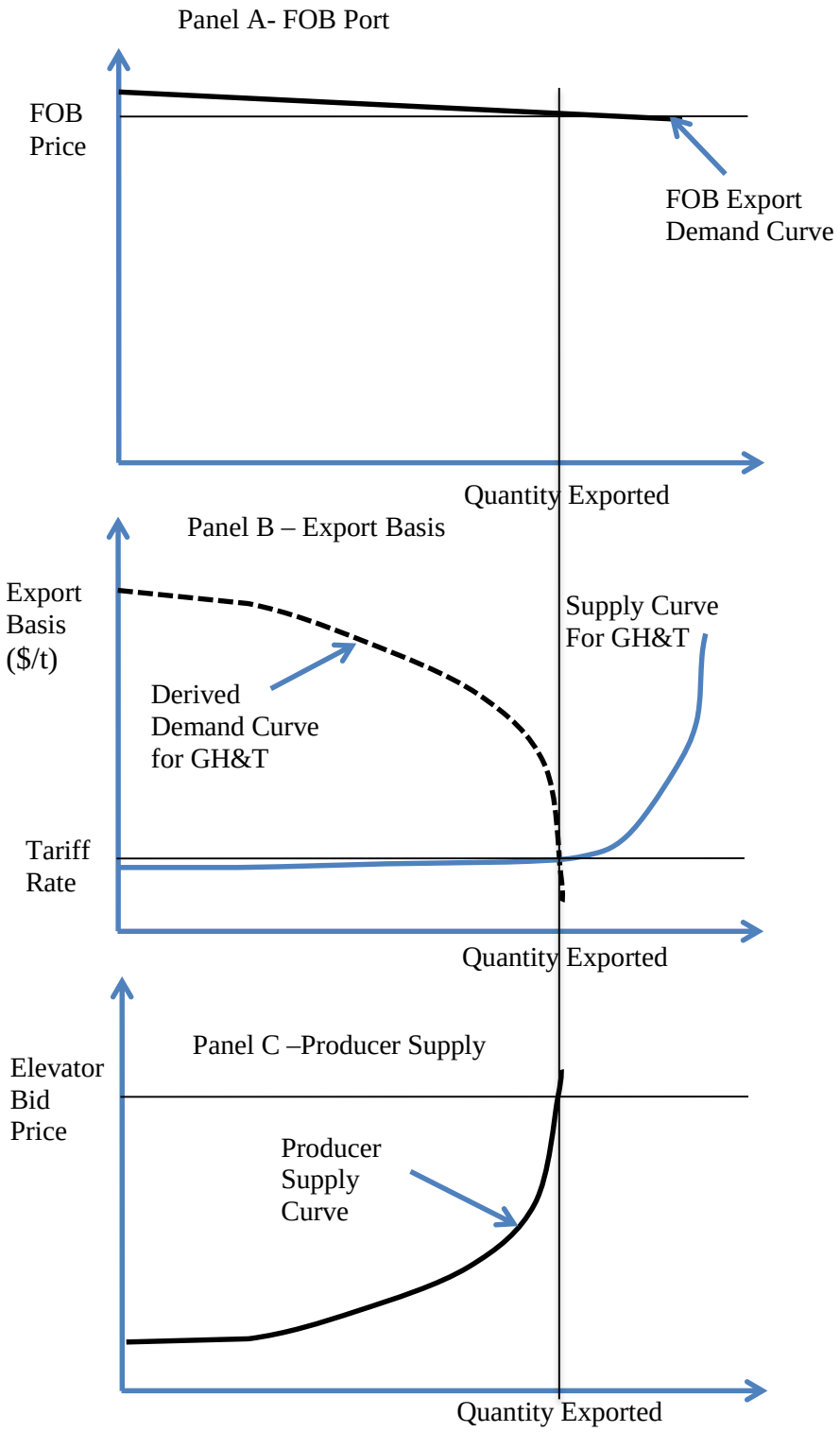


Figure 1: Export Basis and Price Impacts without a binding Capacity Constraint

The derived demand for GH&T is derived as the difference between the FOB Vancouver demand (shown in Panel A) and the producer supply curve (shown in Panel C). The derived demand represents the maximum willingness that a broker would pay to have grain handled and transported from producer delivery to FOB Vancouver position. The FOB Vancouver demand has very little slope, reflecting the fact that Canada produces less than 4% of the world grains and is largely a price taker in the world market. The producer supply curve (shown in Panel C) is the price at which farmers in aggregate are willing to sell any specific quantity of grain to elevators in Saskatchewan for export. The price intercept of the supply curve indicates the cash price that the most desperate producer would accept if the exports were limited to one tonne for the region. As the quantity purchased for export increases, the producers' offer price would also increase. As the quantity purchased for export approaches the total grain available, the producers' supply curve will be become vertical as higher prices cannot attract additional deliveries. The derived demand for GH&T services is the difference between the FOB Vancouver price and the producers' sale price. Graphing this relationship, the vertical subtraction of the upward sloping producer supply curve from the relatively flat FOB demand curve creates the downward sloping derived demand curve for GH&T shown in Panel B.

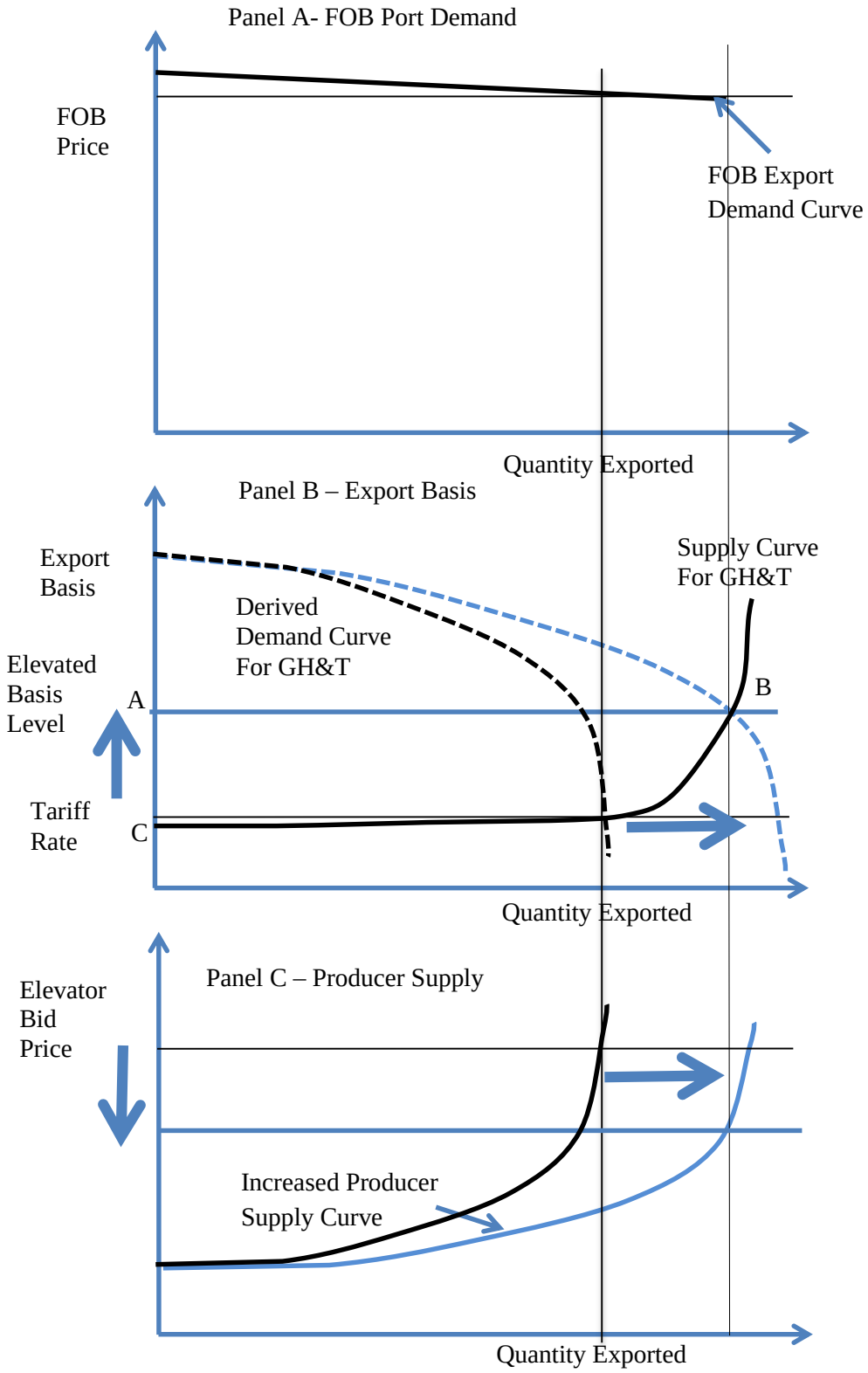
The supply of GH&T services is shown in panel B. The price intercept of the supply curve point represents the minimum basis charge by any grain handling firm to export the first tonne offered. The long and nearly horizontal portion of the GH&T supply curve represents the quantity that will move at posted tariff rates. As the quantity moved approaches GH&T export capacity, the GH&T supply curve slopes upward as the exporter must incur additional costs to secure additional export capacity. The GH&T export supply curve becomes nearly vertical as the options to utilize export capacity are exhausted.

The price of GH&T or basis charges for GH&T will be determined in the market for GH&T where the demand curve for GH&T intersects with the GH&T supply curve. As illustrated in Panel B of Figure 1, if this intersection occurs where the capacity constraints are not binding, the basis charges will be close to the published maximum tariff rates. In this case, bid prices in Saskatchewan will be the Vancouver FOB price minus published tariff rates and grain companies will earn normal profits from exporting grain.

When GH&T capacity constraints become binding, with a large producer supply, the situation changes dramatically, as illustrated in Figure 2. In this case the intersection of derived demand and the supply of GH&T occurs in the more vertical portion of the GH&T supply curve. At this point, the GH&T export basis will be far higher than tariff rates, and the cash bids will be reduced relative to Vancouver FOB prices.

The GH&T rents (area ABC in Figure 2), which are the differences between the average cost of GH&T and the basis charges, will accrue to the grain companies or contract holders that have secured access at lower tariff based rates. Railways, whose average freight rates are constrained by

Figure 2: The Impact of Large Capacity Constrained Supply on Basis Levels and Producer Prices



the maximum revenue entitlement, cannot capture additional revenue by increasing freight rates.[2] Producers who face lower prices for the grain they export or sell locally will incur a cost equal to the increase in basis multiplied by the quantity of their sales.

There are a number of forms of arbitrage related to the *law of one price* that will spread the higher export basis impacts across markets. As long as some product is being exported at the elevated basis levels, the price at which producers are willing to sell to local processors will also reflect the same lower cash bids. Grain companies also have a choice of which grades and commodities to purchase. They have an incentive to purchase and move those grain types with higher basis levels for which they capture rents. This grain company arbitrage occurs until all grades and commodities earn similar basis rents per tonne (to satisfy creditors and cash flow requirements). Finally, producers have a choice between selling at the current basis versus storing and selling at some future date, with the expected return from current and future sales differing by storage costs. When basis levels are elevated, both current and future contract prices will be impacted.

Given these various forms of arbitrage in efficient markets, the impacts of increased basis tend to be very pervasive and impact nearly all sales within the export area very similarly. The exceptions to this general rule will be those producers that are able to avoid the impact of lower cash bids by contracting prior to basis level increases, or finding alternative markets for delivery that have not been impacted by increased basis. For example in the 2013/14 crop year, some producers near the US border were able to limit the impact of a higher than normal basis by trucking their grain to US shipping points that were less congested. While some of these forms of arbitrage did take place, delivery statistics suggest that the vast majority of grain was delivered to local grain elevators for export shipment, and arbitrage to the US was limited by trucking and local U.S. handling capacity.

Finally, it is worth noting that capacity constraints can also create significant logistical issues for grain customers at FOB port locations. Customers often time their purchases to create a steady flow of grain to their processing facilities. The GH&T capacity issues in 2013/14 resulted in a delay in shipment for many customers. While these customers were partially compensated for their losses through demurrage payments, many were forced to take other actions to secure a timely product supply. This additional delivery risk can get reflected in the Canadian FOB offer prices, relative to price offered to other sellers. In this case, the FOB demand curve shifts downward to reflect a reduced willingness to pay for risky Canadian grain supply.

The established theory presented in this section is used as the primary framework to measure the impacts of GH&T capacity constraints. As a means of further illustrating this theory, the next section of the report reviews GH&T export basis levels over the past three crop years and

[2] This differs from the United States, the railways capture most of the rents from a capacity constraint by raising their rates or auctioning off rail car shipments to the highest bidder.

describes the events that impacted their levels.

The Supply and Disposition of Principal Field Crops in Canada

Table 1 outlines the supply-disposition of principal field crops in Canada for the past three crop years, including the June 18, 2015 AAFC forecast for the 2014/15 crop year. The 2012/13 crop year was normal in many respects with production of 76.7 million tonnes (Mt), exports of 42Mt, and ending stocks of 9.6Mt.

In contrast, the 2013/14 crop year was noteworthy in several respects. First, the total production of 97.2 million tonnes far exceeded any previous level of crop production in Canada. Excellent growing conditions on the prairies, low disease pressure, and excellent harvest conditions produced an excellent crop in nearly all regions of Western Canada. Second, despite the record grain shipments in 2013/14, the ending stocks of 18.4Mt was still one of the highest levels in recent history. As can be seen in Figure 3, July 31, 2014 farm stocks of grain in Western Canada exceeded 11Mt, which was significantly higher than average carryovers.

In the 2014/15 crop year Canadian crop production returned to normal levels; however, beginning the crop year with the higher carryover stocks, AAFC estimated 100.7Mt of available supply. Forecasting 47.8 Mt of exports, the second highest exports on record, AAFC anticipated a return to slightly higher than normal carryout stocks of 11.5Mt by the end of the crop year. Given the prospect of carrying some product into the lower priced 2015 crop year, basis levels remained high.

Table 1: Canada: Principal Field Crops Supply and Disposition

	Crop year		
(t = tonne, ha = hectare)	2012/13	2013/14	2014/15
Area Seeded (**1000 ha**)	29,502	29,690	29,159
Area Harvested (**1000 ha**)	28,684	28,930	27,536
Yield (**t/ha**)	2.67	3.36	2.76
Production **(1000 t)**	76,716	97,173	76,068
Imports **(1000 t)**	1,160	1,141	1,891
Total Supply **(1000 t)**	89,521	108,009	100,692
Exports **(1000 t)**	41,889	48,521	47,750
Total Domestic Use **(1000 t)**	38,042	41,129	41,454
Carry-out Stocks **(1000 t)**	9,591	18,370	11,533

Source: Statistics Canada
*AAFC June 18, 2015 forecast

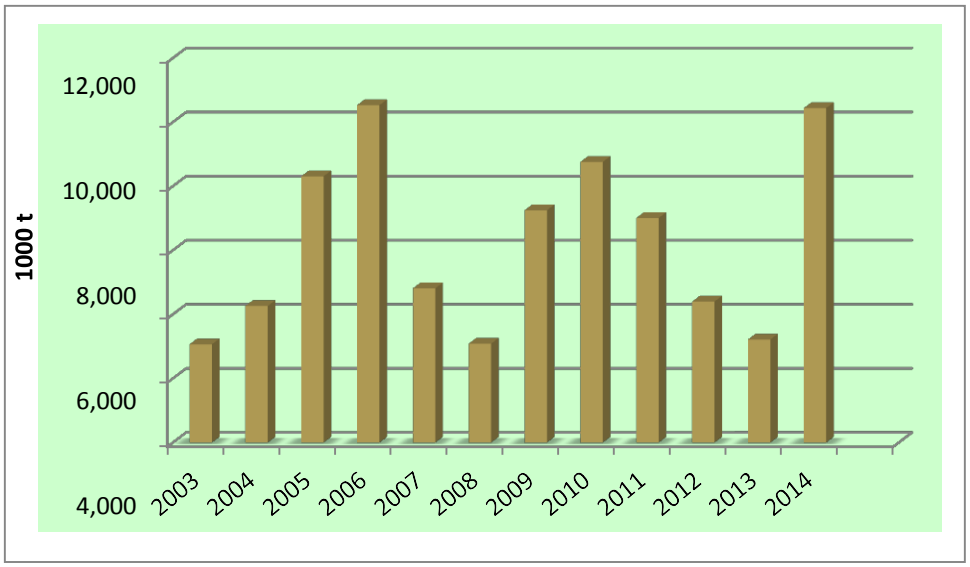


Figure 3: July 31 Farm Stocks of Grains in Western Canada

Source: Stats Canada CANSIM database

Recent Grain Shipments and Basis Levels

When producers are deciding when to market their crop, they compare the price offered minus storage and interest costs for current and all future delivery months, and then try to time their contract sales to maximize their income, subject to creditor requirements and cash flow needs. In addition, the maximum quantities that grain companies are willing to contract for purchase in future months reflects their anticipated capacity to move the product. When a system is booked to capacity, all current and future local prices offered to producers at primary elevators will reflect the export price in the most distant month required for delivery, minus basis in that month, minus storage and interest costs.

If the system has sufficient capacity to move the crop within the crop year, normal basis levels will tend to exist in all future months with slightly higher basis levels in the fall, when producers are eager to deliver. A somewhat lower than normal basis will exist at times of the year where producers need additional delivery encouragement because of cold weather or road bans. When there is insufficient capacity to move the crop within a single crop year, current prices will reflect the subsequent crop year's prices minus storage. This can result in a very large basis, especially when the new crop year's futures prices are lower than the current crop year. As a general rule, basis levels are elevated above normal levels whenever the system lacks the capacity to move the crop within a single crop year, and may become very large if multiple years of excess carryover are anticipated, which was the case in 2013/14.

Figure 4 show grains export volumes over the past 35 months (Aug 2012 – June 2014). As a point of reference, monthly shipments only averaged 2,456 thousand tonnes from 2003/04 to

2012/13. The August and September 2013 deliveries of the crop were lower than normal because of a somewhat delayed start to the 2013 harvest. Shipments then increased significantly, exceeding 4,500 thousand tonnes in October. This acceleration was short-lived, as an early onset to a very cold winter considerably slowed grain movement, a problem that was compounded by a lack of crews, locomotives and rail cars, as the railways had not planned for the capacity necessary to move the volumes desired by the industry (producers and grain handlers). Shipments slowly recovered with excellent post regulation movements, particularly from May to July 31, 2014. Given the excellent movements in fall, spring and summer, total shipments for the 2013/14 crop year achieved a record level.

As mentioned previously, the record production in 2013/14 meant that there was a significant carry-over of stocks into the 2014/15 crop year. With these large stocks and a reasonably large 2014 crop, the GH&T continued to operate at full capacity, with good movements from the very beginning of the crop year. With these large early shipments and a mild winter, grain companies achieved a new record, exporting most available supplies by the end of the 2014/15 crop year.

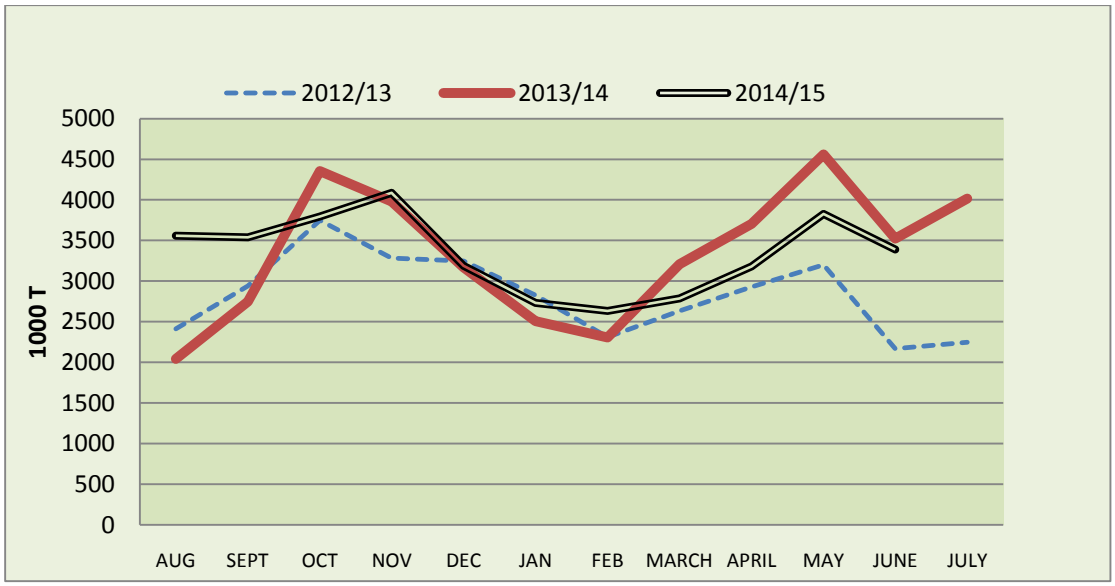


Figure 4: Canadian Grain Exports Month 2012/13, 2013/14 and 2014/15 Crop Years
Source: Canadian Grain Commission: Exports of Canadian Grain and Wheat Flour

Table 2: Licenced Grain Exports Canada by Month 2012/13, 2013/14 and 2014/15 (thousand tonnes)

Crop year	**2012/13**	**2013/14**	**2014/15**
August	2,411	2,043	3,557
September	2,942	2,747	3,541
October	3,748	4,353	3,795
November	3,282	3,979	4,087
December	3,247	3,171	3,188
January	2,827	2,509	2,731
February	2,311	2,306	2,635
March	2,634	3,208	2,788
April	2,929	3,704	3,181
May	3,202	4,560	3,828
June	2,169	3,523	3,390
July	2,249	4,015	2,829

Source: CGC Exports of Canadian Grain and Wheat Flour

As shown in Figure 5, the wheat export basis levels between the cash price received by producers and FOB Vancouver prices changed a great deal over last 35 months. In the 2012/13 crop year, which was post-Canadian Wheat Board (CWB) single-desk authority, the basis level closely tracked the long-term average of the tariff schedules for grain handling services that the grain companies had filed with the Canadian Grain Commission (CGC), plus the average rail freight rates. As noted earlier, the 2012 harvest was somewhat smaller than anticipated and the GH&T had adequate capacity to meet export requirements during the crop year. As a result, basis levels during the 2012/13 crop years reflected normal competitive returns, as there was no need to ration access to the handling capacity in the system and companies had to actively compete with one other in order to attract the delivery of the limited supply of grains offered for sale by producers.

Prior to harvest, at the beginning of the 2013/14 crop year, export basis levels were close to the CGC-reported average maximum tariffs from 2003-2012 of $72.50/t (Central Saskatchewan elevator position). However, as the 2013 harvest commenced, it became apparent that the crop was going to be larger than anticipated.

With the looming prospect of large on-farm stocks, producers became eager to sell and contract to sell their grain. By October 2013, basis levels increased to over $113/t to ration this delivery demand. When rail movement began to slow down in late November and the grain handling system became more congested, the basis levels continued to escalate, reaching about $252/t by early February 2014. By March 2014, the West Coast basis levels for wheat had declined somewhat but were still $200/t, and the combined canola basis and crushing margins exceeded $270/t (Gray, 2014). These extraordinary basis levels were 250-300% of normal basis levels. On March 7, 2014, the federal government responded to the crisis with regulations requiring minimum weekly rail shipments.

One reason for the particularly large increase in basis levels was the "inversion of prices" in the grain futures markets. The futures market prices for the 2014 crop were lower than the United States (U.S.) drought impacted 2013 crop. Faced with the prospect of having to store their grain and sell it into a lower 2014 crop market, producers were willing to accept a very large basis in order to sell their crop in 2013/14. Further increasing the pressure to sell was the expectation that the carry-over stocks would be so large that carry-overs of grain on-farm could persist for several years.

Excess basis levels persisted to the end of the 2013/14 crop year and continued into the 2014/15 crop year as a moderately large crop combined with the large carry-over of producer grain stocks continued to put downward pressure on cash bids. In August 2014, basis levels were $143/t and declined somewhat by October. Basis levels reached some of their lowest levels in February 2015 and warmer than normal weather allowed good rail shipment volumes. Basis levels then increased in May with producers anxious to generate cash flow. These export basis levels then dropped to $125/t in June as much lower than normal rainfall reduced the expected 2015 crop production. Based on industry data, this basis level fell to $93/t by the end of July 2015. As of August 7, Saskatchewan-Portland basis levels were $86/t.

With a smaller than normal crop expected, and the two years of record export volumes, basis levels for the 2015/16 crop year are being quoted in the range of $80/t (Aug/2015 quote), which is close to normal levels. Industry quotes indicate that the Portland – Vancouver price spread for hard red spring wheat has also virtually disappeared. These changes in basis suggest that the industry is confident there will be sufficient capacity to move the 2015 crop in a timely manner, such that the grain companies must offer more attractive basis levels to attract producer deliveries. Notably, the situation could change with either higher than anticipated yields, or lower than anticipated shipment volumes.

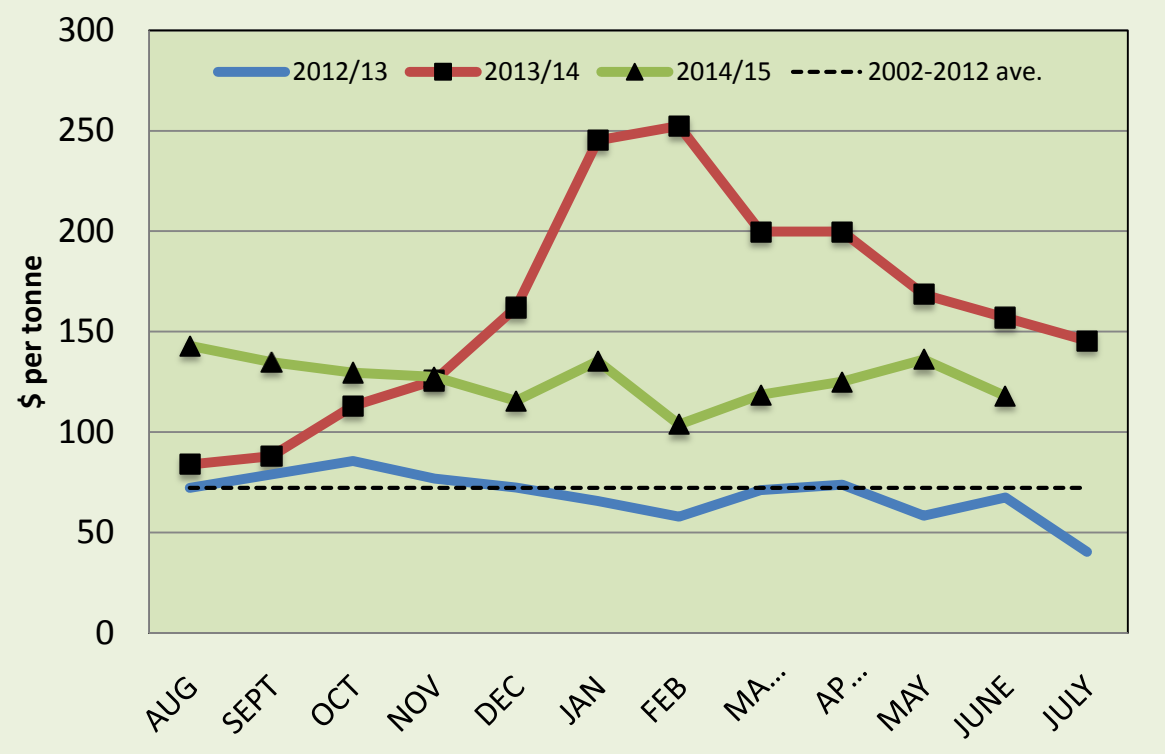


Figure 5: Saskatchewan Cash bid to Vancouver FOB Export Basis, 2012/13, 2013/14 and 2014/15

Source: AAFC, Industry, US Wheat Associates, Saskatchewan Ministry of Agriculture

Table 3: Estimated Vancouver FOB – Saskatchewan Cash bid Export Basis

Shipping month	Crop year 2012/13	Crop year 2013/14	Crop year 2014/15	2002-2012 average
		($/tonne)		
Aug	72.25	83.88	142.89	72.25
Sept	78.95	87.96	134.77	72.25
Oct	85.61	113.06	129.62	72.25
Nov	76.87	125.73	127.50	72.25
Dec	72.44	162.04	115.51	72.25
Jan	65.77	245.24	135.30	72.25
Feb	57.86	252.37	103.83	72.25
March	71.12	199.81	118.61	72.25
April	73.80	199.81	125.08	72.25
May	58.37	168.50	136.15	72.25
June	67.40	157.02	117.99	72.25
July	40.46	145.44	93.00	72.25
Average	68.41	161.74	123.60	72.25

Source: As calculated from Industry, AAFC, CGC, and Sask. Ministry of Agriculture reported prices

The Estimated Financial Impact on Producer from Elevated Export Basis Levels during the 2013/14 and 2014/15 Crop years

Excess basis levels are used to approximate the income impact on Western Canadian grain producers as shown in Table 4. The losses to producers are calculated based on the deliveries of grain in Western Canada during the August 1 to December 31, January 1 to March 31, and April to July 1 period for the 2013/14 and the current 2014/15 crop year.[3] Wheat, barley, canola, peas and oats are included. Other grains produced in the region are not.

Farmer deliveries are multiplied by the estimates of excess basis levels reported earlier to quantify the overall impact. In the first calculation, the basis levels that exist at the time of delivery are assumed to apply to all grain delivered during the period. This should be considered as an upper bound of any estimate, as many producers forward-price and forward-contract deliveries.

In the second calculation, it is assumed that all grain being delivered reflects the basis that existed 12 weeks earlier. While this is an extreme amount of forward contracting, it illustrates that the basis impact is only slightly smaller in total when forward contracting is taken into account.[4] In this case the estimated income loss to Western grain producers is $6.3 billion.

In a third calculation reported in last two rows of Table 4, it is assumed that 20% of all the grain deliveries reported escape any impact of higher export basis, and for all sales, all basis is locked in 3 months in advance. Even in this extremely conservative case, the losses to grain farmers exceed $5.05 billion dollars.

The figures reported in Table 4 are based on several simplifying assumptions, primarily because the data is difficult to obtain in a uniform condition. First, it assumes that the excess basis reported in Table 3 represents the additional export basis due to a lack of export capacity. Given the clear comparison to the $72 basis that existed in the post CWB 2012/13 crop year when there was adequate export capacity, the excess over $72 can be reasonably attributed to the lack of export capacity relative to supply. The return toward more normal basis levels in June 2015, as delivery pressures decreased, also provides support for this assumption.

Second, the reported basis calculations assume that the relationship between the average cash elevator bids and the actual prices received by producers do not change from one crop year to the next. For instance, if producers were able to (on average) receive a $5 /t delivery premium over the cash bids in 2012, they were also able to do so in 2013. This assumption in the calculation could underestimate the excess basis in 2013 and 2014 if these delivery premiums were reduced as the system became congested.

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[3] These periods are used because Statistics Canada does surveys of farm stocks providing more accurate estimates of farm sales during these intervals.

[4] If a producer forward contracted basis levels this would have been a significant advantage when basis levels increased but this strategy would have the opposite effect when basis levels decreased over time.

Finally, these calculations assume that the wheat export basis is also reflected in the basis levels of the other grains (barley, canola, oats and peas). From an arbitrage perspective, this is a reasonable assumption, as grain companies must allocate limited export capacity among the various grains they are buying. As mentioned previously, if the basis level on another grain was significantly higher than wheat, the company would move more of the product until the basis was equal among grains. Similarly, if the basis was lower on some other grain, the company would be better off using their capacity to ship wheat.

Table 4: Estimated Grain Producer Income Impact of Congestion Related Excess Export Basis Western Canada 2013/14 and 2014/15

	2013---2014 Crop year			2014---2015 Crop year			
	Aug---Dec	Jan---Mar	Apr---Jul	Aug---Dec	Jan---Mar	Apr---Jul	Total
Farm Deliveries* Million t	21.80	11.86	18.92	22.85	12.72	15.00	103.15
All Sold at Prevailing Basis**							
Ave Excess Basis $/t	51.49	143.53	77.67	48.63	59.97	34.94	64.88
Producer Losses $Million	1,123	1,702	1,470	1,111	763	524	**$6,692**
All sold at basis 12 weeks prior^							
Excess Basis (t ---12weeks) $/t	6.02	75.78	130.82	58.62	48.48	56.82	61.21
Producer Losses $Million	131	899	2,475	1,339	617	852	**$6,314**
80% sold at basis 12 weeks prior^^							
Excess Basis (t ---12weeks) $/t	6.02	75.78	130.82	58.62	48.48	56.82	48.97
Producer Losses $Million	105	719	1,980	1,071	493	682	**$5,051**

Source: Authors Calculation, Table 3, and CANSIM Table 0010043

* Farm Deliveries of wheat, oats, barley, canola, peas, Western Canada
**Excess basis is estimated to be Vancouver FOB – Sask. Cash bids for wheat - $72 /t see Table 3 for calculation and sources
^Excess basis reported for 12 weeks prior to delivery is used to estimate impact.
^^This lower bound estimate assumes that only 80% of producer deliveries are impacted and all basis is priced 12 weeks prior to delivery

The Impact of Export Capacity Constraints on Vancouver FOB prices

There are several public sources of FOB West Coast wheat prices. The USDA reports daily Portland average FOB prices for 14% Dark Northern Spring (DNS) wheat. The other reported Portland FOB price is done weekly by the U.S. Wheat Associates, which quotes a 13.5% protein level for DNS. The only public source for Vancouver FOB prices is AAFC's weekly price summary, which reports an indicator price for 13.5% protein CWRS FOB Vancouver. AAFC attributes the International Wheat Council as the source of the FOB prices. Private marketing services also provide Vancouver FOB prices. These privately reported FOB prices closely mirror the AAFC reported values.

It is widely accepted in the industry that US DNS wheat is physically similar in quality to Canadian Western Red Spring (CWRS) wheat and therefore both typically trade at a very similar prices FOB at west coast ports. However, as shown in Figure 6, a comparison of Vancouver and Portland FOB prices shows that 13.5 CWRS FOB Vancouver has traded at a significant discount to13.5% protein DNS FOB Portland over the past two crop years. In the 2012/13 crop year, 13.5% protein #1 CWRS sold for a small discount of $7.73/t. Following the large crop of 2013, this discount increased to an average of $29.29 in the 2013/14 crop year and averaged $43.04/t in the 2014/15 crop year up to the week of June 12th, which was the last date that AAFC posted these indicator prices on their website. For the week of August 7, 2015 FOB prices show that 13.5 CWRS FOB Vancouver is at a $4 per tonne premium to 13.5% protein DNS FOB Portland, reflecting expectation that shipments 2015/16 crop year are not anticipated to be capacity constrained.

To the extent that this Vancouver FOB versus Portland discount increased significantly when basis levels rose, and have returned to par values in August 2015, indicates buyers significantly discounted the value of Canadian CWRS wheat during the GH&T system export capacity crisis. The discount could be an important signal of lack of confidence in the GH&T system to deliver product to buyers on time. This suggests that in the short run, the high pace of exports needs to be continued to restore buyer and shipper confidence. In the longer term, the GH&T system needs to build more west coast capacity and create a logistics system with the capability to quickly restore high movement after any disruption in the system. If these measures are not taken, history will almost certainly repeat itself as large crops and cold winters will occur in the future.

Selling any product at a price discount to competitors has a significant negative impact on revenue. As shown in figure 7, applying the increase in Vancouver FOB to CWRS wheat exports further reduced revenue by $550 million in the 2013/14 crop year and by $880 million in the 2014/15 crop year. This total loss in value of $1.43 Billion is over and above the basis related losses reported above. This is also almost certainly a low estimate, as the impacts went beyond wheat exports to negatively impact the value of domestic wheat sales and the export value of other commodities as well.

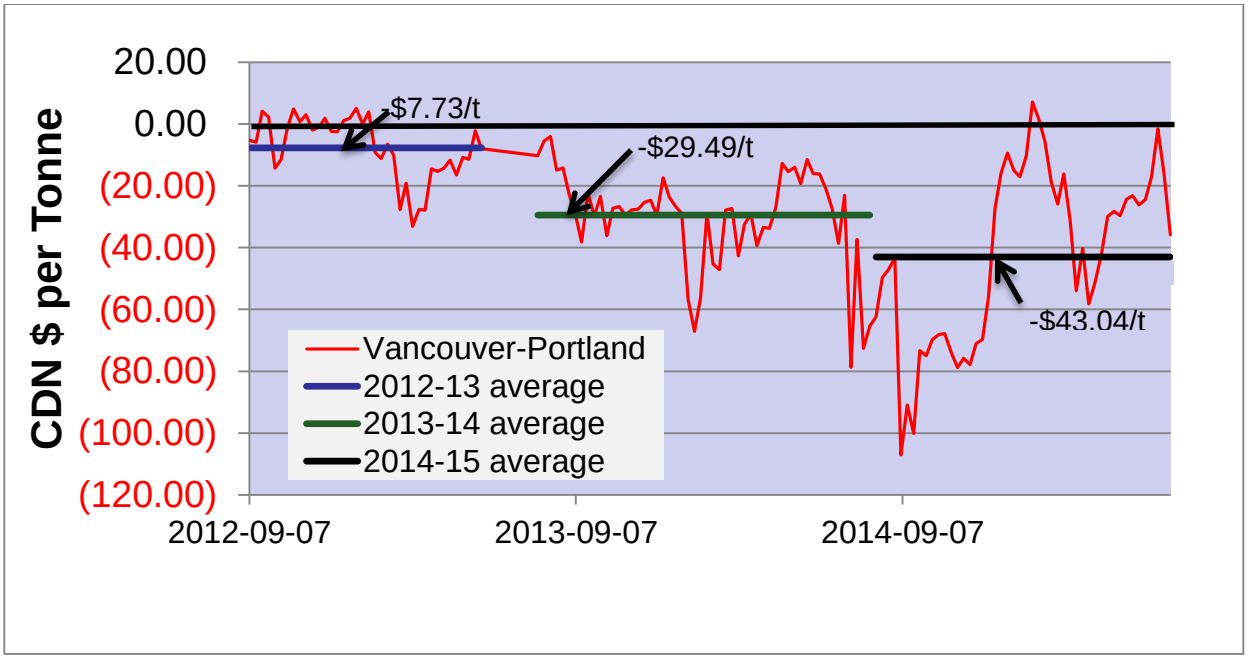

Figure 6: Vancouver CWRS 13.5 – Portland DNS 13.5 FOB Prices 2012/13, 2013/14
Source: US Wheat Associates, AAFC and other industry sources

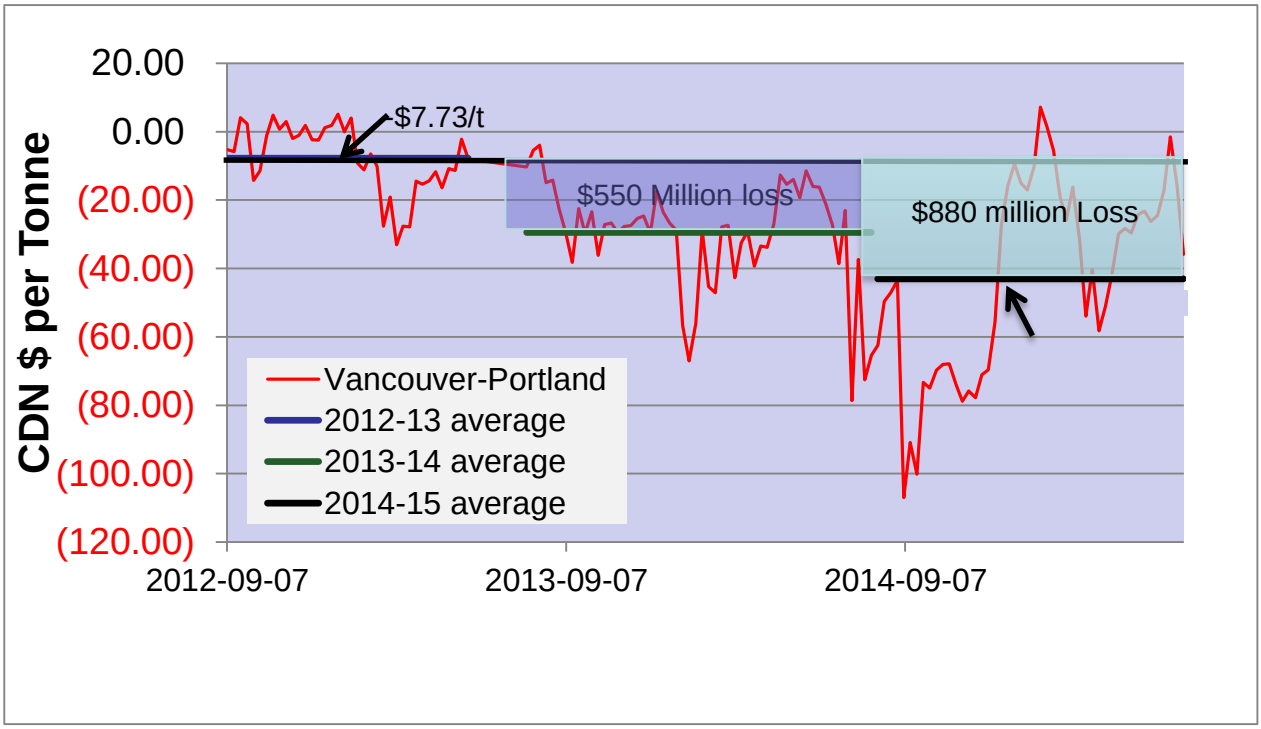

Figure 7: Estimate of Lost CWRS Export Sales Revenue due to Export Capacity Constraints 2013/14, 2014/15 crop years
Source: Author's calculations based on average FOB discounts and grain export volumes

Summary and Conclusions

When there is sufficient capacity in the GH&T system, the export basis approximates rail transportation tariffs plus grain handling tariffs, both of which include a normal profit margin as a return to shareholders. However, when there is insufficient capacity in the GH&T system to move the grain offered for sale by producers, grain handling companies lower their cash bids to discourage producer delivery to the point where deliveries match the limited movement capacity in the system. The resulting increase in export basis is reflected in a lower price paid to producers and reduced farm revenues.

The elevated export basis during the 2013/14 and 2014/15 crop years had a very large and significant impact on grain producer income in Western Canada. As grain export companies reduced their cash bids to ration deliveries, producer prices in the region were reduced relative to Vancouver FOB values. While the lack of available data limits the possibility to precisely estimate the income impact of increased export basis, it is possible to estimate and range of plausible impacts to be in the order of $5 to 6.7 billion (all figures in CDN $). As reported in Table 4 (Page 13), if the price of all producer deliveries of wheat, oats, barley, canola and peas was reduced by the excess over normal basis levels, producer income in the region would have been reduced by an estimated $6.69 billion. If very conservative assumptions were made, such that all production was contracted at basis levels 12 weeks prior to delivery and that 20% of production was marketed to avoid any impact of the increased basis, then income reduction from excess basis is estimated to be $5.05 billion.

An additional cost of the congested GH&T system was a reduction in the Vancouver FOB price for 13.5% CWRS wheat relative to 13.5% DNS wheat FOB Portland. In the 2012/13 crop year the Vancouver discount was $7.73/t. In the 2013/14 crop year this discount increased to an average $29.49/t and in 2014/15 it increased further to an average of $43.04/t. These impacts, which are not included in the Saskatchewan-Vancouver FOB export basis calculations, had an additional negative impact on producer incomes. Applying the additional discounts to the volume of Vancouver CWRS wheat exports, grain export values were further reduced by $550 million and $880 million over the past two crop years, or $1.430 billion for the exports of CWRS wheat.

The inability of the grain handing and transportation system to export the exceptionally large 2013 grain crop within the crop year had a multibillion dollar negative impact on the income of Western Canadian grain producers. The lack of export capacity forced prairie elevator bids downward, significantly increasing the export basis over a two year period. Moreover, Vancouver FOB wheat prices became discounted to equivalent quality US wheat at FOB Portland. Combining the very conservative estimate of basis impact of $5.05 billion with the $1.43 billion wheat price discounts to Portland, means that the total value of loss to producers is approximately $6.5 billion dollars.

The lack of grain export capacity has come at a very significant cost to producers, to provincial economies and to the Canadian economy as whole. For producers, using the conservative estimate of $6.5Billion, the export capacity constraints reduced their incomes by $63/t sold over the two-year period. For a 5000 acre farmer, producing one tonne per acre per year, this represents a total gross income reduction of $630,000 over the two crop years. Even for a considerably smaller 1000 acre farm, the income reduction would have been in the order of $126,000. Given the diversity in location, production levels and marketing strategies, each producer would have been impacted differently but the average impacts were very large and economically important. These large negative impacts are felt throughout the economy as producers earn less income, pay less taxes and buy fewer goods.

The longer term upward trend in Western Canadian grain production, combined with the growth in Asian markets suggests that grain export capacity is likely to be longer-term issue. This will be particularly acute whenever there is an unexpected large crop or unanticipated disruptions to export capacity.

Given the potential costs to the economy and the projections for growth in exports of other commodities that will compete with grain, there is a need for a more strategic national approach to the development of export capacity. This strategic approach must include a comprehensive analysis of future export needs and a full economic exploration of options to expand export capacity, including publically supported infrastructure investment, improved logistics, regulatory structures and transportation policy.

Taking action will require leadership from the federal and provincial governments working with primary industry to achieve economic growth in the national interest. Going forward it is vitally important to have an efficient grain handling and transportation system with the capacity to meet the needs of the industry.

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