COVID-19 and Canadian farmland markets in 2020

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Abstract
Early evidence suggests that Canadian farmland values increased in 2020. Farming returns were not negatively impacted by COVID-19 and it appears as though farming returns will be strong into 2021. Low interest rates in 2020 contributed to substantial farmland value increases in the last half of 2020. There is some evidence that the development component of farmland values increased in 2020. The future consequences of COVID-19 on farmland values are unclear. Some economists suggest that future inflationary risks have increased. A return to inflation rates comparable to those experienced in the 1970s is unlikely, but if increased inflation does materialize it will put upward pressure on farmland values, while increases in nominal and real interest rates will push farmland values down.

RÉSUMÉ
Les informations disponibles, à ce jour, suggèrent que la valeur des terres agricoles canadiennes a augmenté en 2020. Les rendements agricoles n’ont pas été négativement touchés par la COVID-19 et il semble que les rendements agricoles seront solides en 2021. Les faibles taux d’intérêt en 2020 ont contribué à des augmentations substantielles de la valeur des terres agricoles au cours du dernier semestre de 2020. Certains éléments indiquent que la composante développement des valeurs des terres agricoles a augmenté en 2020. Les conséquences futures du COVID-19 sur les valeurs des terres agricoles ne sont pas claires. Certains économistes suggèrent que les risques inflationnistes futurs se sont accru. Un retour à des taux d’inflation comparables à ceux enregistrés dans les années 1970 est peu probable, mais si une inflation accrue se matérialise, elle exercera une pression à la hausse sur la valeur des terres agricoles, tandis qu’une augmentation des taux d’intérêt nominaux et réels va créer une pression baissière sur la valeur des terres agricoles.

1 | INTRODUCTION

Surveys of Saskatchewan farmers conducted in the spring of 2020 by the Agricultural Producers Association of Saskatchewan (APAS) suggested that almost half of the Saskatchewan farmers participating in the survey ranked the impact of COVID-19 on farm asset values as among their top three business concerns (APAS, 2020). Initial concerns about downward pressure on farmland values were justified given considerable uncertainty about the impact of COVID-19 on
commodity markets. The likely role of macroeconomic variables—primarily interest rates—was to exert upward pressure on farmland values. Lawley (2020) presented evidence, based on past research and trends in Canadian farmland values, suggesting that the farmland market would respond primarily to changes in crop cash receipts, the interest rate, and the development value of farmland for those parcels that are close to large urban centres.

A survey of participants in the Ontario farmland market conducted in January and February 2021 finds that an overwhelming majority of respondents believe COVID-19 had no impact on Ontario farmland values (Deaton, 2021). In this follow-up article, I assess the extent to which Canadian farmland markets were influenced by COVID-19 in 2020, beginning with a discussion of the evolution of crop returns and macroeconomic variables in 2020 and followed by presentation of new estimates of farmland value changes in Manitoba in 2020. The preliminary results suggest that Manitoba farmland values increased in 2020, particularly in the last half of the year. Although it is difficult to directly identify the impact of COVID-19 on farmland values, the low interest rates that prevailed during the year contributed to farmland value increases in 2020. I conclude with a discussion of the potential future impacts of COVID-19-related events over the next several months and years.

2 | POTENTIAL DETERMINANTS OF FARMLAND VALUES

Lawley (2020) discusses the potential impact of several factors on farmland values in Canada. In this section, I present updated data documenting the evolution of these factors over the last 5 years, up to the end of 2020.

2.1 | Farming returns

Quarterly Canadian real farm receipts reported by Statistics Canada increased by approximately 3.8% between the fourth quarter of 2020 and the fourth quarter of 2019, and annual farm receipts increased by 9.3% in 2020 compared to 2019. As shown in Figure 1A, increases in real crop receipts accounted for the most of these gains. Real crop receipts increased 7.4% from quarter four of 2019 to quarter four of 2020. Real crop receipts were higher in each quarter of 2020 relative to the same quarter in 2019. Overall, real crop receipts increased by more than 15% in 2020 compared to 2019. Real receipts from livestock exhibited more modest gains; receipts over the first half of the year decreased while receipts over the last half of the year increased, resulting in a net gain of 0.3% in 2020. Finally, government payments for 2020 are 12% higher than government payments in 2019.

2.2 | Interest rates

Perhaps most importantly, interest rates decreased in quarter two of 2020 and remained low throughout 2020. The Bank of Canada target for the overnight rate fell to 0.25% in quarter two and stayed at that level for the remainder of 2020. As traced out in Figure 1B, the Government of Canada 10-year benchmark bond yields fell from 1.12% on February 28, 2020 to 0.71% on March 23, 0.46% on July 31, and 0.67% on December 31, 2020. Similarly, Canadian corporate mortgage rates fell from an average of 3.6% in the first quarter of 2020 to 3.1% in the second quarter, 3.0 in the third, and 2.8 in the final quarter of 2020. The average annual corporate mortgage rate fell one percentage point, from 4.1% in 2019 to 3.1% in 2020. It is important to note that nominal 10-year benchmark bond yields over the last 10 years have been low by historical standards, and the 2020 rates are the lowest over the last decade.

2.3 | Exchange rates

Exchange rates can influence the value of fixed agricultural inputs such as land (Carter, Gray, and Furtan, 1990). Figure 1C plots fluctuations in the Canada-US exchange rate over the past 5 years. In 2020, the exchange rate increased over the first half of the year, approaching 1.4 CAD/USD in the second quarter, followed by declines over the second half to levels

1 The survey finds that 60% of respondents believe COVID-19 had no impact on Ontario farmland values in 2020, while an additional 32% are unsure if it had any impact (Deaton, 2021).
As in the US, house prices in the Canadian market increased substantially in the last half of 2020. Low mortgage rates certainly played a role in house price increases. The extent to which increased house prices have led to short-term increased demand for farmland close to major urban centres is unclear. Zhang and Nickerson (2015) find that the housing crash during the Great Recession led to a substantial decrease in demand for farmland in Ohio. The small change in housing demand that may have occurred in 2020 is, of course, not comparable to the substantial negative shock to housing demand that occurred in 2009. Figure 1D plots the housing price index over the last 5 years for Toronto, Guelph, Winnipeg, and Vancouver. Changes in the house price index suggest that prices increased rapidly in each of these cities. It is interesting
to note that house prices in Guelph increased at a faster rate than house prices in Toronto, perhaps reflecting a shift in demand away from densely-populated locations. Different rates of house price increases can also reflect differences in housing supply constraints across markets. For example, the Canadian Mortgage and Housing Corporation (2021) reports that seasonally adjusted dwelling starts in Guelph decreased by almost 36% in 2020 compared to 2019, while dwelling starts in Toronto increased by 27% over the same period.

3 | CHANGES IN FARMLAND VALUES IN 2020

Analysis by the Federal Reserve Bank of Chicago suggests that farmland values in Iowa, Illinois, Indiana, Michigan, and Wisconsin increased by 6 percent on average, with the largest increases of 9 and 7 percent in Indiana and Wisconsin, respectively (Oppedahl, 2021). These results are substantially higher than estimates in the Iowa State University 2020 Farmland Value Survey, which indicated a 1.7% increase in nominal farmland values (Zhang, 2020). The USDA estimates no change in US farmland values between July 2019 and June 2020, citing uncertainty due to the COVID-19 pandemic. The aggregate US values estimated by the USDA mask some heterogeneity: farmland values in the Northern Plains declined by 2.3% over that period, while values increased slightly in the Appalachian, Corn Belt, and Northeast regions (USDA, 2020). In Canada, the FCC 2020 mid-year Farmland Value Report indicated that Canadian farmland values increased by 3.7% over the first half of 2020. Increases were greatest in New Brunswick (6.5%), Alberta (4.9%), and Saskatchewan (4.2%).

3.1 | Preliminary analysis of Manitoba farmland sales

Canada-wide farmland values from Statistics Canada are not yet available, and the 2020 Farm Credit Canada (FCC) Farmland Values Report is scheduled to be released in the spring of 2021. In this section I construct quarterly estimates of Manitoba farmland values using parcel-level bare farmland transactions in Manitoba for the years 2016 through 2020. The total sample consists of 7,348 farmland transactions in the agricultural regions of Manitoba. Using the Manitoba transaction data allows for an early assessment of changes in farmland values in 2020. It is important to keep in mind that the Manitoba-based estimates presented in this article may not be representative of other farmland markets in Canada. As past FCC Farmland Value Reports have shown, there is considerable year-to-year variability in farmland value changes across provinces. It will be interesting to compare the results of the preliminary analysis performed in this article to those conducted by FCC and Statistics Canada, as they become available.

I start with a comparison of average farmland values from the Manitoba transaction data to historical results reported by Statistics Canada and mid-year results reported by FCC. Statistics Canada reports annual estimates of average farmland values (including land and buildings) based on Census of Agriculture results for Census years, with non-Census years filled in using annual FCC farmland value indices. Statistics Canada reports an average Manitoba farmland value of $1,919 per acre as of July 1, 2016 and $2,201 per acre as of July 1, 2019. The Manitoba transaction data for bare farmland (no buildings) suggests that farmland values in the second quarter of 2016 averaged $1,902 per acre, and farmland values in the second quarter of 2019 averaged $2,162 per acre.

The FCC mid-year 2020 farmland values report estimates that Manitoba farmland values increased by 2.3% over the first six months of 2020, compared to an average increase of 4% between January 2019 and December 2019. I estimate a smaller average price increase of 0.7% when comparing values in the second quarter of 2020 to average values in the fourth quarter of 2019. I also find that average farmland values in the fourth quarter of 2019 were 6% higher than average farmland values in the fourth quarter of 2018, representing a larger increase than those reported by FCC over a similar period. The FCC estimates are calculated based on representative farmland parcels that are tracked through time. In contrast, the average values I calculate and report above are based on all transactions of Manitoba bare farmland; the average values I reported may be sensitive to outliers.

See Statistics Canada, “Value of Farm Capital, Data Sources and Methodology” for a description of data sources https://www23.statcan.gc.ca/imdb/p2SV.pl?Function=getSurvey&SDDS=3471#a2
3.2 Quantile regression results

Use of average farmland values derived from the raw data are of limited use in this application because the composition of farmland sales can vary year to year and there is no guarantee that sales are comparable across years. As an alternative to calculating average farmland values in the study region, in this section I report estimated farmland values based on parameter estimates from a series of quantile regressions of real per acre farmland value (in 2020 dollars) on a small set of parcel characteristics and the year-quarter of the sale. The quarterly estimates of farmland values reported in this section capture the combination of all important macroeconomic factors that cause farmland values to change over time, including interest rates, farming returns, inflation, exchange rates, and the development potential of farmland.

The quantile regression estimates are less sensitive to outliers than estimates from a linear regression. Moreover, the quantile regression estimates provide information about changes in farmland values at different points of the farmland value distribution. Raup (1989) argues that the US farmland boom in the 1970s and 1980s occurred on the most productive farmland, rather than on newly cultivated or marginal land as had been the case in previous US farmland booms. The quantile regression estimates are performed at the 20th, 50th, and 80th percentile of the land value distribution as a simple approach to estimating different price trends on land of differing quality. Finally, access to transaction-level data facilitates estimation of farmland values in different regions of Manitoba, specifically the region surrounding the city of Winnipeg.

As displayed in Figure 2, farmland at the 50th percentile sold for $2,451 in the fourth quarter of 2020 compared to $2,310 in the fourth quarter of 2019, representing an increase of approximately 6.1%. Farmland in the 80th percentile increased in price by just over 8% between the fourth quarter of 2019 and the fourth quarter of 2020, while farmland in the 20th percentile increased by 1.1% over the same period. These early results suggest that the price increases were higher on the

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3 Repeat sales and matching approaches have been proposed in the context of residential sales (McMillen, 2012). A repeat sales approach is not appropriate for farmland sales since farmland markets are thin and farmland sales involve often multiple land parcels that can change over time. Matching approaches are appropriate with access to a sufficiently detailed set of observable characteristics of sales parcels. Lawley and Yang (2015) construct a series of farmland price indices for Manitoba based on the matching approach described in McMillen (2012).

4 Parcel characteristics include the share of sale acreage classified as arable, pasture, native hay, slough, bush, and other uses, the total acreage in the sale, and the municipality in which the sale occurs. These characteristics are derived from Provincial Assessment records. Lawley (2014) conducts an analysis of changes in implicit prices of non-arable land cover on Manitoba farmland using results from a series of quantile regressions, including a larger set of controls such as soil quality measures and the latitude and longitude of sale parcels.

5 Results from quantile regressions estimators suggest that, averaged across all four quarters, farmland at the 50th percentile increased by 3.2% in 2020, relative to 2019. The same calculation indicates that farmland in the 80th percentile increased by 3.5% and farmland in the 20th percentile increased by 7.5%.
higher quality land in the 80th percentile compared to the lower quality land in the 20th percentile. The results in Figure 2 also indicate substantial variation in prices throughout 2020, with declines in the 20th, 50th, and 80th percentile farmland values when comparing the second quarter of 2020 to the fourth quarter of 2019, followed by substantial increases at each percentile when comparing the last quarter of 2020 to the second quarter of 2020. The substantial increases in farmland values over the last half of 2020 are consistent with the low interest rates that were established in the second quarter of 2020 and sustained for the remainder of the year, as well as strong crop receipts in 2020 and projected into 2021. Note that similar quarter-over-quarter trends are apparent in prior years in this sample; although suggestive, the trends that emerged in 2020 were not necessarily caused by changes in macroeconomic factors in 2020.

Figure 3 presents results from quantile regressions for the municipalities neighboring Winnipeg. These estimates serve as a rough first attempt to assess changes in farmland values in the developable region near Winnipeg (this ignores development potential in other areas, such as Brandon, Morden-Winkler, and Steinbach). The results presented in Figure 3 indicate that median farmland values increased by 10.5% between quarter four of 2019 and quarter four of 2020. Farmland at the 80th percentile increased 7.2%, while farmland at the 20th percentile increased 14.4%. Overall, the real value of farmland in municipalities neighboring Winnipeg has trended upwards over the last 5 years. Relative to prices over the previous 5 years, real farmland values at the 20th and 50th percentiles reached new highs in the last two quarters of 2020, while real values at the 80th percentile reached a new high in the third quarter of 2020. The higher values in the last half of 2020 coincide with the substantial increase in Winnipeg house prices as shown in Figure 1D. These results suggest that farmland close to Winnipeg increased in value faster than land farther away. Although suggestive, this should not be interpreted as a causal impact of COVID-19 on the demand for developable land; a better approach can be found in Zhang and Nickerson (2015), which estimates the impact of the 2009 housing bust on the development component of farmland values.

4 | FUTURE IMPACTS

As stated in Lawley (2020), changes in Canadian farmland values over the next several months and years will depend on the trajectory of several key variables, including crop returns, the development value of farmland, interest rates, and perhaps inflation. Each of these variables is difficult to predict. Projections suggest strong crop receipts through 2021, and an increase in farm input prices. Overall, FCC suggests that farmland values will be supported in the near term, in part by these strong crop receipts (Farm Credit Canada, 2021). Prices of houses in most Canadian markets increased through
2020, likely due to low mortgage financing costs. There is some evidence that demand for rural and suburban houses increased since March 2020, and that prices have risen in suburban markets (Verma & Husain, 2020). Increased demand for housing in less densely-populated areas should increase the development value of farmland near large urban centers. The magnitude and permanence of the change in demand for suburban and rural houses is unclear; price increases in the later half of 2020 may also reflect supply constraints due to decreased new housing starts in some markets.

Changes in interest rates and inflation due to the COVID-19 response are likely the two most significant potential drivers of future farmland values in Canada. As of January 20, 2021, the Bank of Canada has committed to the current overnight rate of 0.25% until the 2% inflation target is “sustainably” achieved (Bank of Canada, 2021). There is the potential for overnight rates to fall below 0.25% (Ambler & Kronick, 2021). Although the short-term outlook suggests low inflation rates, there is currently substantial speculation about the potential for higher inflation over the longer-term due to several factors including pent-up consumer demand and fiscal stimulus due to COVID-19 (Ambler & Kronick, 2020; Mankiw, 2021; Summers, 2021). Giles (2021) outlines the arguments on both sides of the debate about the likelihood of a longer-term return to 1970s levels of inflation.

Just and Miranowski (1993) find that low real interest rates in the early 1970s accounted for a substantial share of the farmland value increases during that period. Similarly, the high inflation rates in the early 1970s and again in 1979 contributed to a substantial share of US farmland value increases during that period. Increases in real interest rates in the early 1980s and the decline in inflation accounted for 68% and 70% of the farmland value decline, respectively. Current low real interest rates are certainly a major factor contributing to recent increases in farmland values. Although a return to the high inflation rates of the 1970s is unlikely, a longer-term increase in inflation rates will put upward pressure on Canadian farmland values, while increased real and nominal interest rates will put downward pressure on farmland values.

5 | CONCLUDING REMARKS

Like the experience with the Great Recession, COVID-19 did not appear to have a significant adverse impact on farming returns in 2020; total farm receipts increased by 9.3% mostly due to a 15% increase in crop receipts in 2020 compared to 2019. Farm receipts are projected to increase into 2021. Nominal interest rates fell substantially through 2020 and the target for the overnight rate is projected to remain low into 2023 in an effort to sustainably achieve a 2% target level of inflation. House prices increased substantially in the later half of the year, likely driven by reductions in mortgage interest rates increased demand for housing in less densely populated regions, and potential supply constraints in some markets.

The preliminary evidence presented in this article suggests that increases in Manitoba farmland values occurred across the land price distribution in 2020. Overall, farmland values at the 50th and 80th percentiles increased substantially when comparing quarter four 2020 sales to quarter four 2019 sales. There is also limited evidence to suggest that the development value of farmland in municipalities close to Winnipeg has increased; increases in farmland values in municipalities surrounding Winnipeg exceed increases in other parts of the province. Early evidence suggests that farmland values in the rest of Canada increased in the first half of 2020—it will be interesting to compare the changes in Manitoba farmland values reported in this article to estimates from FCC and Statistics Canada as they become available. It is difficult to directly attribute increased farmland values to COVID-19. It appears that strong crop receipts and low interest rates were the primary factors responsible for increased farmland values in 2020. Increased demand for developable land near urban centers may have also influenced farmland markets, although the evidence that this change in demand is a substantial driver of changes in 2020 farmland values is weak at this point.

REFERENCES

Agricultural Producers Association of Saskatchewan. (2020). COVID-19 survey results March 25th-April 5th, 2020. Accessed March 15, 2021 at https://apas.ca/pub/documents/News%20Releases/2020/APAS%20COVID-19%20Survey%20Report%20-%20Mar24-Apr5%202020.pdf (Accessed March 15, 2021)

Ambler, S., & Kronick, J. (2020, November 3). Opinion: Inflation may be back sooner than you think. Financial Post. https://financialpost.com/opinion/opinion-inflation-may-be-back-sooner-than-you-think (Accessed March 15, 2021)

Ambler, S., & Kronick, J. (2021, January 29). Opinion: Should the Bank of Canada’s interest rates go any lower. Financial Post. https://financialpost.com/opinion/opinion-should-the-bank-of-canadas-interest-rates-go-any-lower (Accessed March 15, 2021)

These two factors account for more than 100% of the decline because they offset the predicted increase in land values of 40% due to higher farming returns.
Bank of Canada. (2021). Bank of Canada will hold current level of policy rate until inflation objective is achieved, continues quantitative easing. Press Release. https://www.bankofcanada.ca/2021/01/fad-press-release-2021-01-20/ (Accessed March 15, 2021)

Biron, O., & Michaud, L. (2020, September 16). 2020 mid-year farmland values update shows a resilient land market. FCC Knowledge. https://www.fcc-fac.ca/en/knowledge/economics/2020-mid-year-farmland-values-update-shows-a-resilient-land-mark.html (Accessed March 15, 2021)

Canada Mortgage and Housing Corporation (CMHC). (2021, March). Monthly housing starts and other construction data. Housing Market Information. https://assets.cmhc-schl.gc.ca/sites/cmhc/data-research/publications-reports/preliminary-housing-starts-data/2021-monthly-housing-starts-construction-data-64695-2021-m03.pdf?rev=09a64573-fbd8-48e3-a5f1-7cc2c3e88d8a (Accessed March 15, 2021)

Carter, C.A., Gray, R.S., & Furtan, W.H. (1990). Exchange rate effects on inputs and outputs in Canadian agriculture. American Journal of Agricultural Economics, 72(3), 738–743.

Deaton, B. (2021). 2020 Farmland value and rental value survey: Summary of findings. Ontario Farmland Value and Rental Value Survey. Department of Food, Agricultural and Resource Economics. Ontario Agricultural College. https://www.onfarmlandsurvey.com/ (Accessed March 15, 2021)

Farm Credit Canada. (2021, February 10). 2021 Grains, oilseeds and pulses sector outlook. FCC Knowledge. https://www.fcc-fac.ca/en/knowledge/economics/2021-grains-oilseeds-pulses-outlook.html (Accessed March 15, 2021)

Giles, C. (2021, February 15). Joe Biden’s huge bet: The economic consequences of ‘acting big’. Financial Times. https://www.nytimes.com/2021/02/26/business/biden-stimulus-overheat-economy.html (Accessed March 15, 2021)

Just, R.E., & Miranowski, J.A. (1993). Understanding farmland price changes. American Journal of Agricultural Economics, 75(1), 156–168.

Lawley, C. (2014). Changes in implicit prices of Prairie Pothole habitat. Canadian Journal of Agricultural Economics, 62(2), 171–190.

Lawley, C., & Yang, W. (2015). Spatial interactions in habitat conservation: Evidence from Prairie Pothole easements. Journal of Environmental Economics and Management, 71 (May), 71–89.

Lawley, C. (2020). Potential impacts of COVID-19 on Canadian farmland markets. Canadian Journal of Agricultural Economics, 68(2), 245–250.

Mankiw, G.N. (2021, February 26). Economic view: The Biden economy risks a speeding ticket. The New York Times. https://www.nytimes.com/2021/02/26/business/biden-stimulus-overheat-economy.html (Accessed March 15, 2021)

McMillen, D.P. (2012). Repeat sales as a matching estimator. Real Estate Economics, 40(4), 745–773.

Oppedahl, D. (2021, February). AgLetter: February 2021. Federal Reserve Bank of Chicago. AgLetter, No. 1991. https://www.chicagofed.org/publications/agletter/2020-2024/february-2021 (Accessed March 15, 2021)

Raup, P.M. (1989). Some lessons from land price booms and busts. Staff Paper P89-52, University of Minnesota Department of Agricultural and Applied Economics. https://ageconsearch.umn.edu/record/14179?ln=en (Accessed March 15, 2021)

Summers, L.H. (2021, February 4). Opinion: The Biden stimulus is admirably ambitious. But it brings some big risks, too. Washington Post. https://www.washingtonpost.com/opinions/2021/02/04/larry-summers-biden-COVID-stimulus/ (Accessed March 15, 2021)

United States Department of Agriculture (USDA). (2020). Land values 2020 summary. USDA-National Agricultural Statistics Service. https://www.nass.usda.gov/Publications/Todays_Reports/reports/land0820.pdf (Accessed March 15, 2021)

Zhang, W. (2020). 2020 Iowa State University farmland value survey. Ag Decision Maker File C2-70. https://www.extension.iastate.edu/agdm/wholefarm/pdf/c2-70.pdf (Accessed March 15, 2021)

Zhang, W., & Nickerson, C.J. (2015). Housing market bust and farmland values: Identifying the changing influence of proximity to urban centers. Land Economics, 91(4), 605–626.

Zhang, W. (2020). 2020 Iowa State University farmland value survey. Ag Decision Maker File C2-70. https://www.extension.iastate.edu/agdm/wholefarm/pdf/c2-70.pdf (Accessed March 15, 2021)

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