

# Spot-futures price adjustments in Quebec grain markets



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## 1. Introduction

- Historically future prices have high volatility due to shock (war, inflation, epidemic, etc.). In this regard, market participants try to predict prices transmission in order to reduce losses.
- Quebec is the second and third largest producer respectively of corn and soybean in Canada. In 2022, Quebec total production of corn and soybean are respectively 24,49% and 17,21% of total Canadian production (Statistics Canada, 2022).
- In addition, Quebec corn and soybean local prices are the sum of future prices and the basis; implying that spot and future prices are somehow related.
- Meaningful knowledge on the adjustment of Quebec grain market with future prices may provide useful information for stakeholders.

## 2. Objectives

This study examines the dynamic relationship between grain prices in Quebec. In particular, the study investigates:

- The relationship between spot and future prices of corn and soybean in Quebec.
- The relationship between spot prices in Quebec and Ontario as Quebec heavily depends on Ontario grain market.

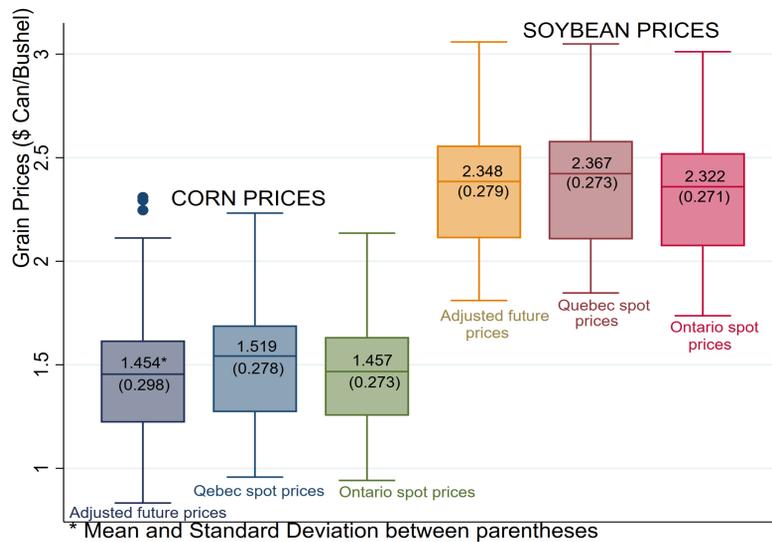
## Acknowledgment

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## 3. Data

Monthly spot and future prices for corn and soybean from January 1994 to June 2022, are collected from CME and Statistics Canada.

Figure 1: Box plots of monthly prices (1994-2022)



In general, the observed spot prices of corn and soybean in Quebec market are on average greater than both future and spot prices in Ontario market (Figure 1).

## 4. Methodology

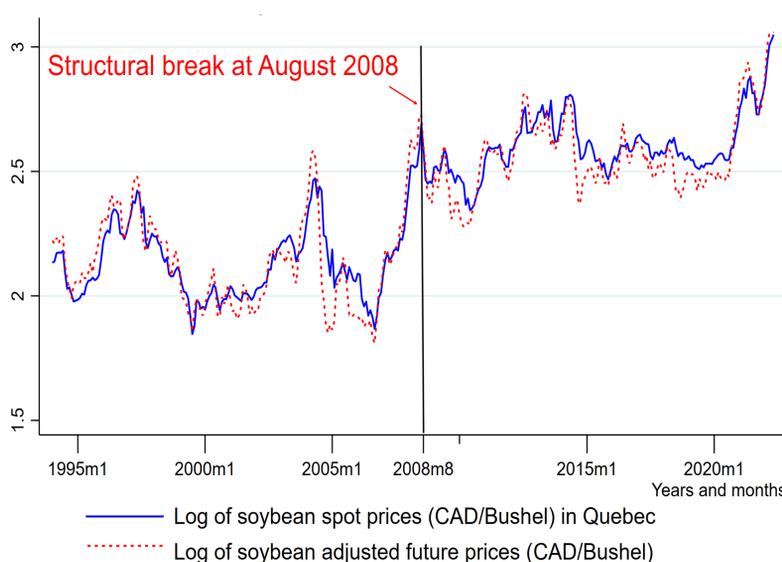
The study relies on arbitrage theory stipulating that spot price is equal to the sum of future price and basis.

**Linear** and **nonlinear cointegration models** are used to estimate two prices series pairs for corn and soybean. These models allow for price asymmetric adjustment (structural break).

## 5. Results and Discussion

Observed spot and future prices for corn and soybean move together with different speeds (Figures 2 & 3).

Figure 2: Quebec Soybean Spot Prices and Futures Prices



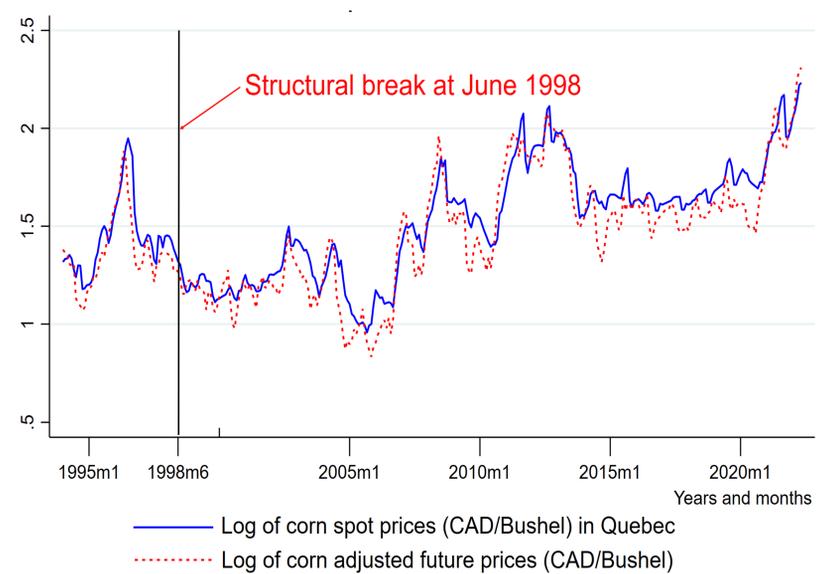
## References

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## 5. Results and Discussion

Structural change of soybean spot prices in June 2008 (Figure 2), can be explained by the 2008 food crisis that mostly affected grains and oilseeds prices (FAO, 2022).

Figure 3: Quebec Corn Spot Prices and Futures Prices



Structural break for corn in June 1998 (Figure 3) is explained by the huge decrease of hog price in Quebec market/North America. Results indicate:

- Arbitrage opportunity between **corn** spot and future prices is **mixed** and depend on the estimated models.
- Soybean** spot price in Quebec market responds **faster** to future price decrease than increase.
- For corn, Quebec spot price responds faster to Ontario spot price increase than to its decrease.
- For soybean, Quebec prices adjustment is symmetric whether Ontario spot price increases or decreases.

## 6. Policy Implications

These results imply that:

- Favorable soybean prices transmission in Quebec local markets helps to maintain competitive environment for users.
- Imperfect adjustment of corn price in Quebec local markets maintain spot price at high level and calls for market risk management strategies by users (hog and poultry farms).
- For grain producers, the reverse adjustment of soybean and corn prices may limit overall profit gains due to grain crops diversification within farms.