

Extended Abstract

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Paper/Poster Title	Organic markets: a safe haven from volatility
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Abstract	<i>200 words max</i>
<p>With a demand that is not met and constantly growing, as well as higher prices, organic markets offer promising prospects to farmers. In addition, organic markets seem to still be rooted in the real economy, as opposed to conventional ones that are more financialized. Can this be a reason for farmers to convert to organic farming? This article explores the validity of a conversion motivation that brings together ethical and economic reasons: the rejection of agricultural modernization reflected in the high volatility of commodity markets. This study finds that organic prices for French milling wheat and French corn are higher and indeed more stable than conventional wheat and corn prices. Also, using GARCH and linear modeling to estimate the optimal hedging ratio, this study finds that cross hedging organic wheat and organic corn using Euronext's futures contracts is not possible. Hence organic markets seem isolated from the financial markets for both milling wheat and corn.</p>	
Keywords	Agricultural markets; hedging; commodities
JEL Code	Q13 see: www.aeaweb.org/jel/guide/jel.php?class=Q)
Introduction	<i>100 – 250 words</i>
<p>While conducting interviews with French grain producers and elevators on an ongoing but different project, an interesting claim echoed from several farmers. They stated that they were in the process or were planning to convert to organic farming because they were “fed up” and “frustrated” with how unstable conventional agricultural prices were, and that organic farming can make them “regain their freedom”. With that in mind, the literature on the motivations to switching from conventional to organic farming was reviewed to see if the volatility of agricultural markets was mentioned. And indeed, a few researchers took the price stability path to explain the conversion, or at least highlighted the lower volatility of organic prices (Bouttes et al., 2019; Halder & Damodaran, 2021; Kleemann & Effenberger, 2010). In this study, the organic milling wheat and corn markets are examined to see if they can be a shelter for farmers escaping the financial market's volatility.</p> <p>Since the demand for organic products appears to be growing, and the market more attractive in terms of prices, can farmers escaping volatility find shelter in it? First, the organic price risk is analyzed by comparing historical volatilities of the organic and conventional prices. The organic premiums for both commodities are also analyzed,</p>	

and their distributions are estimated. Second, this study analyzes if the organic wheat and corn can be hedged on the futures market using the optimal hedging ratios that are estimated with a multivariate GARCH model and an OLS model with lags.

Methodology

100 – 250 words

The data was tested for stationarity using the augmented Dickey-Fuller (ADF) test to detect unit-roots, and the Kwiatkowski-Phillips- Schmidt-Shin (KPSS) test for trend stationarity.

To understand the links between the organic prices and the futures prices, and to assess whether the organic prices were indeed more stable, the standard deviations for the returns were computed, an F test was performed to compare the variances of the organic and futures series and the correlation between both series were computed.

Also, the Kernel density were estimated to fit the organic premium series and have a more accurate idea about the chances that the premium could cover the additional organic production costs.

Cointegration was also examined, to see if the organic and futures prices deviate from each other in the long run.

For the cross hedging analysis, two models were used. First, a multivariate GARCH (generalized autoregressive conditional heteroscedasticity) model, for which the variance estimates capture the time-varying optimal hedging ratio.

Several studies compared the GARCH and OLS models for the hedging ratio computations and found that the GARCH only slightly outperforms the OLS model (Holmes, 1996; Kroner & Sultan, 1993; Lien et al., 2002; Myers, 1991), making the latter an acceptable estimation method. For this reason, in addition to the multivariate GARCH model, a linear regression of the change in spot prices on the change in future prices was estimated (Benninga et al., 1984).

Results

100 – 250 words

The standard deviations of organic returns for wheat and corn are lower to that of both spot and futures conventional prices implying that the uncertainty in the conventional market is more important. The F-test shows that the variance differences are statistically significant between the organic and convention prices. As confirmed by the standard deviation of the returns, the organic volatility does not seem to be higher than the conventional spot one for both wheat and corn. In addition, for each week, the difference between the conventional and organic

volatilities is computed (conventional volatility-organic volatility): historical volatilities are higher for conventional wheat 84.9% of the time, and higher 59% of the time for conventional corn.

The Kernel density is estimated to assess the organic premium's risk. The cumulative distribution function indicates that for organic wheat, there is a 10% probability of obtaining a premium lower than 200 euros. For organic corn, there is a 12.5% probability of obtaining a premium lower than 100 euros. To have a clearer picture, the premium should be compared to the additional cost of producing organic crops compared to conventional crops. For wheat, there appears to be a 60 euros difference that is largely covered by the premium.

The optimal hedging ratios estimated with the GARCH model show that the ratios remain very close to 0, indicating that cross hedging is not possible. This is confirmed with the OLS model that returns a non-significant ratio.

Discussion and Conclusion

100 – 250 words

The organic markets for wheat and corn offer higher but also more stable prices to the producers as seen with the high premiums that cover the additional production costs, It is also reassuring in one way for converted farmers to know that the organic markets for milling wheat and corn are still disconnected from the futures market, and that cross hedging is not possible. This is positive for them because it means that the chances of having volatility spillovers are still low, and the organic market is still independent. Hence escaping volatility is a valid motivation for conversion to organic pricing. But financial markets, although demonized by some farmers, are not necessarily harmful to them. They enable them to fix a selling price in advance through financial instruments like futures contracts, and they also enable price discovery, meaning more transparency of prices.

This situation however won't last forever. If the exodus continues, the organic market might as well just become like the conventional market, especially with the current "conventionalization" of the organic industry (Obach, 2007). Indeed, organic methods are becoming more and more like conventional ones in Europe, with larger farms, both in terms of land size and in terms of labor (Konstantinidis, 2012). With an increased institutionalization (Piriou, 2002), and a surge of third party certification that can be inaccessible to small farms (Nelson et al., 2015), organic products can become standardized hence more easily tradable in a financial commodity market and the premium can be reduced.