Transmission of future prices of corn of the Chicago Board of Trade to the Mexican spot market

Transmisión de precios futuros de maíz del Chicago Board of Trade al mercado spot mexicano

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Abstract

In Mexico, the use of the coverage program of the Bureau of Market Services and Agricultural Market Development (ASERCA for its acronym in Spanish) is a tool that has been used by corn producers (mainly for white corn) for the acquisition of derived products in the CBOT (Chicago Board of Trade), the underlying element of which is US#2 grade yellow corn. In a high volatility environment regarding the prices of corn, the prices of CBOT should be adjusted with the spot domestic prices to incentivize Mexican producers to participate in the program. However, through a multivariate stochastic volatility analysis during the period of 2007–2012, it was shown that the future price of corn is not strongly related to the prices registered in some states of the country, therefore, it can be inferred that the coverage through the ASERCA program does not properly comply with its objective of protecting the national farmers that grow white corn, despite the fact that its use has increased.

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JEL classification: C32; D52; G13; Q14
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Resumen

En México, el uso del programa de coberturas de la Agencia de Servicios a la Comercialización y Desarrollo de Mercados Agropecuarios es un instrumento que ha sido utilizado por los productores de maíz (principalmente blanco), para la adquisición de productos derivados en el Chicago Board of Trade, cuyo subyacente es el maíz amarillo calidad US#2. En un entorno de alta volatilidad en los precios del maíz, los precios del Chicago Board of Trade deberían ajustarse con los precios spot domésticos para incentivar a los productores mexicanos a participar en el programa, sin embargo mediante un análisis de volatilidad estocástica multivariante durante el periodo de 2007 a 2012, se mostró que el precio futuro del mercado de maíz no se encuentra fuertemente relacionado con los precios registrados en algunos estados del país, por lo que se puede inferir que la cobertura mediante el programa de la Agencia de Servicios a la Comercialización y Desarrollo de Mercados Agropecuarios no cumple adecuadamente con su propósito de proteger a los agricultores nacionales que siembran maíz blanco, a pesar de que su uso se ha incrementado.

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Palabras clave: Precios de maíz; Volatilidad estocástica multivariante; Chicago Board of Trade

Introduction

A way to identify the interrelations between markets is through the study of volatility transmission. In this work, the existing integration in the spot price of Mexican domestic white corn and the futures market of yellow corn #2 negotiated in the CBOT was studied. This was done under the context of the “Aid and Service to Agricultural Marketing” (ASERCA for its acronym in Spanish) offered by the Secretariat of Agriculture, Livestock, Rural Development, Fisheries and Food (SAGARPA for its acronym in Spanish).

It is through the ASERCA program that Mexican corn producers have access to the price coverage offered in the CBOT; the price coverage scheme emerged in 1993 due to the sudden fall in the prices of cotton and consequently, the need to guarantee a just price to the producer. It has been since 1997 that coverage in the price of corn was done through put and call option positions.

It is interesting to know the relation between corn prices in the Mexican spot market and the futures market of Chicago, considering that the domestic prices are not competitive, according to the SIAP (2012). This because the white corn produced in the country is approximately 35% more expensive than yellow corn; additionally, agricultural policy is characterized for maintaining high subsidies for their producers and low export prices.

As mentioned before, one way of knowing the interrelations between different markets is to study the transmission of volatilities between them, for which the multivariate GARCH models (MGARCH) can be used. The authors that propose this type of modeling are: Bollerslev (1990), Longin and Solnik (1995), Karoyi and Stulz (1996), Engle (2002), among others. Bawens, Hafner, and Pierret (2013) used a GJR-GARCH model to model the dynamic volatility and correlation in the structure of the futures markets of the European Energy Exchange index. A very complete review of the literature regarding this type of models is offered from the econometric point of view by Bawens, Laurent, and Rombouts, (2006); and a similar study is developed by Asai, McAleer,

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