FONDATION POUR LES ÉTUDES ET RECHERCHES SUR LE DÉVELOPPEMENT INTERNATIONAL

Farm Storage and Asymmetric Maize Price Shocks in Africa*

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We analyze the role of farm storage on price volatility in the context of a developing country where seasonality permeates agricultural markets. Whereas speculative behaviors by stockholders are known to reduce price volatility, seasonal liquidity constraints on farmers' behaviors with regard to stock management modify this general result. Like any stockholders, most farmers stock out grain if they expect a price drop in a close future, but unlike stockholders, they often also sell grain even though they expect a price increase in the next period, for liquidity reasons. As a result, farm stock management does not have the same stabilizing nature as speculative stock management, and notably fails to mitigate price drops. Price volatility is defined in this paper as the unpre-dictable part of price moves, and we distinguish between negative price shocks, the variance of unpredicted price drops, and positive price shocks, the variance of unpredicted price increases.

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* Paper prepared for the Ferdi workshop on "Commodity market instability and asymmetries in developing countries: Development impacts and policies", held in Clermont Ferrand, France, June 24-25, 2015.

• • • / • • • Our main result is that under certain conditions compatible with carryovers, on farm stock management increases the occurrence of unexpected price drops. We build upon a conceptual model where farm storage is submitted to seasonal liquidity constraints and where price anticipations errors by farmers may lead to carryover and to subsequent unexpected price drops.

The empirical relevance of those effects is consequently tested with original data from Burkina Faso. We merge historical maize price and household maize storage data to run a dynamic panel analysis over the 2004-2014 period. Carryovers increase the occurrence of negative volatility episodes throughout the year, and even more when considering the period following harvest, from November to March. The significant effect does not hold anymore if we consider the months that are more distant from harvest time, indicating that carryover generates negative price shocks after harvest, but that this effect fades away in the following months.

The paper highlighted that carryovers, that result from unanticipated price drops during the lean season, increase the occurrence of unexpected price drops at the beginning of a new agricultural campaign. If we want to avoid massive price drops after harvest, our results appeal for the implementation of policy measures to ensure that farm stocks will be nil at the end of the agricultural campaign or to enable farmers to hold their production just after harvest. Two policies can be suggested.

(1) Enable farmers better access to market information and notably markets prices, through more available market information services and better infrastructures. This better access should result in lowering price anticipation errors and thus avoid situations where farmers have consistent carryovers at the end of the year.

(2) Promote on-farm storage just after harvest, in order to smooth both price drops after harvests and extreme price increases at the end of the season. This is quite a challenge in the context of developing countries because farmers need liquidity at the harvest period and as a result tend to sell most of their production. Thus, encouraging storage through subsidization of storage infrastructures in the villages has to be accompanied by measures to facilitate farmers' access to credit, in order to meet their liquidity needs. Warehouse receipt systems are expanding among developing countries, precisely because these systems allow farmers both access to liquidity after harvests and a better remuneration for their activity because they can store their products and sell latter in the year, when prices are higher. These systems are of great interest, and should be further analyzed.

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n° ISSN : 2275-5055

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