BADEGGI JOURNAL OF AGRICULTURAL RESEARCH AND ENVIRONMENT, 2019, 01(01), 113–118

NCRI Press

Available online: www.ncribjare.org
ISSN 2695-2122, e-ISSN: 2695-2114
DOI: https://doi.org/10.35849/BJARE201901014
Journal homepage:www.ncribjare.org

Review Article

Extent of Integration of Markets for Some Agricultural Commodities in Nigeria

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Abstract
Good market integration implies successful trade between deficit and surplus areas, efficient flow of goods and prices between markets and a significant food security, growth and welfare of producers and consumers. Poor market integration, however, indicates a decrease in social welfare of producers and consumers by increasing price of consumers in deficit areas and decreasing price of producers in surplus areas. This review was carried out to highlight the extent of integration of markets for some Agricultural commodities in Nigeria. Based on the literature surveyed, it can be deduced that markets for Agricultural commodities in the country are not uniformly integrated. While majority of grains and cereal markets were inefficient, markets for animal products such as beef were highly integrated. Major determinants of extent of integration of markets for Agricultural commodities in Nigeria are distances between the markets including conditions of the road network as well as interaction of urban wholesalers with the farmers. Where markets are spatially located and the road networks are bad or inaccessible, low or minimal market integration was observed. In order to improve market integration, most importantly, government should improve public infrastructures such as construction of accessible roads. This would reduce transfer cost which usually gets translated to the prices of agricultural products, especially across markets in critical distance. Adequate market information on price dissemination should also be provided to market participants through government agencies and media outlets.

Keywords: Agricultural commodities, Market integration, Price, Farmers, Products

Introduction

The term 'Agricultural Commodity' is commonly used in reference to basic agricultural products that are either in their original form or have undergone only primary processing. Examples include cereals, tubers, fruits and vegetables. A major characteristic of agricultural commodities is that the production methods, postharvest treatments and/or primary processing to which they have been subjected, have not imparted any distinguishing characteristics or attributes. Thus, within a particular grade, and with respect to a given variety, commodities coming from different suppliers, and even different countries or continents, are ready substitutes for one another. As a result, they have no distinguishing and marketable characteristics hence they compete with one another on the basis of price. Prices are the most readily available and reliable information that guide farmers' planting decisions in Nigeria. A farmer's planting decisions depend on anticipated profits which in fact depend on anticipated prices of planted crops. This has made prices an important tool in the economic analysis of markets. In a developing economy like Nigeria, the dynamics of the exchange of information and its effects on the pricing processes are not well understood. Groups of the price of agricultural commodities often move proportionally to each other and when this relation is very clear among different markets it is said that the markets are integrated. Market integration therefore occurs when prices among different locations or related goods do follow similar pattern over a long

Date Received 10/10/18, Revised 04/12/18, Accepted 25/01/19 and Published 28/03/19

period of time. In other words, price changes in one market are reflected in price changes in other markets. Market integration also refers to the smooth transmission of price signals and information across spatially separated markets (Goletti *et al*., 1995). Goodwin and Schroeder (1991) observed that if price changes in one market is fully reflected in an alternative market then themarket is said to be spatially integrated which indicate overall market performance. Markets that are not integrated may convey inaccurate price signal that might distort producers marketing decision and contribute to inefficient product movement (Goodwin and Schroeder, 1991).

Types of Market Integration

The principle of market integration is hinged on the 'Law of One Price' (LOP), which is the hallmark of the theory of perfect competition. A central prediction of the theory of perfect competition is that the price of all transactions will tend to uniformity allowing for differences in transportation costs between different spatial markets (Okoh *et al.*,2005). According to Bopape and Christy (2002), market integration can be distinguished into three forms which are Integration across time, Integration across product and Integration across space.

Markets are said to be integrated across time (inter-temporarily integrated) when the expected price differential does not exceed the cost of storage. Integration across product form shows that markets are vertically integrated and the price differentials between two related commodities should not exceed transportation and processing costs. Markets are integrated across space if, when trade takes between them, price in the importing market equals price in the exporting market plus transportation and other costs of moving the product between the two markets. Agricultural commodities are typically produced over an extensive spatial area and are costly to transport relative to their total value. Fackler and Goodwin (2001) noted that these characteristics of agricultural products yield a complex set of spatial price linkages which needed to be studied to gain insights into the performance of markets.

Factors that affect market integration

1. Market integration may happen due to shifts in demand and supply, which can have a spillover effect in the market from the normal pattern.
2. Government strategies as a means of controlling the direction of the economy by removing trade barriers between the two markets.
3. Distortions introduced by government in the form of policies either at the border, or as price support mechanism to weaken the link between markets. Agricultural policy instruments such as import tariffs, tariff rate quotas, and export subsidies or taxes, intervention mechanisms, as well as exchange rate policies insulate the domestic markets and hinder the full transmission of international price signals by affecting the excess demand or supply schedules of domestic commodity markets.
4. High transaction costs and marketing margins hinder the transmission of price signals. This makes price changes in a given market not to fully pass to prices in the other markets, resulting in economic agents not adjusting to shifts in the supply and demand of the market.
5. Non-competitive behaviour of traders. Oligopolistic behaviour and collusion among traders in a given market may retain price differences between two separated markets in levels higher than those determined by transaction costs.

Market failures are areas of concern to the Government. Sources of Market failures generally include inadequate provision of public goods (such as infrastructure), inefficient flow of information, imperfect competition, and incomplete or missing institutions for risk management like credit and insurance. These result into lack of integration between markets. The underlying objective of market integration analysis is to provide better understanding in implementation of such short- and long term policy interventions (Rashid *et al.*, 2010). Understanding the degree of market integration and the total transfer costs between markets will help diagnose problems in agricultural commodity markets. Consequently, this work attempts to review the earlier work done in the area of market integration. Studies on market integration of

agricultural commodities were reviewed under the following crop groups; grains, vegetables, tubers and oil crops.

Extent of Integration of Markets for Agricultural Commodities in Nigeria

Studies of market integration usually try to characterize the degree of co-movement of prices across spatially separated markets. Fulton *et al.* (2008) observed that, the examination of the extent of how markets were integrated was an important way of understanding whether sufficient market information was available to the market participants. Furthermore, market integration analysis determines the possibility of obtaining gains by trading across commodity markets, exploiting price movements in one market for the prediction of price movements in another. Onyuma *et al*. (2006) noted that despite the nation's dependence on agriculture for food security, majority of agricultural markets in Nigeria and other African countries are inefficient and poorly integrated. According to him, the majority of agricultural markets in African countries are inefficiently and poorly integrated and agricultural marketing efficiency in Nigeria is dismally low.

Market Integration for Cereals

Akintunde *et al*. (2012), in a study on long run price integration in food grain marketing in Osun State of Nigeria reported that none of the market locations studied had prices tied together in the long run. The index of market connection (IMC) obtained indicated that the market also exhibited low short-run market integration. The study concluded that agricultural marketing in the state showed a high degree of marketing inefficiency and a state-wide policy to improve food marketing efficiency was recommended. A study by Taru (2014) on Price Fluctuation and Market Integration of Selected Cereals in North-Eastern Nigeria revealed that rural and urban prices of cereal grains were not co-integrated. Among the three commodities studied by Taru (2014), none had shown any co-integration between its price in rural and urban markets. Granger causality (unidirectional) existed between rural and urban prices of maize, while there was no Granger causality between rice and sorghum markets. It was also observed that the farmers are vulnerable to poor prices of commodities in the long-run which may yield a disincentive effect on them. The marketing and price information transmission mechanism for cereals grains marketing were concluded to be inefficient. This conclusion is contrary to claims by other studies that co integration exist between rural and urban prices of cereals. Example of such studies is one carried out by Ikudayisi and Salman (2013) on Spatial Integration of Maize Market in Nigeria. They observed that spatial price linkages exist within maize market as products moved efficiently across markets which is related to efficiency of price information flow. Akande and Akpokodje (2003) in a study on Rice Prices and Market Integration in Selected Areas in Nigeria observed that the markets for local rice are generally integrated. That is, excluding transportation and risk factors, retail prices of local rice in one centre do not substantially differ from prices of the same commodity in other centres.

Ibrahim (2013) in her study on Price Integration of Cowpea Retail Markets in Niger State revealed that markets in Niger State present a relatively long run integration in cowpea prices. A strong spatial price linkage exists between the selected markets. This was adduced to the ease of flow and use of market information, competition among market participants and the presence of arbitrage.

Market Integration for Horticultural Crops

Obayelu and Alimi (2013) in their study on Rural-Urban Price Transmission and Market Integration of Selected Horticultural Crops in Oyo State, Nigeria revealed that the indices of market concentration (IMC) for onion, chilli pepper, sweet pepper and fresh pepper were less than one (1) indicating high short-run market integration. It was deduced that changes in rural market price caused immediate changes in urban market price for all the selected items except fresh tomato. The low short-run market integration of tomato markets suggests that rural market prices of fresh tomato did not account for immediate changes in urban market price of fresh tomato. Layade and Adeoye (2014) in their study on Price and Market Integration for Onion in Rural-Urban Markets of Oyo State, Nigeria revealed that prices were all integrated of order one. Co-integration analysis showed that prices of onions in urban and rural markets were integrated in the long run, and that

the urban market price granger caused rural market price of onions. The index of market connection (IMC) indicated high-short market integration.

Market Integration for Tubers

The result of the study conducted by Tiku *et al*. (2015) on The Estimation of Market Integration of Yam Marketing in Cross River State, Nigeria revealed that short-run and Long-run integration for prices of yam existed between markets. Through their analysis of cassava, yam, maize market integration, Momoh and Agbonlahor (2003) concluded that the maize and the tuber markets in Oyo State are highly integrated. Thus price signals are transmitted from food deficit urban markets to food surplus rural areas. The study however, did not indicate fully integrated market and complete market segmentation did not exist. It was also inferred that the maize and tuber markets in Oyo State are highly efficient in the short run, thus the market pairs are not characterized by much market imperfections. This was adduced to the short distances between the reference and the rural markets as well as the direct interaction of urban wholesalers with the farmers which facilitates information flow between reference and rural markets.

Market Integration for Animal Products

Bobola*et al*. (2015) in their study on Price Fluctuations, Linkages and Causality in the Nigerian Beef Market observed that prices were co-integrated in 72.7% of beef market locations indicating a high degree of marketing efficiency in the beef market. Prices were tied together in the long run in seven out of every 10 market locations in spite of short run divergences. Results of Granger causality test did not reveal any significant causality link between the peripheral and central markets, suggesting that there are no clear trends in price leadership. Mafimisebi (2012) observed that the level of long-run spatial equilibrium and integration is just fair in the Nigerian dry fish markets with the implication that many markets act alone and do not synchronize with others in terms of prices. This indicates that the tendency exists that end-users are paying more for dry fish than the actual demand, supply and other conditions should allow. According to the study, the low level of long-run spatial linkage is most likely a reflection of the low level of economic development in Nigeria. Only 59.1% of dry fish markets showed prices which are connected in the long-run and which prices differ only by an amount exactly equal to the transfer cost of one unit of fish between spatially separated markets.

Market Integration for Oil crops

According to Akanni and Adams (2011), cashew nuts market in south western Nigeria is characterized by price fluctuations through space and time which may be linked with the large number of market intermediaries who act between the primary producers and the markets. A study conducted by Bakoji *et al*. (2013) on analysis of soybeans marketing in Toro Local Government Area of Bauchi state, Nigeria revealed that wholesalers in the area were more efficient than rural assemblers and retailers. Anzaku *et al*.(2016) studied Market Integration and Price Dynamics of Sesame in Nasarawa State, Nigeriausing co integration analysis. They observed that only 21.8% of market pair was integrated, the remaining pairs of markets were segmented. Also the rate of price adjustment within one month was very high in nearly all the integrated pairs. The study concluded that markets are largely inefficient

Conclusion

The major determinants of extent of integration of markets for agricultural commodities in Nigeria is the distance between the reference and the rural markets as well as the direct interaction of urban wholesalers with the farmers which facilitate information flow between reference and rural markets. Where markets are spatially located and the road networks are bad or inaccessible, low or minimal market integration is observed. Factors that may encourage price volatility of agricultural commodities in Nigeria include variances in bargaining power among consumers, cyclical income fluctuation among sellers and consumers, natural shocks and inappropriate response by farmers to price signals. The absence of the necessary infrastructures, storage, market information, standardized weights and measurements and other market support services impair free flow of goods and services.If markets are spatially integrated it meant that it takes some

time for the exogenous shocks to transform and reach the various geographically separated markets. The imperfectly integrated markets may send wrong price information signals to producers and other actors of the marketing chain, resulting in incorrect production and marketing decisions.

An important factor to consider is also the geographical variations of agricultural production, products flow from surplus to deficit areas in the country and even abroad. Apart from the separation of the areas of surpluses and deficits by geographical barriers, there is a lack of specialization in the production of Agricultural commodities. Without integration of markets, price signals will not be transmitted from supply deficit regions to surplus markets. Distorted government policies, high transaction costs and marketing margins are imperfections in the market, and are the major factors which affect spatial market integration adversely.

Recommendations

1. Adequate market information on price dissemination should be provided to market participants through government agencies and media outlets.
2. Extension services should be established by government to keep market participants informed about current prices.
3. Government should also establish and enforce credit and insurance policies that enhance risk management for market participants.
4. Most importantly, government should improve public infrastructures such as construction of accessible roads.

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