



Policy reforms and asymmetric price transmission in the Zambian and Tanzanian coffee markets[☆]



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ABSTRACT

Several governments in sub-Saharan Africa have embarked on various market reforms to improve commodity market performance. However, the success of such market reforms depends partly on the strength of the transmission of price signals between spatially separated markets and between different levels of commodity value chains. This study employs momentum threshold cointegration and error correction models to examine the impact of policy reforms on the transmission of prices between the world coffee market and domestic prices in Zambia and Tanzania. The findings show that in the case of Zambia, where policy reforms liberalized coffee markets, the producer prices respond more swiftly to decreases than increases in world market prices, and this swiftness increased after the policy reforms. For Tanzania, where reforms resulted in increased government intervention, producer prices were found to respond quicker to increases than decreases in world market prices over the period under consideration. However, the period before reforms showed domestic prices responding more swiftly to decreases than increases in world prices, while the post-reform period was characterized by faster responses to increases than decreases in world prices.

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1. Introduction

Economic reforms have been undertaken in many developing countries over the past two to three decades. The reforms which included removal of price controls, trade liberalization, and privatization of government owned agricultural enterprises, were partly aimed at improving producer prices and enhancing trade efficiency (White and Leavy, 2001). As widely documented in the economic literature, the measures implemented during the economic reforms have varied widely across countries in the region. For example, while some countries have greatly reduced the role of state-related marketing institutions and control of international trade, other countries still have marketing boards controlling the exports of commodities (Baquedano et al., 2011; World Bank, 1994).

Given that policy reforms in the agricultural sector were geared towards getting prices right for farmers, an issue of economic significance is the extent to which changes in world market prices of export crops are transmitted to domestic producers. Particularly for export crop producers, the success of such market reforms depends partly on

the strength of the transmission of price signals between international markets and domestic producer prices (Kilima, 2006). Thus, the extent to which small-scale farmers benefit from price increases on the world markets remains a crucial issue in the trade liberalization debate (Coxhead et al., 2012).

Moreover, the extent of adjustment and speed with which shocks are transmitted from global to domestic prices is a significant factor reflecting the actions of market participants along the market channel (Esposti and Listorti, 2013). The nature and extent of adjustments of domestic prices to market shocks may further have significant implications for marketing margins, spread, and mark-up pricing practices. Concerns about the rate and symmetry of price responses are normally raised, if one or more sectors in the marketing channel are highly concentrated and dominated by few firms (Wilcox and Abbott, 2004).

The significance of identifying the nature and degree of price transmission from world to domestic markets has been widely documented in the literature (Baffes and Gardner, 2003; Baquedano et al., 2011; Coxhead et al., 2012; Katsushi et al., 2008; Kilima, 2006; Krivonos, 2004; Subervie, 2011; Wilcox and Abbott, 2004). However, the empirical literature has not sufficiently dealt with the impact of domestic policies on the transmission of prices between the world markets and domestic producer prices. For example, the study by Baffes and Gardner (2003) analyzed price transmission between world and domestic markets of developing countries under policy reforms. However, their framework assumed linear relationship between world and domestic prices, without considering the role of asymmetric impact of

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shocks. Kilima (2006) and Katsushi et al. (2008) also examined world–domestic price transmission, without considering the impacts of policy reforms.

The study by Krivonos (2004) on impacts of policy reforms on price transmission in the coffee market employed Autoregressive Distributed Lag (ARDL) and error correction models to capture the role of asymmetric impact shocks. However, the analysis completely ignored threshold effects in price transmission. Baquedano et al. (2011) studied the world market integration for export and food crops in Mali and Nicaragua, using a generalized error correction model, but without threshold effects. The recent study by Subervie (2011) employed threshold cointegration to analyze the dynamics of world price transmission to coffee growers in Columbia, India and Salvador. Although the study took into account the threshold effects in price transmission, it ignored the possibility of accumulation of changes in the price spread in one direction or the other, before reverting to equilibrium state.

Given that agricultural reforms took place as part of overall economic reforms in developing countries, it certainly would be interesting and useful to examine the extent to which these policy reforms have affected the world–domestic commodity price transmission. To the extent that coffee continues to play a crucial role in the economies of most of the countries in eastern and southern Africa, even for countries like Zambia and Tanzania that have relatively small world market shares, an analysis of the impacts of policy reforms on price transmission would provide useful insights for policy makers. Coffee offers employment to more than 400,000 smallholders in Tanzania and is the largest export earner for the country (Baffes, 2005). The sector also employs about 17,000 seasonal workers in the rural areas in Zambia (ZCGA, 2007). Both countries have liberalized their coffee markets during the economic reforms of the late 1990s to differing extents. While coffee markets have remained fully liberalized in Zambia, in Tanzania, cooperative unions still dominate the industry, with high government regulation through the Tanzania Coffee Board (TCB). Furthermore, as prices of major agricultural commodities declined over the last decade, coffee showed the greatest fall, resulting in declining and volatile domestic prices. This led to reduced investments in the coffee sector in most countries. In some cases, farmers resorted to uprooting coffee trees and replacing them with food crops like maize (Baffes, 2005).

The main objective of this study is to examine the impacts of policy reforms on the nature and speed of transmission of world prices to domestic prices in Zambia and Tanzania. In contrast to the other studies mentioned above, our study employs a momentum-based threshold cointegration model and asymmetric error correction framework to analyze how policy reforms have affected the transmission of price changes from the world to domestic markets in the two countries. The approach accounts for the possibility of accumulation of changes in the price spread in one direction or the other, before reversion to equilibrium state. Given the sector and economy-wide policy reforms both countries have undertaken over the past two decades, the analysis will provide insights into the effects of these policies on world–domestic price transmission.

Our empirical evidence reveals that economic reforms did have significant impacts on world–domestic price transmissions. In particular, producer prices in Zambia were found to respond more swiftly to decreases than increases in world market prices, and the magnitude of this swiftness increased substantially after policy reforms. In the case of Tanzania, producer prices were found to respond faster to increases than decreases in world market prices over the entire period. However, the period before reforms showed domestic prices responding more swiftly to decreases than increases in world prices, while the post-reform period was characterized by faster responses to increases than decreases in world prices.

The next section presents an overview of the economic reforms and coffee markets in Tanzania and Zambia. Section three discusses the data used in the analysis and outlines the empirical strategy employed in the paper. It briefly presents the momentum-based threshold cointegration

and asymmetric error correction models employed in the price transmission analysis. The empirical results from the long and short-run analyses are presented in the fourth section, while the final section presents the conclusions.

2. Economic reforms and coffee markets in Tanzania and Zambia

As indicated previously, coffee is Tanzania's largest export crop, with 95% of coffee grown by smallholders on average holdings of 1–2 ha. The coffee sector in Tanzania has a history of structural changes and government interventions. Between 1961 and 1976, primary societies, which actually joined together to form cooperative unions, handled coffee procurement, paid farmers, and delivered the coffee to the cooperative processing factories, which then sold the coffee to exporters (Baffes, 2005). The primary societies were abolished in 1976, and all post-harvest functions were handed over to the Tanzania Coffee Board. As a result of poor performance, the new structure was dissolved in 1984, with the cooperatives and primary societies being reinstated. In 1991, the Cooperatives Act was passed by the government, resulting in the recognition of the cooperatives as private institutions owned and managed by the members. A notable improvement from the sector reforms was the prompt payment (within three weeks) to the unions by the Coffee Board. In addition, the Board delegated to the unions the responsibility of paying primary societies and growers (Baffes, 2005).

Further reforms in the coffee sector, which became part of the structural adjustment program, affected the cooperatives. In particular, the devaluation of the national currency and deregulation of the financial markets did affect the functioning of the cooperatives. The currency depreciated from Tsh 15.29/US\$ in 1985 to Tsh 140.33/US\$ in 1989 and Tsh 509.63/US\$ in 1994. The decline in the Tanzanian Shilling resulted in an increase in the Shilling-value of coffee exports and the local price of imported chemical inputs (Winter-Nelson and Temu, 2002). At the same time, the deregulation in the financial markets led to substantial increases in interest rates and greater restrictions in access to finance, with the nominal lending rates increasing from 12.25% in 1985 to 40% in 1994.

The high interest rates and greater restrictions in access to finance for public enterprises contributed to the financial difficulties of the cooperatives, as they lacked liquidity to make initial payments to farmers and were indebted to farmers for past deliveries (Baffes, 2005). To improve efficiency in the system, the government allowed private traders to engage in trade starting in the 1994–95 marketing season. The Tanzanian Coffee Marketing Board was replaced with the Tanzania Coffee Board (TCB). The TCB continued to operate the auction for exports, issued export permits and licenses for domestic trade, and also monitored the industry (Winter-Nelson and Temu, 2002). The reforms resulted in many private traders entering the domestic trade, with their share of auction deliveries rising from 13% in 1994 to 69% in 1996.

While the reforms led to improvements in producers' share of export prices and private sector participation, the functioning of input markets, particularly provision of credit, deteriorated sharply, as the multinationals did not engage in supply of inputs to the farmers. Moreover, the quality of services in areas such as research and extension declined significantly, resulting in a dramatic decline in the overall quality of coffee produced in the country. Given these experiences, the Coffee Board decided to implement changes in 1999/2000. Currently only about 20% of the coffee is sold directly to international traders (mainly by large estates and some certified products like the Fair Trade Coffee), while 80% go through an auction run by the TCB.¹ Krivonos (2004)

¹ The USAID (2006) describes the Moshi Coffee Auction as impractical because of its minimum requirement of 22,000 lb for export, because it virtually prevents small farmers from participating as individuals. The issuing of trading license also remains restrictive (Krivonos, 2004).

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