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DOES THE CURRENT SUGAR MARKET STRUCTURE BENEFIT CONSUMERS AND SUGARCANE GROWERS?

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Key Points:

1) The market structure in Zambia's sugar industry is highly concentrated, leading to consumers paying higher prices than expected given the low cost of sugar production in the country.
2) The legislation on vitamin A fortification for sugar acts as a non-tariff barrier in the sugar sector, which limits competition in the sector.
3) Vitamin A fortification requirements coincided with a sharp rise in consumer sugar prices. This rise is not tied to changes in world prices and is substantially higher than the cost of fortification to sugar processors.
4) Sugarcane producers participating in out-grower arrangements are positioned to benefit from the current market structure, as farm prices are based on the division-of –proceeds, which is tied to the ex-factory (processors') price.

INTRODUCTION: Zambia experienced tremendous growth in the sugar industry spurred by increased private investments in the sector following market liberalization. However, the increased investments have also created a market structure in which a single multinational is dominant. A single firm controls about 90% of the total market share for sugar. This concentration raises concerns about the functioning of the market and the efficiency and equity implications of potential market distortions

Sugar is one of the most successful non-traditional export crops for Zambia, which accounts for 3-4% of the national Gross Domestic Product (GDP) and 6% of total national exports in Zambia (Palerm, Sierevogel, and Hichaambwa 2010).

Since the liberalization of the sector, Zambia has experienced meteoric growth in its production and export of sugar. According to the United Nations' Food and Agriculture Organization (FAO 2013), raw sugar production rose from 135,000 tons in 1990 to 430,500 tons by 2010. At the same time, the country's exports grew from less than a thousand tons to 273,000 tons over the same period. While Zambia is a low cost sugar producer (Ellis, Singh, and Musonda 2010) and exports over 60% of its production, the domestic price of sugar is high. The disconnect between high consumer prices and low costs of production may be the result of the monopolistic structure of the sugar market.

While the market is highly concentrated, contract farming arrangements enable smallholders to be included in the value chain. Price relationships between the sugar millers and sugarcane growers are governed by contractual prices which are fixed and

reviewed every year. This model is seen as a mechanism for effectively integrating smallholders into remunerative cash crop production systems.

The main objective of this paper is to examine the effect of the sugar market structure in respect to pricing and how consumers and producers are affected.

DATA AND METHODS: The market analysis part of the study utilized monthly price data for sugar from 1996 to 2010 for the sugarcane producer price, the ex-factory at the processor's gate, the retail price, and the world sugar price. The sugar cane producer price was obtained from sugarcane growers; the sugar ex-factory price was obtained from sugar millers; and the sugar retail price was obtained from the Central Statistical Office (CSO).

We considered the transmission of price changes in the world market to Zambian ex-factory, sugar cane producer, and retail prices, as well as the transmission from ex-factory prices to sugarcane producer prices. Weak transmission from world prices to ex-factory, retail, or producer prices would suggest distortions in domestic prices. The presence of asymmetric transmission that passes price increases to consumers or price decreases to producers more readily than the reverse could suggest the exercise of market power and is tested for the sugar market in Zambia. [1].

FINDINGS:

The Concentrated Structure of Zambia's Sugar Market Disadvantages Consumers. The largest sugar miller in Zambia, Zambia Sugar Plc, accounted for about 92.5% of total domestic sugar production, while Kafue and Kalungwishi Estates accounted for 7.2% and 0.3% respectively. This market structure limits price competition in the market and contributes to higher than expected consumer prices. Sugar companies in Zambia have significant influence in the domestic market and therefore the pricing has little to do with local demand and supply condition because there is no significant competition. Hence, they can charge a high price in the domestic market. In the export market, where they face competition with other suppliers such as Tanzania, Malawi, or Kenya, they charge a lower price. An example is the Democratic Republic of Congo which is Zambia's largest importer of household sugar. In 2009, average retail sugar prices in Zambia were about US$ 0.98/kg, whereas the retail price of the sugar in Lubumbashi (imported from Zambia) was US$ 920/ton equivalent to US$ 0.92/kg (Chulu 2009).

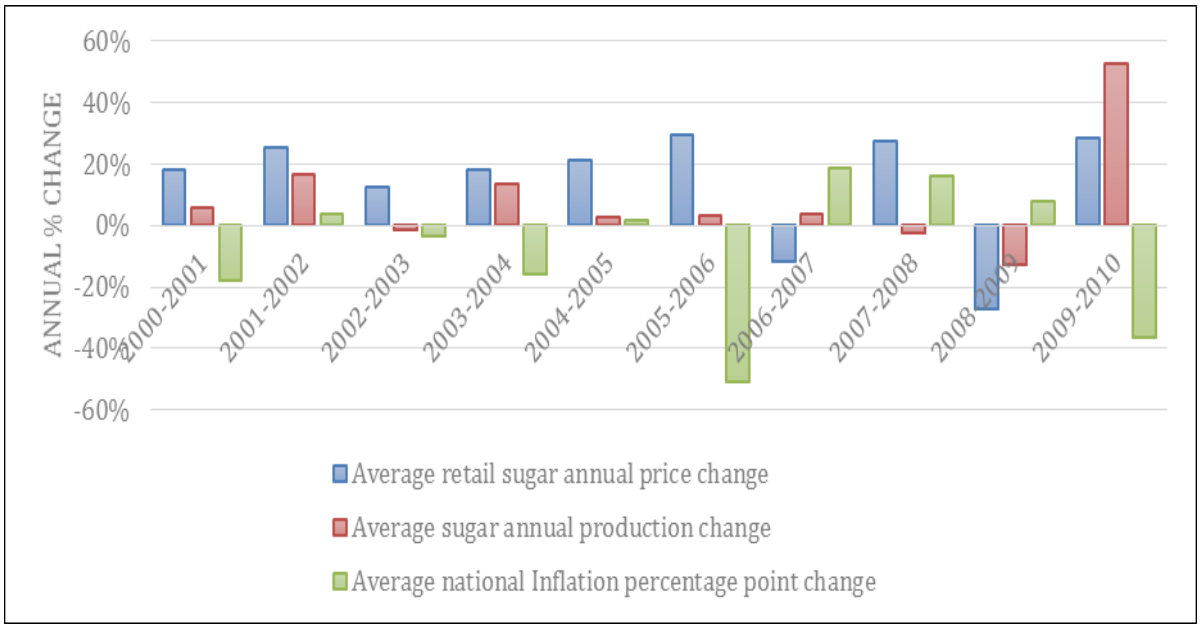
Figure 1 demonstrates that, although sugar production has significantly increased, prices have not decreased. This has been the case, despite inflation (general price levels) declining over the same period. The developments in the sugar industry technical efficiency in production have not benefited consumers, as they have to pay a higher price for the commodity.

Pricing in the Sugar Market is Characterized by Weak and Distorted Transmission of Price Signals: World sugar market prices and domestic ex-factory prices show co-movement of prices in the long-run, similar to ex-factory and sugarcane prices. On the other hand, world sugar price and domestic retail prices do not move together, which is a similar to world sugar prices and domestic sugarcane prices.

In essence, these results imply that in the domestic market, sugar millers are able to benefit from world price changes. However, the lack of co-movement between ex-factory and retail prices suggests that consumers are less likely to benefit from these price movements. No co-movement of prices is established between retail and world prices.

[1] Details of the methodology applied can be found in the Working paper No. 89: *Does the Current Sugar Market Structure Benefit Consumers and Sugarcane Growers*? Online available at: http://www.iapri.org.zm/index.php/research-reports/working-papers.

Figure 1. Annual Percentage Change in Retail Sugar Prices, Production, and National Inflation



Source: CSO 2010; World Bank 2013.

Simulation of the speed of price transmission indicates that price changes in the world market take about three years to be transmitted in the domestic ex-factory prices.

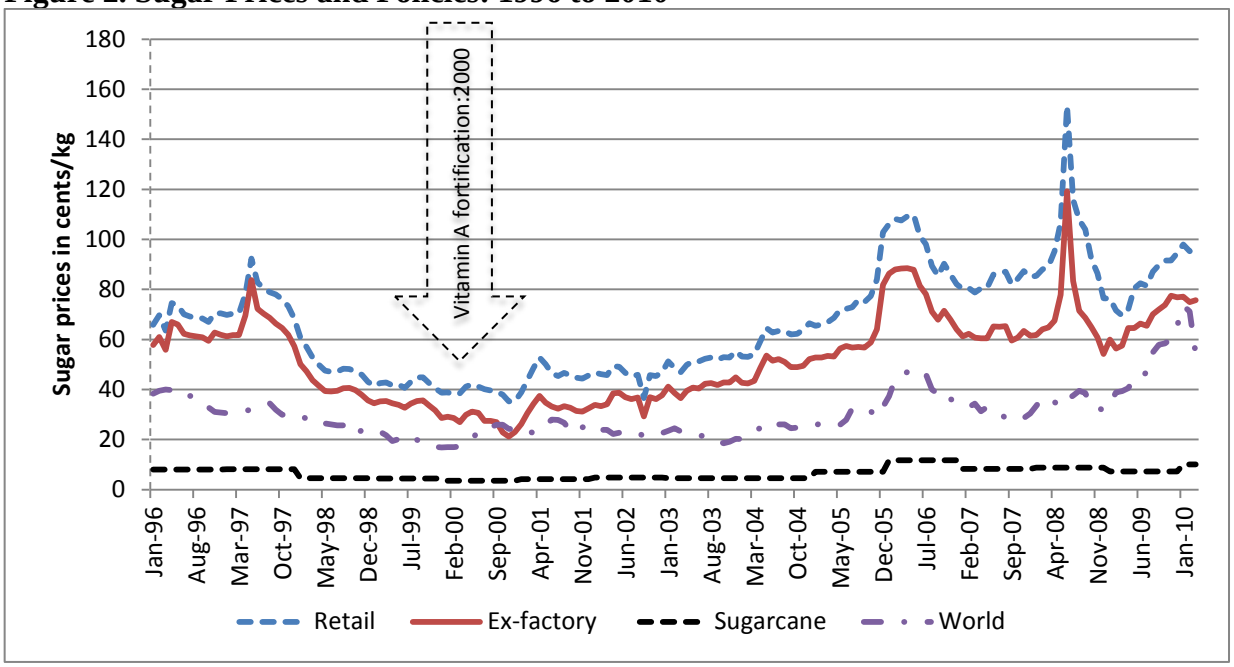
Within the domestic market, changes in the ex-factory price would take about one year and six months to be transmitted to sugar cane prices. Further, results show that price increases in the world market are transmitted to domestic ex-factory prices, but that price decreases are not transmitted. Within the domestic market, there is a tendency to pass-on price increases by sugar millers to sugarcane growers than price decreases. Thus, sugarcane producers tend to benefit from the price relation while consumers are disadvantaged.

The Current Market Structure Benefits Sugarcane Producers: Among all the three sugar millers in Zambia, only Zambia Sugar Plc has established contractual (vertical) relationships with sugarcane growers in its supply chain. These out-grower arrangements include the Kaleya, Maggobo, and Manyonyo smallholder schemes. The relationship between Zambia Sugar Plc and out-growers is governed by contractual arrangements. The contracts are indefinite and reviewed every three years. Sugarcane out-growers are offered supply quotas for the supply of cane and these are awarded based on a three year average of cane supplied by a farmer subject to review. The sugarcane price is a contract price negotiated between the company and farmers. The sugarcane price is based on Estimated Recoverable Crystals and shared proceeds from the sale of sugar.

When the World Bank evaluated a number of value chains in Zambia where smallholders are involved, sugar growing under contract arrangements was found to be the most profitable enterprise (World Bank 2007). Thus, growth in the sugar industry provides a mechanism for farmers to be included in profitable value chains.

The Policy on Vitamin A Fortification Supports High Domestic Sugar Prices. Policies play a significant role in shaping economic outcomes in the sugar market. Notably, vitamin A fortification requirement for all directly consumed sugar, and administrative barriers have all played important roles in the observed outcomes in the sugar industry. Figure 2 shows the impact of Vitamin A fortification on sugar prices. In Zambia, sugar marketed for domestic household use is required by law to be vitamin A fortified, while exported sugar is not.

Figure 2. Sugar Prices and Policies: 1996 to 2010



Source: Zambia Sugar 2010; USDA 2010. Wholesale price is factory gate for refined sugar; Sugarcane price is factory gate; World price is FOB Europe for refined sugar.

Because few other countries fortify sugar, sugar from international markets cannot be imported into Zambia for household consumption. The legislation was supported by what has been termed an administrative barrier to trade in that it required sugar imports be approved by three government departments: the Ministry of Agriculture, the Ministry of Health and the Ministry of Commerce, Trade and Industry (Ellis, Singh, and Musonda 2010).

Prior to the legislation, imports (originating from Malawi) had reached almost 25% of total domestic consumption (Serlemitsos and Fuscos 2001). Prior to the legislation, imports (originating from Malawi) had reached almost 25% of total domestic consumption (Serlemitsos and Fuscos 2001).

In 2000, legislation requiring vitamin A fortification was implemented. The legislation resulted in the decrease in imports and the increase in domestic prices which diverged from world prices. Thus, the legislation on Vitamin A fortification contributed to escalating prices of sugar, working against the initial objective of making Vitamin A accessible to the wider population.

CONCLUSIONS: Although production of sugar in Zambia has been increasing rapidly, domestic sugar prices remain high. The concentrated structure of the sugar market, which is supported by fortification requirements that act as barriers to entry, enable sugar millers to benefit from increases in world prices through exports, while protecting their margins when world prices decline through high domestic consumer prices.

Sugarcane out-growers have increasingly become important in the value chain. Sugarcane out-grower farmers benefit in the contractual relationship, with the rising price. The sugarcane producers' price is tied to the ex-factory price through what is termed as division of proceeds. This allows producers to benefit quickly from favorable price rises.

The policy framework underlying the sugar market in Zambia has implications on consumers. While liberalization and privatization can be hailed as successful policies that spurred the growth of the sugar industry, the effectiveness policy that requires Vitamin A fortification is questionable. The introduction of this policy corresponds with the period of rising sugar prices precipitated by

reduced competition from imports and the consolidation of one major sugar miller.

POLICY OPTIONS: There is need to re-evaluate whether fortification of sugar is still a good strategy for enhancing Vitamin A access to the Zambian population especially the rural population. Most of the rural poor have low purchasing power and the rising price of sugar is a major impediment for them to access the commodity. One option is for the government to revise the legislation and make it optional for sugar millers to fortify their sugar. The government and co-operating partners can then step up alternative means of promoting Vitamin A such as bio fortified crops such as orange maize and orange-fleshed sweet potatoes.

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