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Monitoring price incentives for maize in Mozambique

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OVERVIEW

Currently, maize is the most important food crop in Mozambique, as it is the most important source of food for the majority of the population. In addition to this, a large number of households rely on maize as an important source of revenue. In the North of Mozambique, where the main maize producing areas lie, households often export maize to neighboring countries. Conversely, the south depends on maize imports, particularly from South Africa. Overall, maize farmers are mostly small-scale subsistence farmers in rural areas, who cultivate areas below 1.5 ha using low-input, rain-fed agricultural systems.

MAFAP indicators suggest that both farmers and wholesalers received positive market price incentives for most years during the analyzed period (2005-2016). Specifically, 2006, 2007 and 2012 were the only years where both farmers and wholesalers received disincentives. Price disincentives were likely associated to poor market integration between domestic and international markets, which resulted in poor price transmission. However, from 2013 onwards, the depreciation of the Metical against the USD has played an important role in increasing price incentives for both farmers and, to a lesser extent, wholesalers.

The Market Development Gap (MDG) for maize is negative suggesting that a reduction in inefficiencies could potentially lead to sizeable increases in producer prices. One recommendation would be to improve transport infrastructure (including roads) in order to reduce access costs and promote north-south domestic trade. Currently Mozambique relies on an import tariff that is likely to somewhat protect domestic maize producers. However, in the long-run, productivity-enhancing investments should be pursued to decrease the need for trade protection.

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COMMODITY CONTEXT: PRODUCTION AND MARKET TRENDS

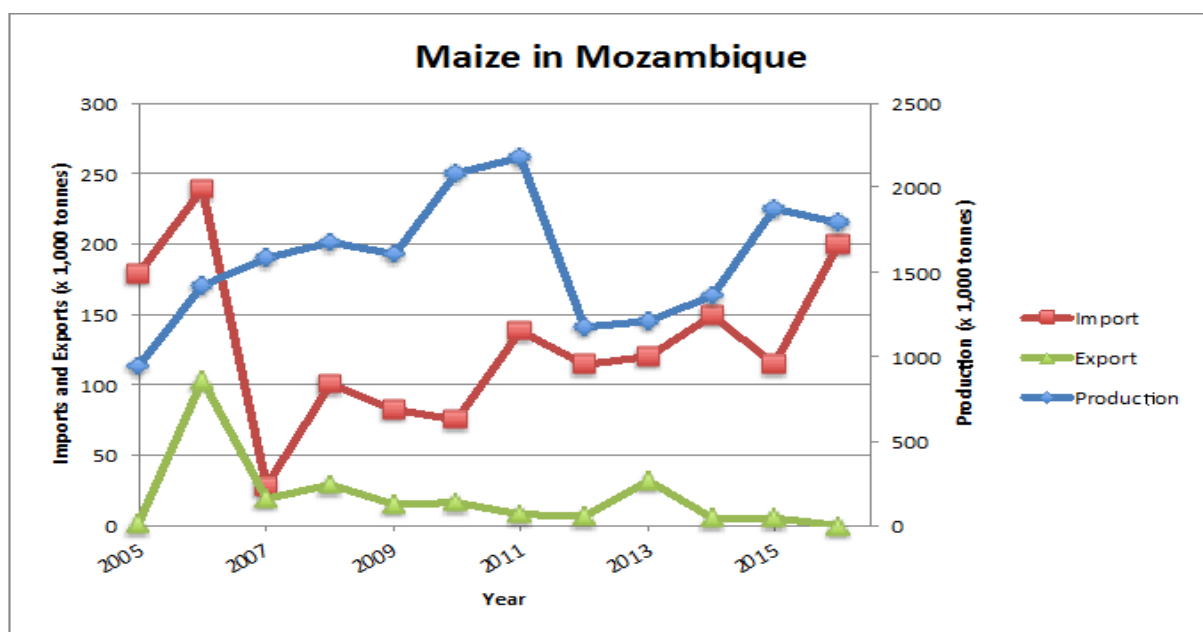


Figure 1: Maize production and trade

Source: Data FAOSTAT (2017) and USDA¹ (2017)

Historically, maize has been the main source of food for the majority of Mozambicans. According to national statistics, maize is the main staple food, followed by cassava and rice (FAO, 2014). In addition to this, maize is the most widely cultivated crop and is cultivated by around 80 percent of the estimated 4.2 millions of smallholders (PEDSA, 2011; World Bank, 2012; FAO, 2013; Magaua, 2012; MASA, 2015).

Maize production accounts for over 80 percent of the total cereal production and, together with cassava, it accounts for about 40 percent of the total cultivated land (FAO, 2013; Magaua, 2012). Yet, the country still relies on imports to satisfy its total domestic demand for maize (see Figure above). There are several factors that explain the country's dependency on maize imports. First, maize production is characterized by a very pronounced geographical pattern. In maize-producing regions in northern Mozambique, maize is exported to neighboring countries such as Malawi (mainly as informal exports). At the same time, the maize-consuming region in southern Mozambique is a net importer and imports mostly from South Africa (FAO, 2013; Magaua, 2012; Sitko, Kuteya & Chisanga, 2014). The market pathway used in our analysis is similar. Chimoio (in central Mozambique) was identified as the producing region whereas Maputo (the capital) was used as the point where the local maize competes with the imported maize.

¹USDA data was used for the periods not covered by FAOSTAT, namely imports and exports from 2014 to 2016, and production for the years 2015 and 2016.

This very stark pattern of producing and consuming regions is partly due to poorer agro-ecological conditions to grow maize in the south compared to the north. A second reason relates to the technology package used to produce maize, which constrains productivity. Currently, maize is grown mostly for subsistence purposes and production systems are typically characterized by a low intensity of input use, small land areas (less than 1.5 ha) and low levels of irrigation (most of production is rain-fed agriculture) (PEDSA, 2011; World Bank, 2012; Magaua, 2012). Finally, high transport costs limit the potential domestic trade between the north and the south of the country, thereby contributing to the country's reliance on maize imports.

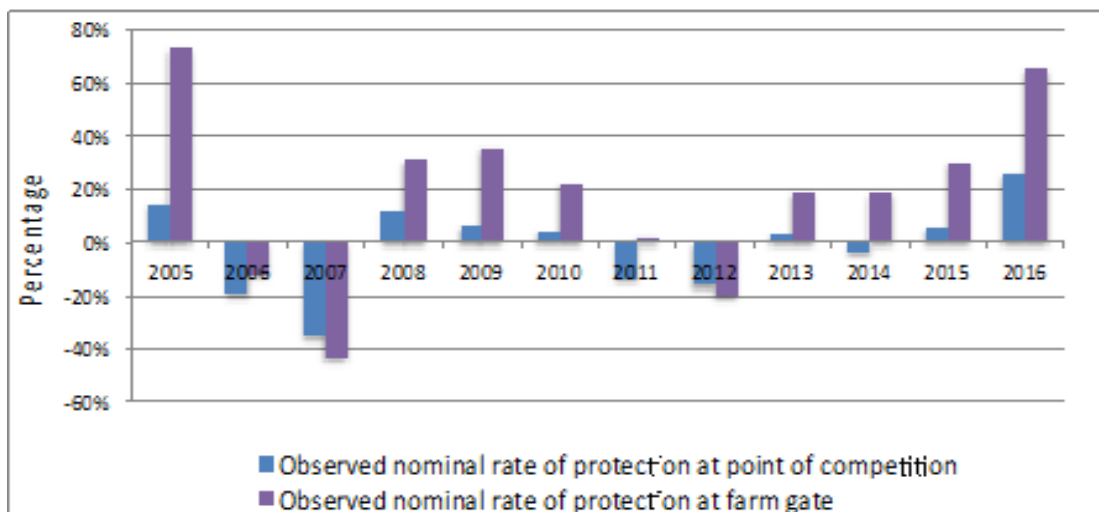
In recent years, the Government of Mozambique (GoM) has sought to reduce maize imports. To this end, a number of policies and investments were pursued. For instance, during the period 2014-2018, the GoM approved a 20 million dollars project to increase production and productivity of grain (rice, maize and wheat), mainly through investments on research and technology transfer (GABINFO, 2016). Second, in 2014 the GoM inaugurated the Zambezi river bridge, which sought to promote agricultural trade between the central and northern regions of the country and the southern region. Third, subsidies were also provided through the e-voucher program, in order to improve small-scale and subsistence farmers' access to improved agricultural inputs such as seeds (for maize, beans, soybean and peanut), fertilizers and pesticides (FAO, 2017). This programme was recently launched in 2015/2016 in Manica province and was subsequently extended to Nampula and Zambezia provinces in 2016/2017. However, the idea of providing seed vouchers (and fairs) to farmers is not new and has been introduced at least 10 years ago. The main aim of this policy is to assist producers affected by natural disasters as well as to stimulate seed markets development (Tostão, 2007).

MAIN POLICY DECISIONS AFFECTING THE COMMODITY

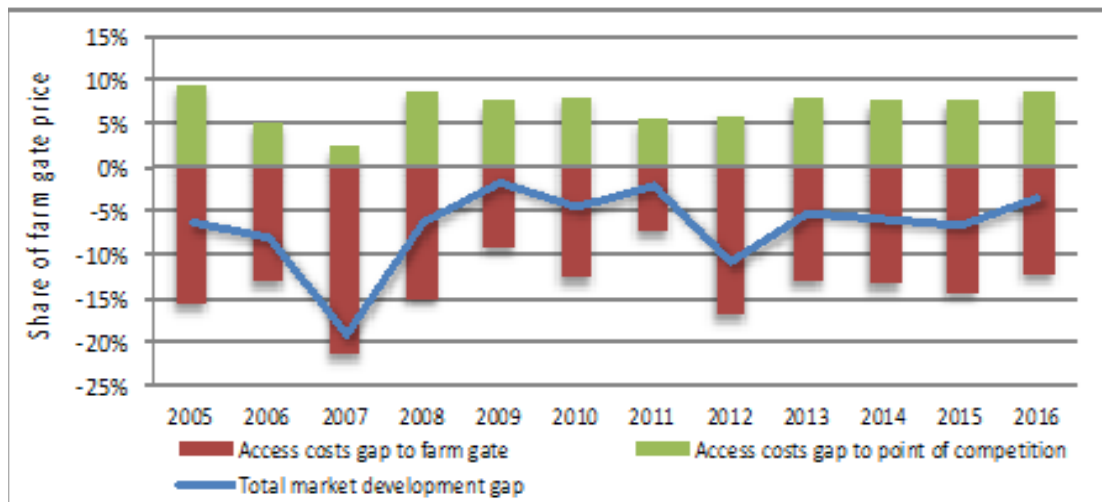
Trade	<ul style="list-style-type: none"> Under the WTO rules, the GoM has established free trade agreements (FTA) on maize (seed, grain or other forms) with SADC member countries (excluding South Africa) and the European Union, still prevailing an import tariff duty at 2.5 percent (ad valorem) for the other most favoured nations (MFN) as per the WTO classification (WTO, 2016; FAO, 2014; World Bank, 2010). Maize flour is traded differently, with an import tariff duty set at 15 and 20 percent (ad valorem) for SADC countries (excluding Malawi with whom it has established a FTA and MFN (WTO, 2016). VAT (17 percent) removal on maize imports (Hamela, 2012)
Domestic market	<ul style="list-style-type: none"> NA
Inputs subsidies and other support services	<ul style="list-style-type: none"> The GoM, through its National Plan for Investments on the Agricultural Sector (PNISA) 2013-2017, has defined some actions to promote maize production, namely: making available certified seeds and fertilizers at subsidized prices, improving infrastructure facilities to reduce trade barriers for farmers, promote technology transfer to farmers, as well as introduce phytosanitary campaigns to control for diseases. To promote the use of fertilizers, the GoM has applied a VAT exemption for fertilizer companies, leaving only an import tariff rate of 2.5 percent (World Bank, 2012).
Post-harvest and processing support	NA
Agricultural infrastructure development	NA
Exchange rate policy	NA
Other policies	NA

PRICE INCENTIVES INDICATORS

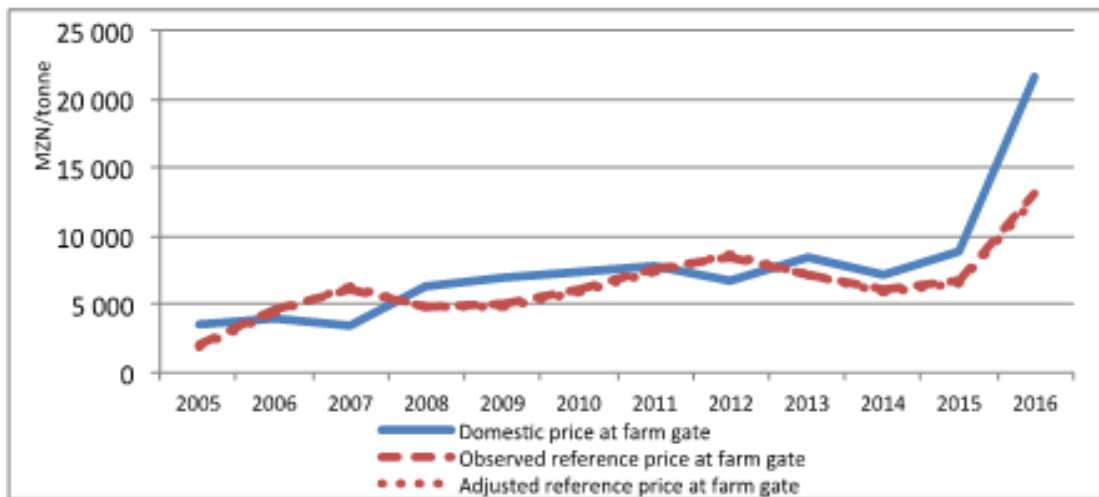
(a) NRP for maize at farm gate and at point of competition



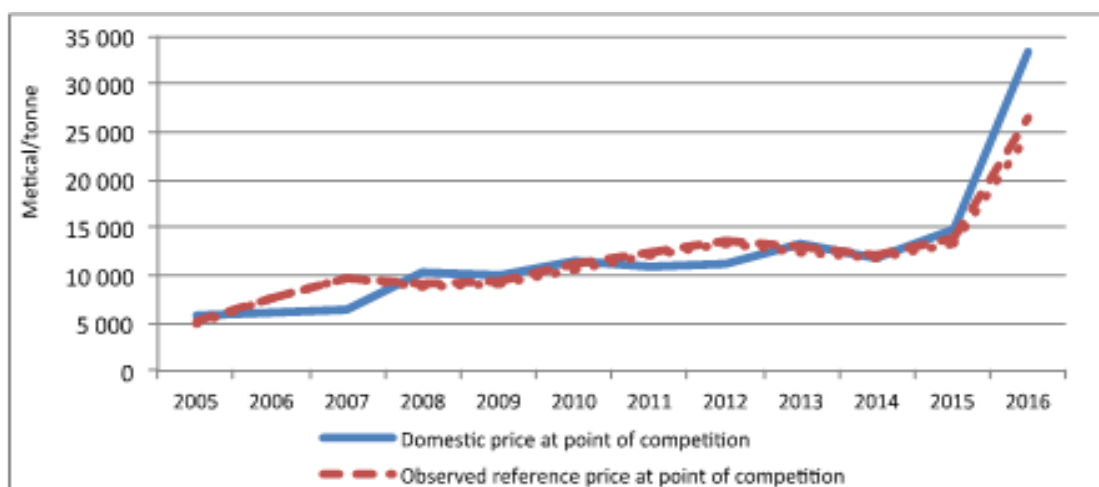
(b) Market Development Gap (percentage of farm gate price)



(c) Domestic price vs reference price at farm gate



(d) Domestic price vs reference price at point of competition (retail)



Source: MAFAP (2017)

INDICATORS INTERPRETATION

MAFAP indicators reveal that the policy and market environment created price incentives for maize farmers and wholesalers for most years during the 2005-2016 period, with incentives typically being higher for farmers. However, in some years - most notably in 2006, 2007 and 2012 - farmers faced price disincentives mostly attributable to poor price transmission. Throughout the period, high demand for maize, as well as the import tariff applied on maize imports may have led to positive price incentives for farmers. Since 2013, the rapid depreciation of the metical has also led to higher price incentives for farmers and wholesalers.

From 2005 to 2016, price incentives have been volatile for the maize value chain in Mozambique, particularly at the farm gate level, as depicted by the NRP indicator above. In 2005 for instance, the NRP reached its maximum value. The large value obtained for the NRP can be attributed to reduced domestic supply, as a result of the 2005 drought, which led to higher prices at the farm gate (FAO, 2014). In 2006 and 2007, the negative NRP values observed suggest that domestic maize prices in Mozambique have followed international prices with a lag.

In 2012, while the country witnessed low production levels, this did not lead to an increase in price incentives. The large increase in international prices did not translate into a commensurate increase in domestic prices, causing a negative NRP value that year. More recently, from 2013 onwards, farmers have consistently received positive price incentives. This can be explained by a number of factors. First, the Government of Mozambique (GoM) has carried out a number of initiatives and investments aimed at increasing production and facilitating domestic trade. Second, the macroeconomic environment has changed considerably. Between 2013 and 2015, there was also a decrease in international prices whereas local prices have increased. Finally, The rapid depreciation of the metical in 2014/2015 and 2015/2016 seems to have been associated with an increase in the NRP. The depreciation of the metical may have increased the demand for local maize as opposed to imported maize.

Overall, the NRP at both farm gate and wholesale (point of competition) seem to follow the same pattern. However, the NRP tends to be lower at the point of competition. Overall, a positive NRP is to be expected at the wholesale level as a result of the 2.5 percent import tariff. Nevertheless, since 2013, despite the removal of VAT (Hamela, 2012), the NRP at point of competition level has increased, potentially due to the depreciation of the metical.

In general, the MDG was negative for most of the analysed years. A negative MDG suggests that farmers are receiving lower prices than they would have potentially received if market inefficiencies were removed. The average MDG over the analysed period was 1.5 percent. Excessive access costs are higher between farm gate and the wholesale market than between the wholesale market and the border. This is likely to be a key factor explaining why the south (the point of competition on our analysis) is currently a net importer while the centre (and north, the farm gate) are typically net exporters.

Driving Factors

Policy	Sector Performance
<ul style="list-style-type: none"> ○ Liberalized prices at farm gate level ○ Import tariffs (2.5 percent) ○ Removal of 17 percent VAT since 2012 	<ul style="list-style-type: none"> ○ Volatile exchange rate: rapid depreciation of the metical in the recent years ○ Supply chain inefficiencies and high market access costs

POLICY IMPLICATIONS AND RECOMMENDATIONS

Overall, policies and the market environment are providing incentives to maize farmers and wholesalers, particularly since 2013. However, with regards to market inefficiencies, the MDG was negative in most years, suggesting that removing inefficiencies has the potential to increase farm-gate prices. In addition to this, the analysis also reveals large differences between the observed and adjusted access costs. Such inefficiencies also ultimately penalize the consumers, highlighting the importance of identifying the interventions needed to reduce market inefficiencies.

Overall, farmers and wholesalers have received price incentives during 2005- 2016 and the recent strong depreciation of the metical has also contributed to the increasing incentives witnessed since 2013. However, the environment has typically been more favourable to farmers than to wholesalers, who have received lower incentives and faced higher excessive access costs than farmers.

A price structure that leads to profits for farmers is an important condition to ensure the sustained high levels of supply required to make a country self-sufficient. As a result, these positive NRP for farmers and wholesalers are desirable from a production side. However, as highlighted by the MDG, there are large inefficiencies both from farm-gate to PoC and from border to PoC. These inefficiencies are likely to impose a cost on both consumers, who need to pay higher prices, and producers, who could potentially receive higher prices if market was more efficient.

There are a number of recommendations that emerge. First, the government could aim to reduce market inefficiencies in order to promote domestic trade between the north and south. This could be achieved, for instance, through rehabilitation of important access roads or even investments in some more efficient transports systems. In the short-run, a gradual reduction in import tariffs could lead to lower prices at consumer level, while maintaining some level of protection for farmers. In the long-run it is important to pursue investments that can reduce the production cost of maize, so as to increase the competitiveness of Mozambican maize.

FURTHER ANALYSIS

Potential additional research to be undertaken in support of policy reforms for the maize sector in Mozambique include:

- a. Analysis on the impact of the removal of import tariffs;
- b. Social benefit-cost analysis on the impact on infrastructure investments and action to be taken in order to promote domestic trade between the north and south.

DATA SOURCES

Benchmark price: Wholesale prices in South Africa gathered at Safex and transport costs from South Africa to Mozambique provided by private transport company Lalgy.

Domestic price at point of competition: Average wholesale prices provided by SIMA.

Domestic price at farm gate: Average producers Prices provided by SIMA.

Access costs from border to the point of competition: Transport cost from Transportes Lalgy; Port handling costs from World Bank doing business online database for 2005-2013, subsequent costs were deflated using CPI; margins from literature.

Access costs from the point of competition to the farm gate: Transport costs from Transportes Lalgy margins from literature.

ADDITIONAL INFORMATION

This analysis is the result of partnerships established in the context of the MAFAP programme with the Ministry of Agriculture and Food Security of Mozambique (MASA) and the Center for Studies of Agro-food Policies and Programs (CEPPAG).

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A fully-fledged technical note on “Analysis of price incentives and disincentives for maize in Mozambique, 2005-2016” is available [here](#).

References of the analysis and Methodology are reported in the pdf version of this webpage. MAFAP methodological guidelines are also available [here](#).

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