



MAFAP SPAAC

Monitoring African Food and Agricultural Policies
Suivi des politiques agricoles et alimentaires en Afrique

ANALYSIS OF INCENTIVES AND DISINCENTIVES FOR MAIZE IN NIGERIA

July 2013



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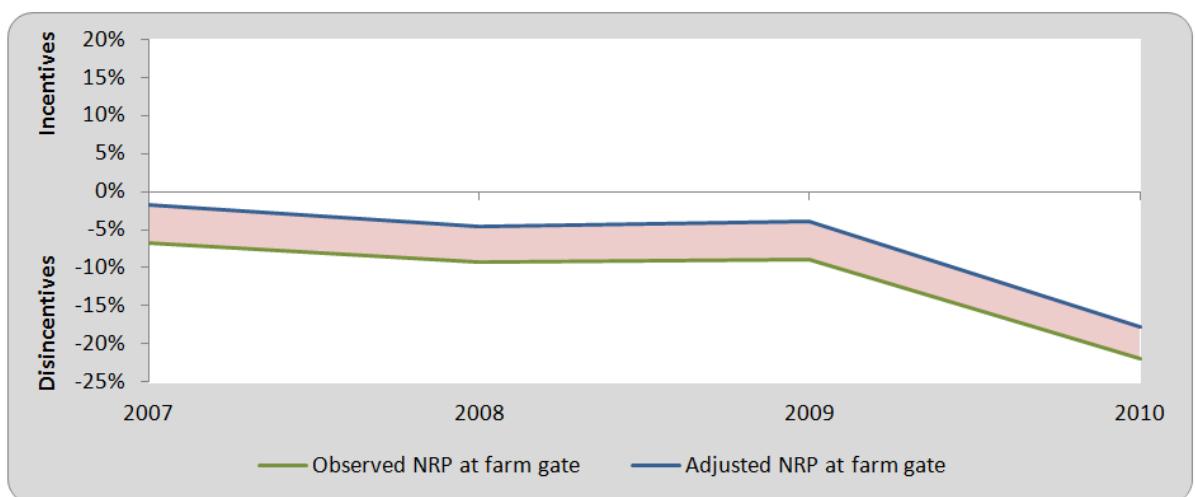
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SUMMARY OF THE NOTE

Product: Maize
Period analyzed: 2007 – 2010
Trade status: Net importer

- Largest maize producer in Africa.
- Maize is the 5th most important commodity in terms of production volume (2005-2010) and is characterized by an increasing trend over the period 2000 to 2010.
- 55 % of maize produced is used as food, 31% as feed and 2% is processed (2005-2009).
- Maize is mainly produced for local consumption with only small quantities being exported and imported. Imports were banned from 2005 to 2008.
- The 'Doubling maize production initiative' aims at increasing maize output through price support and input subsidies measures (from 2006 to 2008).



The observed Nominal Rate of Protection (NRP, green line) indicates that maize farmers have received disincentives in 2005 and again between 2008 and 2010 under the prevailing cost structure in the value chain. The adjusted NRP (blue line) captures the effects of market inefficiencies on farmers. The area in red shows the cost that these inefficiencies represent for producers.

- Despite protective policies in place, including input support, farmers' disincentives were increasing between 2007 and 2010.
- The cause of disincentives should be investigated and monitored further.

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1. PURPOSE OF THE NOTE

This technical note is an attempt to describe the market incentives and disincentives for maize in Nigeria.

For this purpose, yearly averages of farm-gate and wholesale prices are compared with reference prices calculated on the basis of the price of the commodity in the international market. The price gaps between the reference prices and the prices along the value chain indicate the extent to which incentives (positive gaps) or disincentives (negative gaps) are present at the farm-gate and wholesale level. In relative terms, the price gaps are expressed as Nominal Rates of Protection (NRP). These key indicators are used by MAFAP to highlight the effects of policy and market development gaps on prices.

The note starts with a brief review of the commodity's production and consumption as well as trade and policies affecting the commodity. It also provides a detailed description of how the key components of the price analysis have been obtained. Using this data, the MAFAP indicators are then calculated and interpreted in light of existing policies and market characteristics. The analysis is commodity and country specific and covers the period 2007-2010. The indicators have been calculated using available data from different sources for the period 2007-2010 and are described in Chapter 3.

The outcomes of this analysis can be used by those stakeholders involved in policy-making for the food and agricultural sector. They can also serve as input for evidence-based policy dialogue at the country or regional level.

This technical note is not to be interpreted as an analysis of the value chain or detailed description of production, consumption or trade patterns. All information related to these areas is presented merely to provide background on the commodity under review, help understand major trends and facilitate the interpretation of the indicators.

All information is preliminary and still subject to review and validation

2. COMMODITY CONTEXT

PRODUCTION

Nigeria is the 10th largest producer of maize in the world, and the largest maize producer in Africa, followed by South Africa (IITA, 2012; USAID 2010). While maize is grown in the entirety of the country (both yellow and white varieties), the North Central region is the main producing area (see Figure 1, below). Seventy percent of farmers are smallholders, with an average 5 ha area of cultivated land accounting for 90 percent of total farm input (NAIP 2010). Maize in Nigeria is usually intercropped, with yam, cassava, guinea corn, rice, cowpea, groundnut, and soybeans.

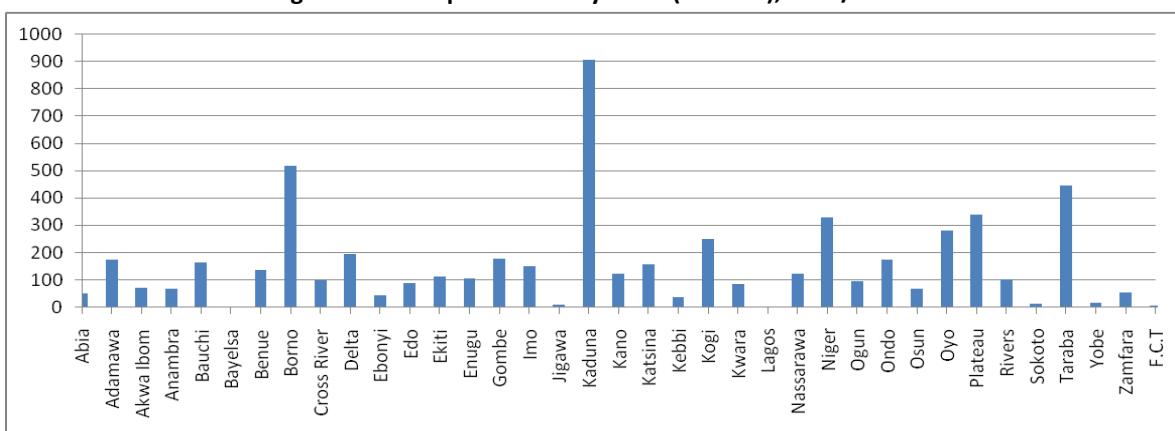
Figure 1: Maize Production at State Level, 2005



Source: USAID, 2005

As shown in Figure 2, based on information from the Nigerian National Bureau of Statistics (2005/2006), Kaduna is the main producing state.

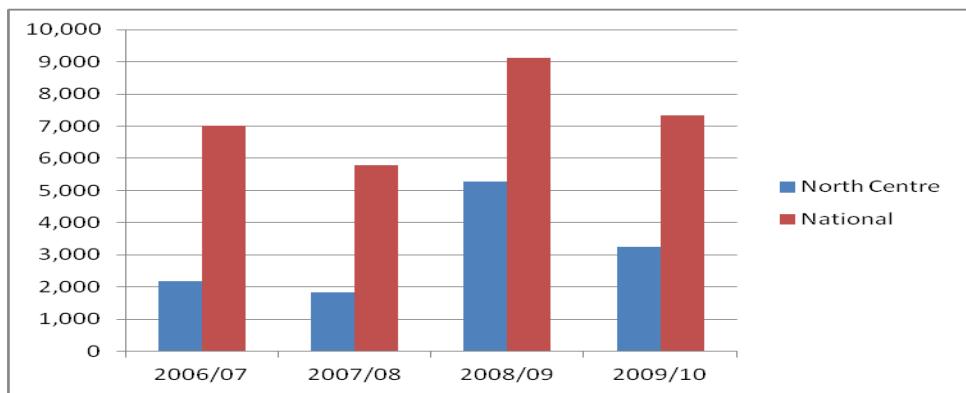
Figure 2: Maize production by State ('000 Mt), 2005/2006



Source: MOA, Nigeria 2012

Looking at yearly figures, the North Central Region accounted for an average of 31 percent of total national production in the years 2006 and 2007, 44 percent in 2009 and 58 percent in 2008 (Figure 3).

Figure 3: Yearly National and North-Central maize production ('000 Mt), 2006-2009



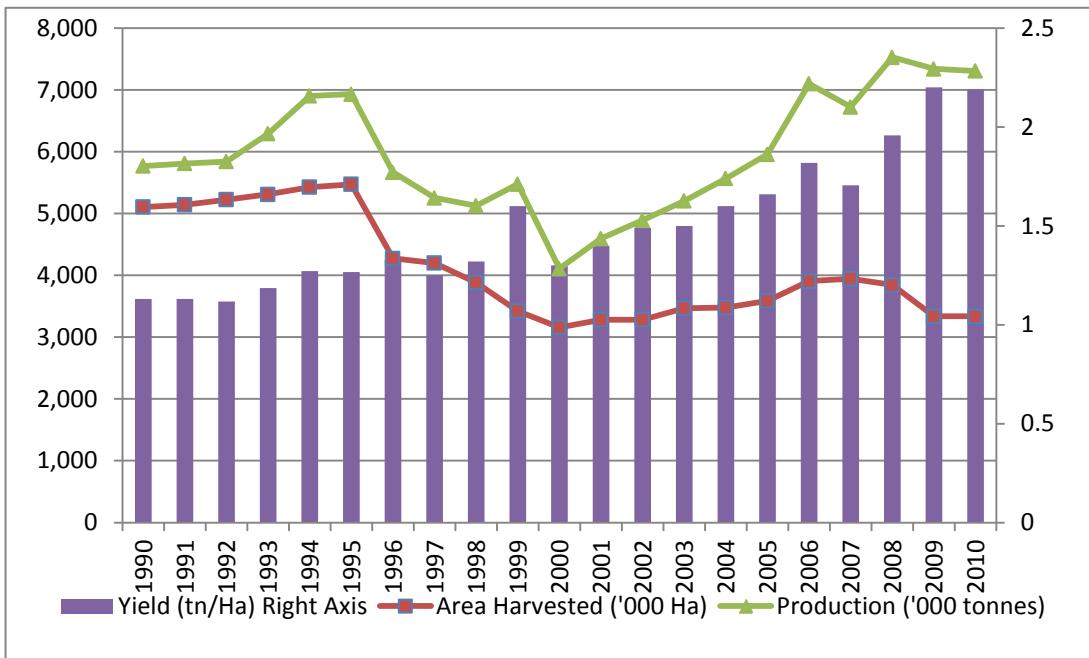
Source: Nigeria Bureau of Statistics, 2012

Maize is, on average, the 5th most produced agricultural commodity in the period of 2005-2010, becoming the 3rd most produced crop (by quantity) in the country during 2009 and 2010, after cassava and yams. Most of the production aims to the domestic market, since a negligible part of the production is formally exported (FAOSTAT, 2012). However, informal trade does occur with neighboring countries, although detailed volumes are not available.

Ecological zones of production include mangrove swamp, deep water, irrigated lowland, rain fed lowland, and rain fed upland (WARDA 2008). Although the Guinea Savannah zone provides the best ecological condition for maize cultivation, maize is also grown in the Forest zone, the Derived Savannah zone and the Southern Savannah (USAID 2010).

Examining production, yields and area harvested trends for the past two decades, there is an overall alignment between production and area harvested until 2000. Indeed, from 2000, the area harvested remained lower than 1990 (about 5 millions hectares in 1990 and between 3 and 4 millions from 1998 to 2010) while the production increased drastically at an average rate of 5.52% per year between 2000 and 2010. This might indicate an improvement in production technology, since yields are increasing as well. (FAOSTAT 2012).

Figure 4: Maize area and production trends in Nigeria (1990-2010)

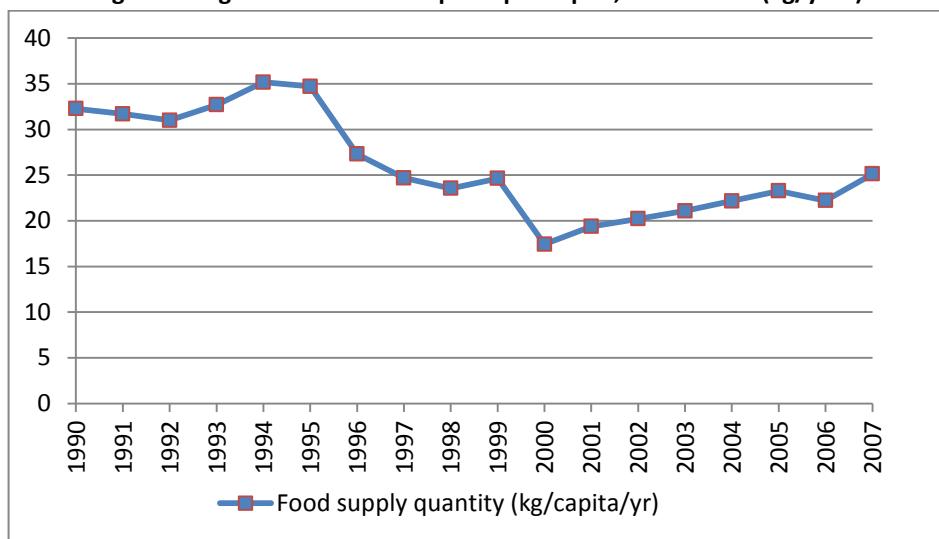


Source: FAOSTAT (2012).

CONSUMPTION/UTILIZATION

Introduced in Nigeria in the 16th century, maize is the fourth most consumed cereal during the past two decades, below sorghum, millet and rice (FAOSTAT 2012). Being among the primary food staples, maize consumption is widespread across the country and among households of different wealth. It is widely used in the preparation of traditional foods. Main local dishes include *pap*, *tuwo*, *gwate*, and *donkunu*, with the cereal cooked, roasted, fried, ground, pounded or crushed form (Abdulrahaman et al., 2006). Following a peak in 1994 (35 Kg/year), per capita consumption of maize in Nigeria underwent an overall decrease throughout the 1990s, reaching a negative peak in 2000 (17 Kg/year) with a positive growth rate between 2001 and 2007 (aside from 2006, when the per capita consumption declined by 0.4 percent), as reported in Figure 5 (FAOSTAT 2012).

Figure 5: Nigeria maize consumption per capita, 1990 - 2007 (kg/year)



Source: FAOSTAT Food Balance Sheets

Although maize is not the most consumed cereal in terms of quantity, the Nigeria Food Consumption and Nutrition Survey, conducted by IITA in 2003, based on the survey of 6 480 households across federal states, shows that maize is the most frequently consumed food staple in Nigeria. About 20 percent of the surveyed households consume maize both as flour or green. Frequency of maize consumption is followed by cassava (16.5 percent), rice (11.9 percent) and cowpea grain (11.8 percent) (Table 1).

Consumption over four times a week like maize could indicate that the food were consumed almost every day. It reflects the food most preferred by households or those that were available and affordable.

Table 1: Frequency of consumption of staple food crops at the national level

	0 Week	1-2 Week	3-4 Week	Over 4 Week	Overall Percentage
Maize	0.68	6.15	6.35	6.96	20.1
Cassava	0.63	6.85	4.61	4.45	16.5
Rice	0.52	5.89	5.26	3.24	14.9
Cowpea grain	0.31	4.31	4.45	2.77	11.8
Groundnut	0.18	4.07	3.58	3.31	11.1
Yam	0.45	4.92	3.29	1.72	10.4
Sorghum	0.08	1.22	2.19	3.12	6.6
Plantain	0.63	3.45	1.29	0.55	5.9
Soybean	0.25	1.48	0.47	0.35	2.6

Source: IITA Nigeria Food Consumption and Nutrition Survey, 2003

Most of the national production aims at human consumption. However, industrial uses (such as the brewery and feed industry) have been developing in the past decade: the percentage of total maize production used for feed has grown from 13 to 18 percent of total production (USDA, 2005-2010). A specific driver of the feed industry is the development of the poultry sector, as poultry feed represents 95-98 percent of the total feed produced in the country between 2005 and 2010 (USDA, 2005-10). The development of the poultry industry is one of the priorities of Nigeria's agri-business strategy and is in line with the imposition of bans on maize exports to ensure maize supplies to the poultry and feed industries.

According to IITA, maize demand in the country is estimated to increase 3.2 percent per year due a perspective growth of urbanization and population. IITA estimates that approximately 60 percent of maize produced in the country is used for industrial end uses for both for human (flour, beer, malt drinks, cornflakes, starch, dextrose, syrup) and animal consumption, mainly poultry (UNIDO 2010).

In terms of maize types, yellow maize is mostly used for feed and human consumption, while white maize for human consumption only. IITA estimates that yellow maize production will likely increase considerably as compared to white maize in the coming years, due to the development of the feed sector (particularly poultry) (Hartwich, 2010). However, maize contribution to total feed production is small, and ranges between 11 percent in 2006 and 18 percent in 2010, given the high cost of maize as compared to other feeds (Table 2). Maize grain is primarily used in layer and broiler feed ratios (Hartwich 2010).

Table 2: Maize production used for Feed

	2005	2006	2007	2008	2009	2010
Maize usage for Feed Production (tonne)	800,000	810,000	900,000	1,000,000	1,200,000	1,300,000
total Maize Production (tonne)	5,957,000	7,100,000	6,724,000	7,525,000	7,338,840	7,305,530
% of Total Production used for Feed	13%	11%	13%	13%	16%	18%

Source: own calculations, based on USDA and USAID data (2005 to 2010)

MARKETING AND TRADE

Nigeria presents a combination of growing domestic demand (for both human consumption and feed) together with a ban on maize imports (between 2005 and 2008) and exports at different moments in time (2009 and 2010, with no comprehensive information on the previous years). Details on trade restrictions will be discussed in the Policy Decisions and Measures' section (Chapter 2.e), below.

Trade data for maize other than seed have significant gaps, especially on the export side, for which trade flows are not available in the main databases (UNCOMTRADE and GTA, FAOSTAT). FAOSTAT was the only source providing some information on export flows for maize, although it includes seed in the computation. Despite the inclusion of seed, FAOSTAT exports figures were initially used as a proxy to capture trends in net maize trade for the country (2005-2010).

Even with the inclusion of seed, formal exports only account for a maximum of 0.20 percent of production (in 2007), and formal imports account for a maximum of 0.3 percent of production (in 2005).

Table 3: Maize production (including seeds), import and export of Nigeria (2004-2010)

	2004	2005	2006	2007	2008	2009	2010
Production ('000 tonne)	5,567	5,957	7,100	6,724	7,525	7,339	7,306
Imports ('000 tonne)	0.05	17.668	9.612	0.687	0.049	0.049	n/a
Formal exports ('000 tonne)	0	2.226	3.666	10.416	1.023	1.023	n/a
Formal export as a % of production	0.00%	0.00%	0.10%	0.20%	0.00%	0.00%	n/a
Formal imports as % of production	0.00%	0.30%	0.14%	0.01%	0.00%	0.00%	n/a

N/A = data not available.

Source: FAOSTAT, 2012

GTA records have been selected for the analysis of disaggregated import flows, since total import figures match those recorded by FAOSTAT (although in more detail) and UNCOMTRADE information presented data gaps. Although GTA data only cover years 2007 to 2010, they provide quantities and value of imports to Nigeria disaggregated by partner countries. However, information on GTA is not comprehensive nor confirmed, since GTA published a specific disclaimer for its Nigeria data, calling for users' caution¹.

According to GTA (similar trends are reported by FAOSTAT statistics), South Africa and United States are the main partners for imports. Although total formally imported quantities remain negligible, as shown in Table 4, below, South Africa appears to be the main partner for the years 2008-2009, with 8 tons exported to Nigeria in 2008, 97 in 2009 and 183 in 2010. The United States is the main (and only) partner in 2007, with a recorded total of 7 tonnes, and in 2010, with 6,554 tonnes. Considering the high variability across years, averages were not used to assess the main importing partners. Quantities and values imported to Nigeria are however particularly low, also when trade flows of South Africa and United States are screened as reporting countries. Although low quantities might be a primary result of the import ban and high tariffs, it is noted that volumes remain low in 2010 and 2009 (when the ban was lifted).

¹ "Nigerian data is inconsistent for many codes. There are significant variances in values and quantities, resulting into erratic unit prices. Users should review numbers with caution. Nigerian partner countries for imports are not always based on Country of Origin", GTA (2012).

Table 4: Maize (10059) imports (tonnes), main partners, 2007-2010

Partner Country	2007	2008	2009	2010
World	7	14	150	7003
United States	7	3	0	6554
South Africa	0	8	97	183

Source: GTA, 2012

Nonetheless, it is to be noted that the inclusion of comprehensive data on informal trade flows (both imports and exports figures), which is currently unavailable, is likely to provide information on neighbouring countries (currently not included) as relevant trade partners. Besides tariff barriers on maize, Nigeria has a list of prohibited imports which make smuggling a widespread phenomenon in the country (Meagher, 2003). Although detailed data is unknown, it is noted that although Nigeria imports an average of 30 to 40 percent of its grain imports from the ECOWAS block, only a negligible percentage of the country's cereal demand is actually met by formal imports (Inter-réseaux, 2010). USDA estimates informal cross-border exports ranging from at 200 000 tonnes in 2005/2006 and 2010, and 100 000 tonnes for the other years under review, indicating Niger, Chad and Sudan as main destinations (USDA 2006-2010). Thus, although formally Nigeria is maize importing country, there are import and export flows which are not captured in official data, and their estimate is currently not confirmed.

Within Nigeria, Lagos and Kano represent the two main centers where goods are marketed due to their proximity to the two most active borders for informal trade between Nigeria and Benin and between Nigeria and Niger, as well as due to the proximity between Lagos and the ports of Lomé and Cotonou. Conversely, according to FAO special report (based on CILSS/FAO/FEWSNET/SIMA/WFP Joint Market Assessment Mission), maize prices in Jibia, Illela and Mai Adua markets (in Northern Nigeria, at the border with Niger), along with prices in Malanville (in Benin, at the border with Niger) have a strong influence on maize prices in Niger (FAO 2008).

Informal cross border trade flows of maize between Nigeria and its neighboring countries are particularly intense in the Kano-Katsina-Maradi region at the border with Niger (Figure 6). This corridor is characterized by flows of both local products and re-exports from other countries. The importance of this corridor between Niger and Nigeria has historical roots and relates to the complementarities of the two cropping systems. Niger used to import significant volumes of cereals including millet, maize and sorghum from Nigeria to mitigate its structural production deficit.

Figure 6: Informal Trade hubs, Northern Nigeria

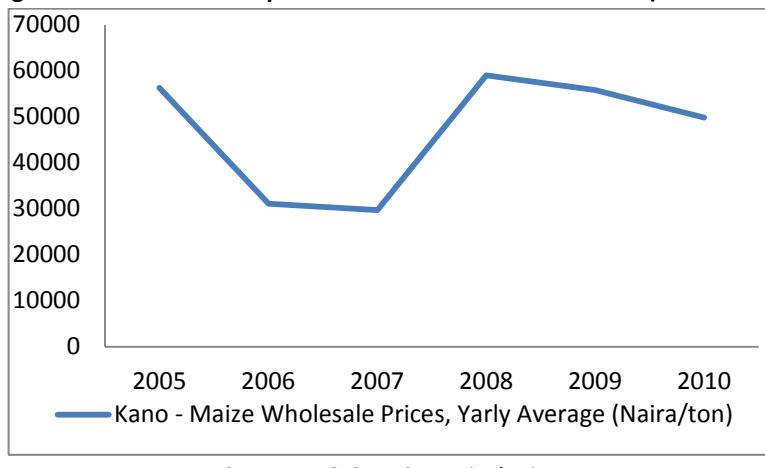


Source: Sahel and West Africa club/OECD, joint mission report "Food security and cross border trade in Kano, Katsina, Maradi", 2006

Additionally, studies undertaken by OECD stresses the new patterns of informal cross border trade in the West Africa region which are not only confined to border areas, but have extended to the whole national territory of countries (Sahel and West Africa club, OECD, 2006). Nigeria plays significant role with its flows of petrol, grain and fertilizer, which penetrate the northern and western part of Niger, being re-exported to Mali, Burkina Faso and Ghana (Meagher, 2003). The informal exports to the Francophone countries are attributed to the informal exchange rate between the Naira and the CFA Franc which made Nigerian goods cheaper than the ones produced in Francophone countries. Re-allocation and smuggling of subsidized fertilizers and other subsidized inputs from Nigeria can be a constraint for those development initiatives aimed at increasing agricultural productivity in Nigeria (Meagher, 2003). The significant volumes of maize and inputs traded informally between Niger and Nigeria imply the involvement, not only of small, but also large traders which take indirect advantage of the non-tariff measures (such as bribes) and road blocks which impact more heavily on the low profit margins of the smaller traders (Sahel and West Africa club, OECD 2006).

Wholesale price data are currently available for the Northern region only, Kano market. A descending trend is observed in the first half of the observed period, with a maximum price of 56 333 Naira/tonne in 2005 and a minimum of 29 754 Naira/tonne in 2007. With a rise of maize prices comparable to 2005 level in 2008 (59 083 Naira/tonne in 2008), the trend has been descending ever since, with a yearly average of 55 833 Naira/tonne in 2009 and 49 833 in 2010 (GIEWS, 2012).

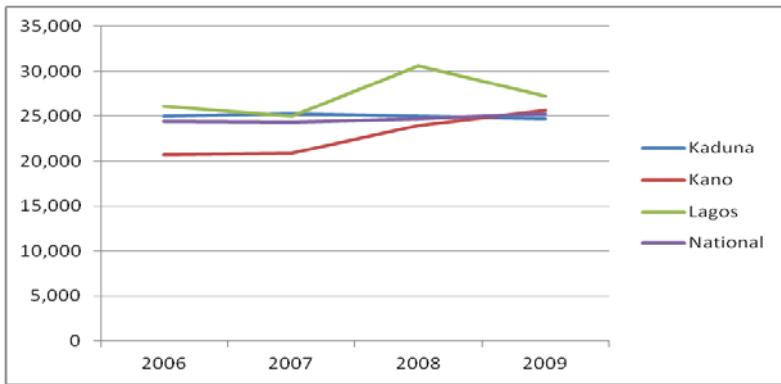
Figure 7: Yearly average trends in wholesale prices of maize from Kano market (Northern Region) (Naira/tonne)



Source: FAO GIEWS, nominal price

Farm gate prices are available for the main markets considered in this analysis from National Bureau of Statistics (year), for the years 2006 to 2009. As shown in Figure 8, Lagos presents the higher price per tonne, while in Kaduna (the main wholesale market), the price is lower than the national average.

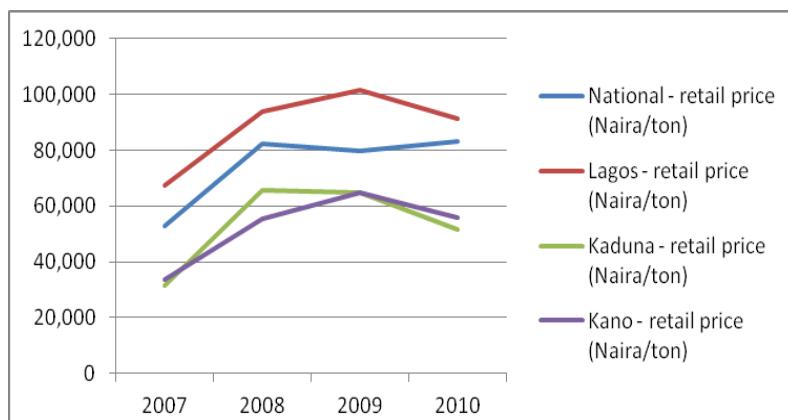
Figure 8: Yearly average trends in farm gate prices of maize in Kaduna, Kano, and Lagos markets, including national average (Naira/tonne)



Source: Nigerian National Bureau of Statistics, 2012

Retail prices are available for the years 2006-2010 (Ministry of Agriculture). As shown in Figure 9, below, Lagos retail prices are higher than the national average, probably due to both transportation costs from the North to the South and to the fact that most of the imported maize is marketed in Lagos, since price collection does not distinguish between imported and domestically produced maize (USDA, 2010)

Figure 9: Yearly average trends in retail prices of maize in Kaduna, Kano, and Lagos markets, including national average (Naira/tonne)



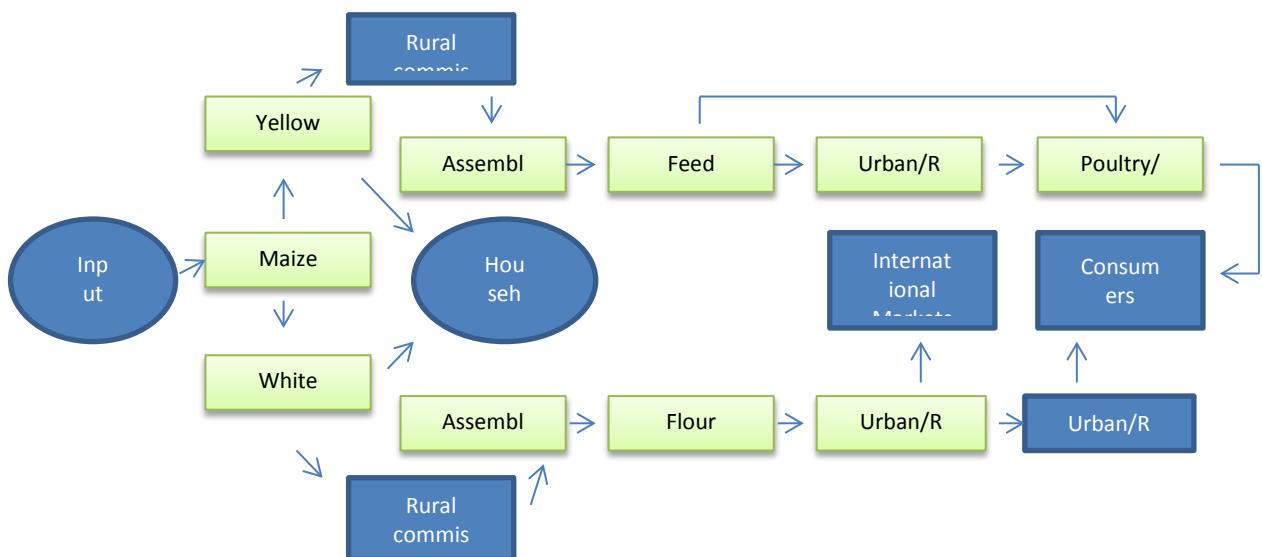
Source: Nigerian Federal Ministry of Agriculture and Rural Development, 2012

Additional information on prices will be provided in the section “Domestic Prices” (chapter 3), below.

DESCRIPTION OF THE VALUE CHAIN AND PROCESSING

Based on preliminary research and the review of available value chain analysis, two main supply chains can be identified: for direct human consumption and for processing (mainly feed for poultry industry). White maize is primarily used for human consumption, while yellow maize is used for feed and human consumption. According to FAO estimates, white maize accounts for an average of 15-35% of total cereals production (FAO 1994). Although only 18 percent of maize is used for feed (USDA 2005-10), according to IITA estimates (UNIDO 2010 and Olomola 2007) the growth rate of yellow maize chain is projected to outgrow white maize in the near future. Figure 10 is reported as an example of value chain. The graph below merges information on the value chain for human consumption in the Northern Region with information on a national overall value chain (both for direct consumption and processing (UNIDO 2010, Ahmed, 2004)).

Figure 10: Supply chain for Yellow and White Maize, Nigeria

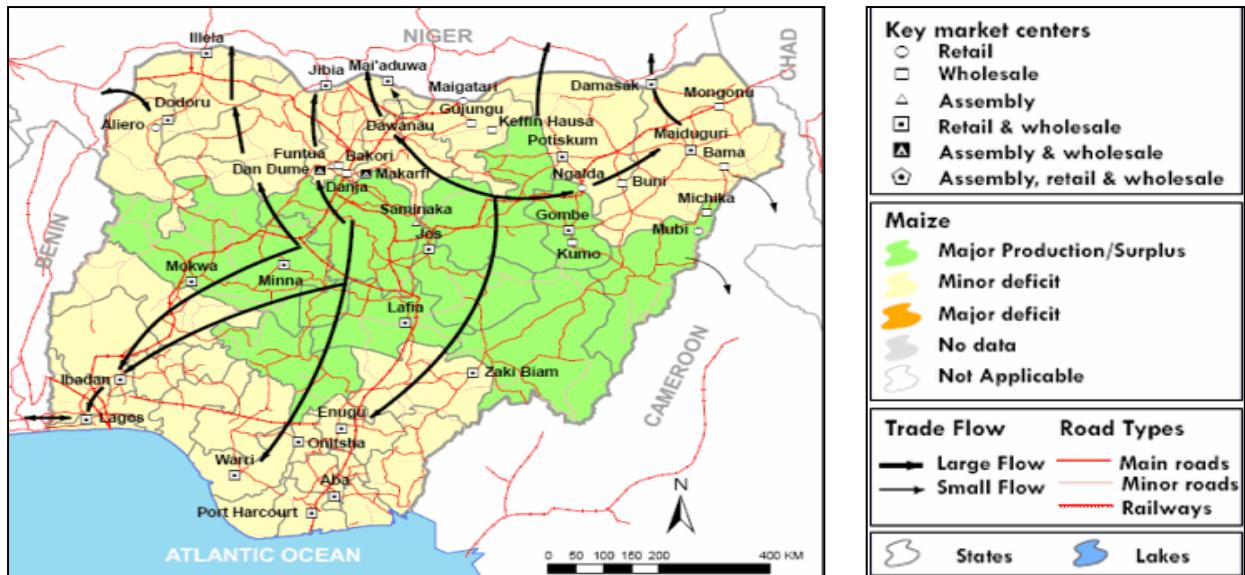


SOURCE: based on IITA (2011) and Ahmed (2004) Value Chain Studies

Although the North Central Region produces one third of maize in the country, most of processing facilities are in the South West (Lagos and Ibadan) and in the North Centre (Kaduna and Kano) (UNIDO 2010). However, USDA (2009) indicates Lagos and Ibadan as the main wholesale markets where imported and locally produced yellow maize compete, particularly for the feed (poultry) industry, due to transport savings for imported maize as compared with domestic production grown in the middle and northern regions.

FEWSNET (2012) confirms the North-Central Region (and the Central Belt in general) as the main surplus area in Nigeria, with flows directed from the North to the deficit areas, mainly towards the South of the country, as well as to neighboring countries (see Figure 11, below)

Figure 11: Map of Nigeria illustrating flow of maize



Source: FEWSNET, 2012. http://www.fews.net/docs/Publications/ng_fullmap_maize_norm.pdf

The structure of costs and prices varies by zone in the country (Table 5). The main producing area, the North-Central zone, has the lowest gross margin rate as compared to the other regions. There is a high degree of heterogeneity in gross margins across regions and across cost items. Labour cost in the North East is approximately 30 percent lower than in other areas, while machinery used (solely) in the South-South region (tractor) account for 20 percent of the total value of output. Input costs (fertilizer, seeds, herbicide and seed dressing) vary widely across states, also reflecting different federal policies. For example, fertilizer in the South-East zone accounts for less than half of the cost in the North-East. Similarly, the cost of seeds varies from 200Naira/ha in the North-Central to 7 300 Naira/ha in the North-East Zone.

The price structure reported below shows the incentives for trade between the different areas and validates the routes identified by FEWSNET (see Table 9, below).

Table 5: Farm gate cost structure, Naira/ha

Zone	North-West Zone	North-East Zone	North-Central Zone	South-West Zone	South-East Zone	South-South Zone
Labour	15,170	4.58	12,300	15,825	20,600	20,000
Seed	750	7,333	500	2,625	1,000	n/a
Fertilizer	6,000	10,000	12,000	11,700	4,000	7,200
Herbicide	n/a	n/a	5,050	4,000	n/a	7,800
Seed dressing	n/a	n/a	500	n/a	n/a	n/a
Insecticide	750	n/a	n/a	n/a	n/a	n/a
Transportation	720	n/a	1,000	n/a	3,000	n/a
Bags	720	1,650	600	n/a	n/a	n/a
Tractor	n/a	n/a	n/a	5,500	n/a	20,000
Water application	n/a	n/a	n/a	3,000	n/a	n/a
total Variable Costs	24,110	20,893.79	31,950	42,650	27,600	55,000
Total Value of Output	25,200	62,700	35,720	64,750	75,000	104,000
Gross Margin	1,090	17,880.40	3,770	22,100	47,400	49,000

Source: NISER 2001 (in Omolola, 2007)

POLICY DECISIONS AND MEASURES

Following to a relative decline in public agricultural expenditure in the post-structural adjustment period, the past decade saw an increasing interest in the sector, with a number of initiatives launched by the Government and the endorsement of a revised National Agricultural Policy in 2005. Building on the regional momentum of the New Partnership for Africa's Development (NEPAD, 2001) and the Comprehensive Africa Agriculture Development Programme (CAADP, 2003), the overall thrust of Nigerian policy decisions and measures is to increase food production, commercialization, and develop the agribusiness sector. The Presidential Transformation Agenda (2011) aims to define agriculture as a business, promotes private sector investment in agriculture, along with the development of private sector driven marketing organizations, and the promotion of Incentive-based Risk Sharing for Agricultural Lending (NIRSA). Although no commodity-specific transformation plan is mentioned for maize (as it is for rice, cassava, sorghum, cocoa, cotton), the agenda targets maize as a primary value chain to be developed in the North-Central Region.

Initiatives are activated through a three-tier Government structure. While the Federal Government provides general guidance on the policy and macroeconomic framework, State and Local Governments are in charge of the implementation. Input procurement and distribution, investment in rural infrastructures, and promotion of marketing institutions are addressed at the State Government Level. The Local Government oversees the local provisions of infrastructures (NAIP).

Currently the Federal Government's direction builds on the development of programmes such as the Special Programme for Food Security (SPFS, 2001), the Fadama II Programme (2003-2009) and the recapitalization of the Nigerian Agricultural, Cooperative and Rural Development Bank (NACRDB, 2004). Particularly, the National Food Security Programme (NFSP) includes trade policies, such as import substitution, marketing/price policies, and the promotion of modern agricultural practices. The National Investment Plan (NAIP, 2011-2014), implementing the CAADP at national level, is guided by a Five-Point Agenda, which is largely consistent with the four CAADP principles. The 5-Point Agenda is characterized by five main pillars: (1) Developing Agricultural Policies and Regulatory System (DAPRS); (2) Agricultural Commodity Exchange Market (ACCOMEX); (3) Raising Agricultural Income with Sustainable Environment (RAISE); (4) Maximizing Agricultural Revenue in Key Enterprises (MARKETS); and (5) Water, Aquaculture and Environmental Resource Management. Although maize was excluded from the focus crops of the Presidential Initiative (2002), it was indeed included among the commodities selected for special focus in the NAIP (cassava, rice, millet, sorghum, wheat, maize, sugar, cow peas, soya beans, tomato cotton, cocoa, and oil palm).

Three initiatives have a general impact on maize, through current public expenditure: Fertilizer policy (procurement and distribution); the National Special Program for Food Security (NSPFS); and the buyer-of-last-resort grain purchase. They represent respectively 43 percent, 22 percent and 26 percent of spending in 2008 (WTO Review 2011), with capital expenditure mainly focused on the purchase of agricultural inputs. However, there are two categories of policies directly impacting maize: price support and input subsidies measures, while the "doubling maize production initiative" was launched to double maize output between 2006 and 2008. However, although the total maize output increased between 2007 and 2008, the total production failed to double in those years (IITA 2006).

Price Support Measures

Guaranteed Minimum Price: The Guaranteed Minimum Price (GMP) Programme is the follow up to the Buyer of Last Resort Grain Programme, formerly run by the Food Reserves Agency. The Buyer of Last Resort Grain Programme's main goal was to develop a buffer stock in response to shortage of cereals, as well as to influence prices by purchasing cereals when markets prices are below threshold (WTO Review, 2011). In 2008, in response to the high food prices crisis, the Government guaranteed minimum price system for purchasing excess produce (FAO/GIEWS 2008), along with the procurement of 650 000 tonnes of fertilizer and the release of 65 000 metric tonnes of grains (no disaggregation for maize available)(IFPRI food Security Portal, 2008). Although the GMP policy involved maize, its impact on the specific cereal is unknown.

Input Subsidies: Fertilizer Policy

Both State and Federal Government can provide fertilizer to farmers as input support. However, contribution varies considerably between one state to the other, and between one year to the other. The Federal Market Stabilization Programme (FMSP) allows companies to produce and import fertilizer and allocate it to state governments with a 25 percent subsidy. Additionally, State Governments can add further to the subsidy. The National Investment Plan (NAIP) sets a target of 30 percent increase of fertilizer use in the period 2010-2015, with an overall demand expected to grow from 2.6 to 3.4 million tonnes by 2015. There are three main initiatives within the NAIP actively targeted towards the increase in fertilizer use: (1) the Organic Fertilizer Development Programme (OFDP) promotes the use of organic fertilizer through a Public Private Partnership (PPP) approach; (2) the Fertilizer Quality Control (FQC) project aims at increasing the quality of fertilizer used and distributed; and (3) the National Foundation Seed Multiplication aims at releasing high quality foundation seeds to certified producers. The Presidential Transformation Agenda promotes private sector involvement in input distribution, to minimize inefficiencies due to the translation of national policies at state level. Promoted within the Transformation Agenda, the fertilizer voucher program, trialed in Taraba, has reached 8 times as many farmers as input distribution by the public sector.

Trade policy

Nigeria trade policy is linked to the recently revised Common External Tariff Regime (CET) of the ECOWAS community. The CET was first adopted by the ECOWAS states in 2005 and subsequently revised in 2009 to include a fifth band of 35 percent, in addition to the four tariff bands on which the ECOWAS member states agreed upon, to meet Nigeria's request to protect its nascent industries and sub-sectors. Nigeria is currently applying the 35 percent tariff line on 167 tariff line items (World Bank, 2010). The country's average MFN (Most Favourite Nation) tariff stands now at 12 percent. While the average tariff, for agricultural products, is 16.5 percent.

The restrictive trade policy adopted by Nigeria is also reflected with non-African partners. Nigeria rejected in 2008 an economic partnership agreement (EPA) with the European Union (ECOWAS Commission, 2008). Nigeria declared no domestic support or export subsidies to the WTO Committee on Agriculture during the 1995-2009 periods (WTO 2011), with agriculture contributing an average of 4 percent to the national GDP (WTO Review, 2011).

The Federal Government of Nigeria prohibited the importation of a number of agricultural commodities in 2004, as an incentive to the development of local production. Import of maize was banned between 2005 and 2008, although there is conflicting information on when the prohibition became actually active. USAID,

for example, noted that the ban became effective starting on 2006 (USDA 2005-2010). Although some imports are still recorded, there is a steep decline in quantities between 2007 and 2009, persisting also after the removal of the ban (FAOSTAT, 2012). Following the cancellation of maize from the Import Prohibition list, a tariff of 5 percent was applied to its imports (USDA, 2010; WITS 2012)². As for the tariff on maize imports following September 2008, conflicting information is available: while the WTO Trade Policy Review (2011) indicates a tariff of 109 percent, USDA, WITS and partial information from Nigeria Customs indicate that the tariff is set at 5 percent. Additionally, there is export prohibition on maize since 2009. It is unclear whether the prohibition was in place previously, between 2005 and 2008; however, the negligible formal exports in those years suggest that it was (WTO Policy Review, 2011) (Table 6).

Table 6: Summary of Import/Exports Ban in Nigeria, 2005-2010

	2005	2006	2007	2008	2009	2010
Import Ban	Active	Active	Active	Active	5% Tariff	5% Tariff
Export Ban	n/a	n/a	n/a	n/a	Active	Active

Source: Own Calculation based on USDA, WITS, Nigeria Customs and WTO data

² WTO Trade Review mentions a tariff of 109%.

3. DATA REQUIREMENTS, DESCRIPTION AND CALCULATION OF INDICATORS

TRADE STATUS OF THE PRODUCTS

To calculate the indicators needed to estimate incentives or disincentives to production (NRP, NRA) as well as the Market Development Gaps (MDGs), several types of data are needed. They were collected and are presented and explained hereafter.

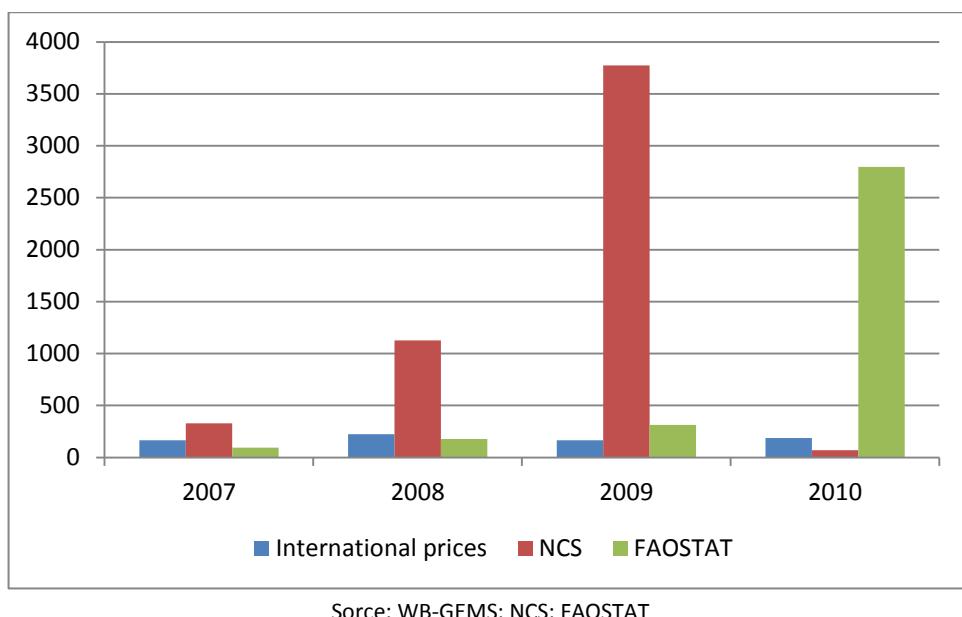
As discussed above, even if maize is thinly traded, Nigeria is considered a net importer for all years under review, and the trade status of the country will be set as 'import' for all years analyzed.

BENCHMARK PRICES

Observed

Since Nigeria is a net importer of maize , the CIF price was taken as benchmark price. Data provided by the Nigeria Customs Service (NCS) are based on very few trade flows, for instance in 2007 only imports from the United States were taken into account. Furthermore, there are considerable inconsistencies in the data on imports and exports of Nigeria across available data sources.

Figure 12: Comparison of maize benchmark prices from different sources



Sorce: WB-GEMS; NCS; FAOSTAT

Therefore, FOB prices of one of the main countries exporting maize to Nigeria was converted into CIF and used as benchmark.

When looking at Nigeria as reporting partner in GTA, the US and South Africa are both the main exporters to the country for two years within the series. The US appears to be the main partner in 2007 and 2010, while South Africa in 2008 and 2009 (see Table 7).

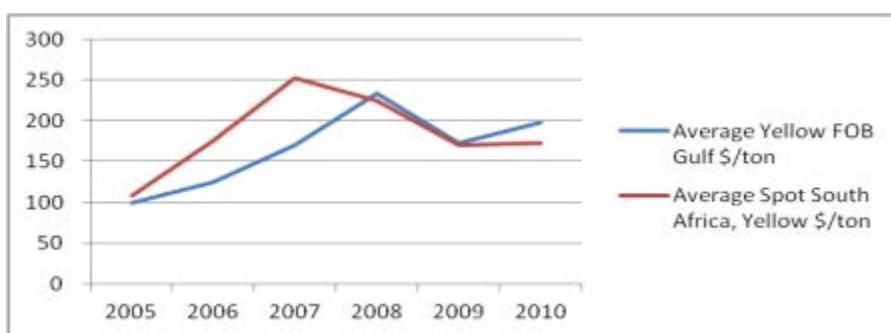
Table 7: Quantity (tonne) imported to Nigeria by the US and South Africa (2007-2010)

	2007	2008	2009	2010
United States	7	3	0	6554
South Africa	0	8	97	183
Main exporter	US	SA	SA	US

Source: GTA, 2012 – Nigeria as reporting country

A comparison between FOB export prices in the United States (as reported by IGC) and spot prices in South Africa (as reported by Safex), showed an overall compatibility of trend, as illustrated in the Figure 13, below. Therefore, US FOB export prices were eventually used to construct the benchmark price. Additionally, to guarantee a higher level of accuracy, FOB prices were selected as reported by the International Trade Council (IGC), rather than by GTA.

Figure 13: FOB United States vs. spot Prices South Africa, 2005-2010



Source: IGC (US) and Safex (South Africa), 2012

The benchmark price was calculated by converting FOB export prices of the US (IGC) into CIF import prices for Nigeria. Initially it was tried to add (aside from the 1 percent insurance cost), the cost of freight to Nigeria. However, since no detailed data was available on the latter, nor to the neighboring countries, the benchmark price was obtained by adding the freight cost from the US Gulf to South Africa. It is noted that both freight to South Africa and Egypt were available (55.8 and 49 USD/tonne respectively) and similar in price (with a 13 percent difference), and South Africa was chosen since it was the higher cost, therefore approximating by excess. Table 8, below, shows the calculations made to obtain the reference price.

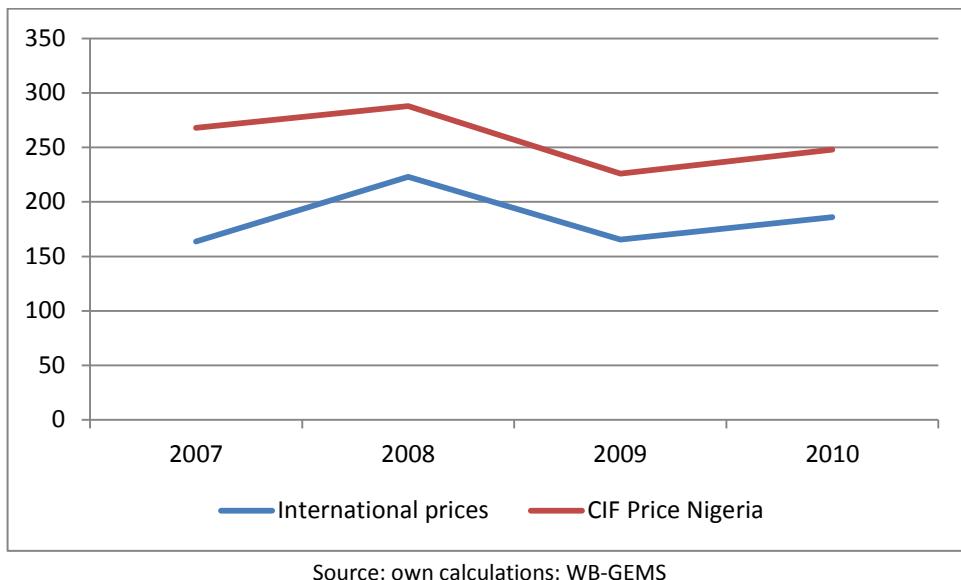
Table 8: Calculations to obtain the benchmark price

	2005	2006	2007	2008	2009	2010
Freight Costs Gulf to South Africa	35	51	96	53	52	49
Average Yellow FOB Gulf USD/tonne	99	125	170	233	172	197
FOB + 1% of FOB (insurance)	99.99	126.25	171.8683	235.7891	173.8883	199.3908
CIF Price Nigeria USD/tonne	135	178	268	288	226	248

SOURCE: own calculations, based on IGC freight rates (Gulf to South Africa)

The validity of such a choice is further confirmed by comparing our calculated benchmark price with international prices reported by the world bank.

Figure 14: Comparison between international prices and CIF Price Nigeria(USD/Tonne)



Source: own calculations; WB-GEMS

As for the choice between yellow and white maize, the US is a yellow maize exporter; however, farm gate and wholesale prices available in the domestic market do not distinguish between white and yellow maize, therefore more information would be needed for this analysis to take quality into consideration.

DOMESTIC PRICES

Lagos was chosen as point of competition (where the imported maize competes with the locally produced cereal) for two main reasons: (1) Lagos is one of the ports of entry for imported maize and also a market where domestic maize from the central and Northern regions is traded; the main processing industries are located in the Lagos/Ibadan area, and most of the imported maize tends to remain in the Lagos/Ibadan area, due to high transportation costs to the surplus areas (USDA 2009); (2) GIEWS/Fewsnet Pathways indicate surplus maize from the Northern Belt (main surplus area, with Kaduna as main producing State) to move towards the South (main deficit area).

More in-depth information on the informal trade pathways and volumes could set the main wholesale market (Kano) as point of competition, since Kano is one of the main hubs of informal trade flows with neighbouring countries (as discussed in section 2.c, above). However, although information on informal trade suggests that Kano is the export hub to the northern countries, despite the export ban, there is insufficient information on the marketing chain of the informally traded commodity, and this analysis will focus on the Southern part of the chain (Kaduna – Lagos – World).

Wholesale prices

Observed

Since wholesale prices were available for Kano market only (GIEWS), wholesale prices for Lagos were calculated by applying the ratio between wholesale and retail prices in Kano to the Lagos market, as shown in Table 8, below. Due to data gaps, the calculated wholesale prices for Lagos are available from 2007 to 2010 only.

Table 8: Lagos wholesale prices calculations

	2007	2008	2009	2010
Kano - Maize Wholesale Prices, Yearly Average (Naira/tonne)	29,754	59,083	55,833	49,833
Kano - retail price (Nair/tonne)	33,647	54,209	61,499	54,446
Ratio Kano wholesale/Kano Retail	0.88	1.09	0.91	0.92
Lagos Wholesale Price, calculated Naira/tonne	57,896	96,862	92,905	81,459

Source: own calculations, based on MOA and GIEWS data, 2012

Farm Gate prices

Observed

Farm gate prices are collected by the National Bureau of Statistics (NBS) and are available for the years 2006-2009. Farm gate prices are higher in the main producing state (Kaduna), than farm gate prices in Kano, and Kaduna prices are close to the national average (see Table 9, below). Eventually Kaduna farm gate prices were chosen for the analysis, since the state is the main producer in the country and GIEWS study on pathways indicates the commodity travels from surplus to deficit area (including South-West Lagos area).

Table 9: Farm Gate Prices by State, 2006-2009 (Naira/kg)

	2006	2007	2008	2009
Kaduna	25.02	25.29	25.03	24.75
Kano	20.67	20.86	23.95	25.61
Lagos	26.13	25	30.58	27.26
National	24.44	24.37	24.74	25.3

SOURCE: NBS, 2012

Kaduna Farm Gate Prices for the year 2010 were obtained by dividing Kaduna retail prices in 2010 by the average ratio between Kaduna Farm gate and retail prices in the available years (2007-2009), as shown in Table 10 below.

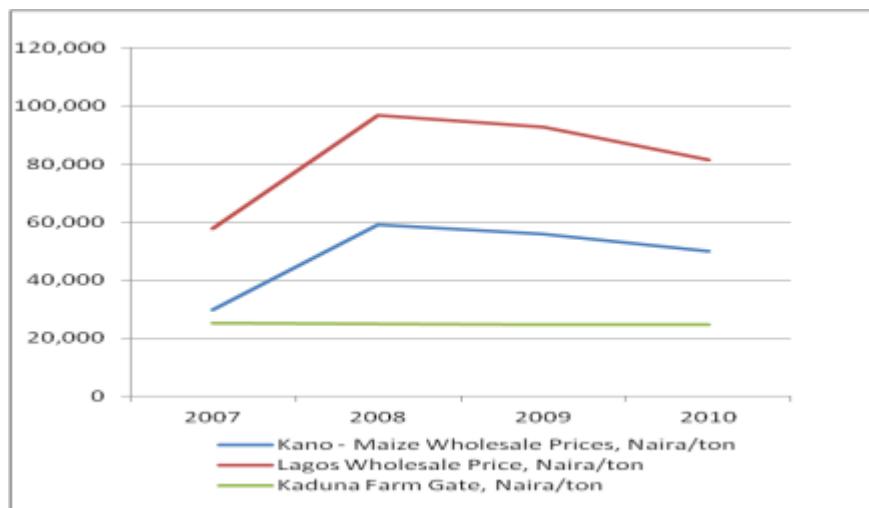
Table 10: Calculation of Kaduna farm gate prices for 2010, Naira/tonne

	2005	2006	2007	2008	2009	2010
Kaduna Farm Gate, Naira/tonne		25,020	25,290	25,030	24,750	24,520
Kaduna Retail Prices			33,008	60,591	60,757	50,518
Ratio Kaduna Farm Gate/Retail Prices			1.31	2.42	2.45	

SOURCE: own calculation based on NBS and MOA data, 2012

Figure 13 compares the trends of farm gate prices in Kaduna and wholesale prices in Kano and Lagos. While confirming that selected and calculated wholesale prices are higher than farm gate, the graph indicates that the price trend in farm gate prices is more stable as compared to wholesale. Although there is no indication in the literature that the following happens in the maize value chain, it is noted that in the rice value chain, for example, the retail (and wholesale) prices vary according to changes in international prices, regardless of the stability of prices at farm gate (USAID, 2011). It is possible that a similar pattern is present in the maize value chain.

Figure 15: Farm gate prices in Kaduna and wholesale prices in Kano and Lagos, Naira/tonne 2007-2010



SOURCE: own calculations on the basis of GIEWS and NBS data, 2012

EXCHANGE RATES

Observed

Exchange rate for the years under review is shown in Table 11, below. Although there is a possibility that the exchange rate might be overvalued (WTO Trade review and IMF, 2011), more information is required to adjust the exchange rate accordingly.

Table 11: Nigeria Exchange Rate, Naira/USD

	2005	2006	2007	2008	2009	2010
Exchange Rate Observed	131.27	128.65	125.81	118.55	148.90	150.30

Source: IMF, Annual Average

ACCESS COSTS

Access costs point of competition-farm gate

Observed

Observed access costs between the farm gate and the point of competition are calculated on the observation of costs incurred during transport of maize from the Giwa market to Katsina (Northern Nigeria, 232 km), and by applying the same cost structure to the distance between Kaduna and Lagos (784 km) (Ahmed, 2005). Total cost includes: non- tariffs measures, loading, union fee, and taxes to the Local Government (taxes paid to Giwa states were adjusted to cover the longer distance between Kaduna and Kano), petrol costs and transporter's margins. The table below summarizes the disaggregated items.

Table 12: Transaction costs, Kaduna to Lagos

Transporters' costs	Naira/tonne
Union fee in the market	67
LGA produce loading revenue	236
Loading N10 x 200	674
Non-Tariff Measures	169
Gas/Diesel	5,393
Total expenses	6,539
Net income	3,573
Total costs incurred during transport, including transporter's margin	10,112

Source: Own calculations, based on Ahmed, 2005

In addition to the above, the observed access costs from farm gate (Kaduna) to the point of competition (Lagos) include the average rural assembler profit, the rural commission agents fee (considered as a service), and the commission agents margins, as summarized in Table 14 below.

Table 13: Transaction costs, Kaduna to Lagos

Rural Assembler Profit (6.2% of Farm Gate)	1,544
Rural Commission Agents (0.55% of Farm Gate)	137
Total costs incurred during transport, including transporter's margins (from Kaduna to Lagos)	10,112
Commission agents margin (1.2% of retail)	1,037
Observed Access Costs	12,830

Source: Own calculations, based on Ahmed, 2005

Since there is no disaggregated information for the different years under analysis, is the analysis assumed that the observed access costs remain the same through 2007 to 2010?

Adjusted

Access costs were adjusted to account for market inefficiencies and non-tariff measures costs during transport from farm gate to point of competition. Specifically, since there is no evidence of excess profit margin for the different agents (considering all reported agents' margins were below 10 percent), only non-tariff measures were subtracted from the observed access costs, as illustrated in Table 15, below.

Table 14: Adjusted Access costs

Observed Access Costs	12,830
Non-tariff Measures	169
Adjusted Access Costs	12,661

Source: Own calculations, based on Ahmed, 2005

Access cost border – point of competition

Observed

Observed access costs at point of competition include handling costs and primary marketing (including assembly, cost of bags, and intermediary margins). Due to the minimal distance between the port and wholesale in Lagos, our analysis assumes that transport to the point of competition is equal to zero.

Landing and port charges are calculated as 8USD per tonne of the price of imported maize (WB, 2011). Primary marketing is calculated at 15.45 percent of benchmark price (Gittinger, WB, 1984)

Table 15: Calculation of Observed access cost border- point of competition

	2,007	2,008	2,009	2,010
ACOwh	6,233	6,247	6,401	6,979
Handling (8 USD per tonne), Naira/tonne	1,006	948	1,191	1,202
15.5% of benchmark	5,227	5,299	5,210	5,777

Source: own calculations, based on WB 2011 and Gittinger 1984

Adjusted

Access costs were adjusted to account for transport inefficiencies during transport from border to point of competition (Lagos retail)

Since detailed information on logistics performance in Nigeria is not available, the adjustment was calculated on the basis of the World Bank Logistic Performance Index (LPI). LPI rates country's performance on their efficiency in customs, infrastructure, handling of international shipments, logistics competence, tracking and tracing, and timeliness. On a maximum score of 5, Nigeria scores 2.59 on the LPI, meaning that its efficiency rate is 48 percent lower than the optimum. Germany is the most efficient country in the ranking with a LPI score of 4.1. Considering that LPI scorecard includes both developing and developed countries, the best performing country in Africa (South Africa) was used as a benchmark to calculate Nigeria's inefficiency relative to the region. South Africa scores 3.46 on the LPI, meaning that Nigeria is 25 percent less efficient than the regional benchmark. Therefore, the adjusted access costs from border to point of competition were calculated by subtracting 25 percent from the observed Access costs.

EXTERNALITIES

No specific externality is recorded

BUDGET AND OTHER TRANSFERS

Although input support (mainly fertilizer) policies are in place, we are not aware of their specific disaggregation and impact on the maize sector.

QUALITY AND QUANTITY ADJUSTMENTS

Additional information should be gathered on the quality difference between imported and domestically produced maize which will be incorporated in the quality adjustment factor.

DATA OVERVIEW

The following table summarizes the main sources and methodological decisions taken for the analysis of price incentives and disincentives for maize in Nigeria.

		<i>Description</i>	
<i>Concept</i>		<i>Observed</i>	<i>Adjusted</i>
Benchmark price		▪ FOB US (as reported by IGC) plus insurance and freight costs from US Gulf to South Africa	N.A.
Domestic price at point of competition		▪ <i>Lagos Wholesale price.</i>	N.A.
Domestic price at farm gate		▪	N.A.
Exchange rate		▪ Annual average of exchange rate as reported by IMF	N.A.
Access cost between border and point of competition		▪ Observed access costs at point of competition include handling costs and primary marketing (including assembly, cost of bags, and intermediary margins).	▪ the adjustment was calculated on the basis of the World Bank Logistic Performance Index (LPI).
Access costs between farm gate and point of competition		▪ Observed access costs include: non-tariffs measures, loading, union fee, taxes to the Local Government, petrol costs, transporter's margins, average rural assembler profit, rural commission agents fee, and the commission agents margins	▪ Observed with the subtraction of non-tariffs measures
QT adjustment	Bor-Wh	N.A.	N.A.
	Wh-FG	N.A.	N.A.
QL adjustment	Bor-Wh	N.A.	N.A.
	Wh-FG	N.A.	N.A.

The data used for the analysis is summarized in the following table:

		Year	2007	2008	2009	2010
		trade status				
DATA	Unit	Symbol	m	m	m	m
Benchmark Price						
Observed	USD/TONNE	P _{b(int\$)}	268.04	288.37	225.72	247.97
Adjusted	USD/TONNE	P _{ba}				
Exchange Rate						
Observed	Naira/USD	ER _o	125.81	118.55	148.90	150.30
Adjusted	Naira/USD	ER _a				
Access costs border - point of competition						
Observed	Naira /TONNE	AC _{owh}	6,233	6,247	6,401	6,979
Adjusted	Naira /TONNE	AC _{awh}	4,675	4,685	4,801	5,234
Domestic price at point of competition	Naira /TONNE	P _{dwh}	57,896	96,862	92,905	81,459
Access costs point of competition - farm gate						
Observed	Naira /TONNE	AC _{ofg}	12,830	12,830	12,830	12,830
Adjusted	Naira /TONNE	AC _{afg}	12,661	12,661	12,661	12,661
Farm gate price	Naira /TONNE	P _{dfg}	25,290	25,030	24,750	24,520
Externalities associated with production	Naira /TONNE	E				
Budget and other product related transfers	Naira /TONNE	BOT				
Quantity conversion factor (border - point of competition)	Fraction	QT _{wh}				
Quality conversion factor (border - point of competition)	Fraction	QL _{wh}				
Quatity conversion factor (point of competition – farm gate)	Fraction	QT _{fg}				
Quality conversion factor (point of competition – farm gate)	Fraction	QL _{fg}				

CALCULATION OF INDICATORS

The indicators and the calculation methodology used is described in Box 1. A detailed description of the calculations and data requirements is available on the MAFAP website or by clicking [here](#).

Box 1: MAFAP POLICY INDICATORS

MAFAP analysis uses four measures of market price incentives or disincentives. *First*, are the two observed nominal rates of protection one each at the wholesale and farm level. These compare observed prices to reference prices free from domestic policy interventions.

Reference prices are calculated from a benchmark price such as an import or export price expressed in local currency and brought to the wholesale and farm levels with adjustments for quality, shrinkage and loss, and market access costs.

The **Nominal Rates of Protection - observed (NRPo)** is the price gap between the domestic market price and the reference price divided by the reference price at both the farm and wholesale levels:

$$NRPo_{fg} = (P_{fg} - RPo_{fg})/RPo_{fg}; \quad NRPo_{wh} = (P_{wh} - RPo_{wh})/RPo_{wh};$$

The $NRPo_{fg}$ captures all trade and domestic policies, as well as other factors which impact on the incentive or disincentive for the farmer. The $NRPo_{wh}$ helps identify where incentives and disincentives may be distributed in the commodity market chain.

Second are the **Nominal Rates of Protection - adjusted (NRPa)** in which the reference prices are adjusted to eliminate distortions found in developing country market supply chains. The equations to estimate the adjusted rates of protection, however, follow the same general pattern:

$$NRPa_{fg} = (P_{fg} - RPa_{fg})/RPa_{fg}; \quad NRPa_{wh} = (P_{wh} - RPa_{wh})/RPa_{wh};$$

MAFAP analyzes market development gaps caused by market power, exchange rate misalignments, and excessive domestic market costs which added to the NRPO generate the NRPa indicators. Comparison of the different rates of protection identifies where market development gaps can be found and reduced.

With the data described above we obtain the price gaps summarized in Table 16, and nominal rates of protection in Table 18, for the period 2007-2010.

Table 16: MAFAP price gaps for Maize in Nigeria 2007-2010 (Naira per Mt)

	2007	2008	2009	2010
Trade status for the year	m	m	m	m
Observed Price gap at point of competition	17,942.07	56,429.04	52,893.36	37,209.37
Adjusted Price gap at point of competition	19,500.37	57,990.81	54,493.56	38,954.18
Observed price gap at farm gate	(1,834.52)	(2,572.84)	(2,431.50)	(6,899.60)
Adjusted price gap at farm gate	(444.75)	(1,179.60)	(999.83)	(5,323.32)

Source: Own calculations using data as described above.

Table 17: MAFAP nominal rates of protection (NRP) for Maize in Nigeria 2007-2010 (%)

	2007	2008	2009	2010
Trade status for the year	m	m	m	m
Observed Nominal rate of protection at point of competition	44.91%	139.56%	132.20%	84.09%
Adjusted Nominal rate of protection at point of competition	50.79%	149.19%	141.87%	91.65%
Observed Nominal rate of protection at farm gate	-6.76%	-9.32%	-8.95%	-21.96%
Adjusted Nominal rate of protection at farm gate	-1.73%	-4.50%	-3.88%	-17.84%

Source: Own calculations using data as described above.

Table 18: MAFAP Market Development Gaps for Maize in Nigeria 2007-2010 (Naira per Mt)

	2007	2008	2009	2010
International markets gap	-	-	-	-
Exchange policy gap	-	-	-	-
Access costs gap to point of competition	1,558.30	1,561.78	1,600.20	1,744.81
Access costs gap to farm gate	(168.53)	(168.53)	(168.53)	(168.53)
Externality gap	-	-	-	-
Market Development Gap	1,389	1,393	1,431	1,576
Market Development Gap (%)	0.05	0.05	0.06	0.05

Source: Own calculations using data as described above.

4. INTERPRETATION OF THE INDICATORS

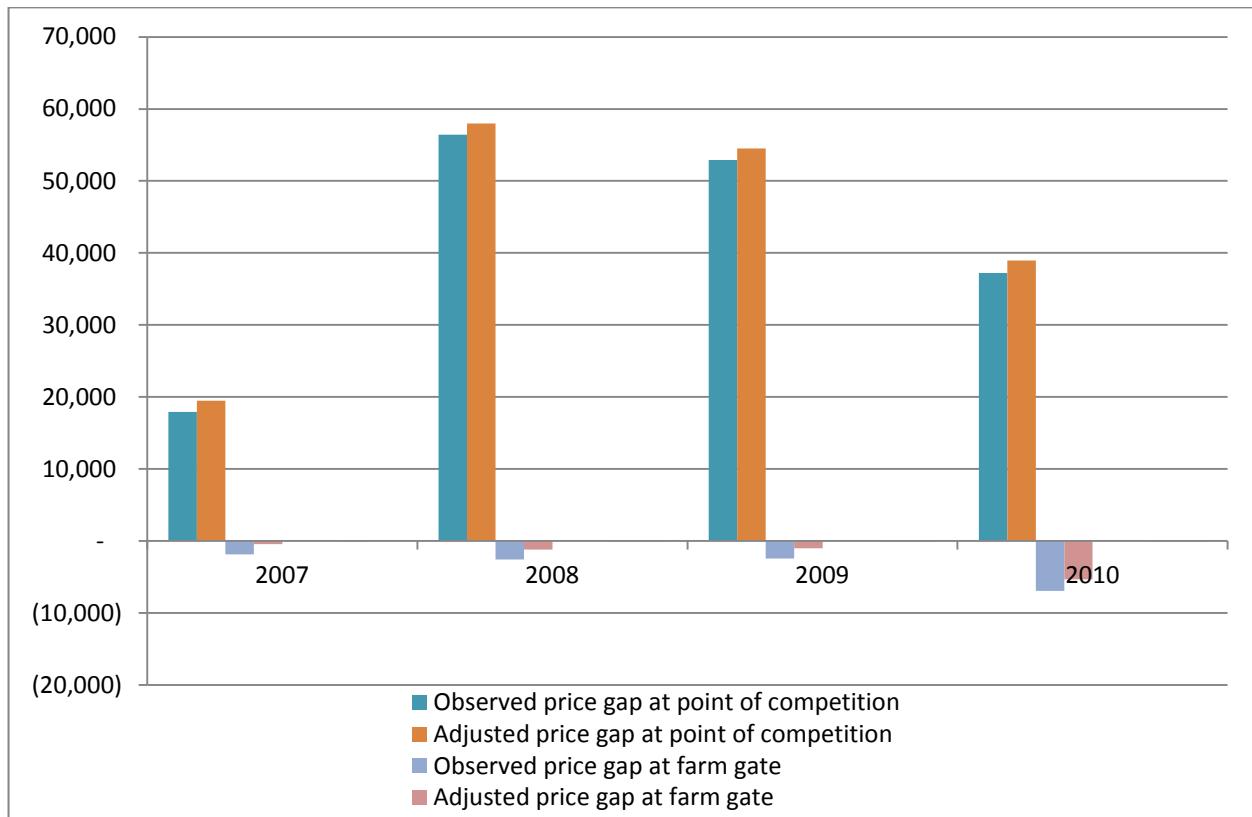
Figures 14 and 15, below, show observed and adjusted price gaps at wholesale and farm levels, as well as observed and adjusted nominal rates of protection at wholesale and farm levels. Based on these indicators, MAFAP methodology observes incentives and disincentives for producers and traders, depending on national policies and domestic and international prices.

Price gaps and nominal rates of protection at point of competition.

As illustrated in Figure 14, both observed and adjusted price gaps at point of competition are positive, showing an incentive for traders for the entire timeframe under review (2007-10). Specifically, the gap increases between 2007 and 2008, with a peak in 2008 (56 429 Naira/tonne), and then decreases between 2008 and 2010. The nominal rate of protection is above 100 percent in 2008 and 2009. Observing the difference between observed reference price and domestic price at point of competition, it is noted that the reference price is on average half of the domestic price during the period 2007-2010, and that the difference is particularly high in 2008, when the reference price at point of competition (40 432 Naira/tonne) is less than half (42 percent) of the domestic price at point of competition (96,862 Naira/tonne). The difference between the two is lowest in 2007, when the reference price at point of competition (39 954 Naira/tonne) in 2007 is 69 percent of the domestic price at point of competition (57 896 Naira/tonne). The adjusted price gaps at point of competition and adjusted nominal rates of protection at point of competition are higher than the observed, showing a further incentive for traders, when market inefficiencies are taken into consideration.

In terms of trade policies, the timeframe under revision can be divided in two main periods: import prohibition between 2007 and 2008, and 5 percent import tariff, between 2009 and 2010. However, despite the decrease in the price gap at point of competition, in 2009 and 2010, as compared to 2008, it is noted that the price gap at point of competition was particularly low in 2007, suggesting that other reasons aside than trade policies should be taken into consideration to explain traders' incentives.

Figure 14: Observed and adjusted price gaps at wholesale and production levels

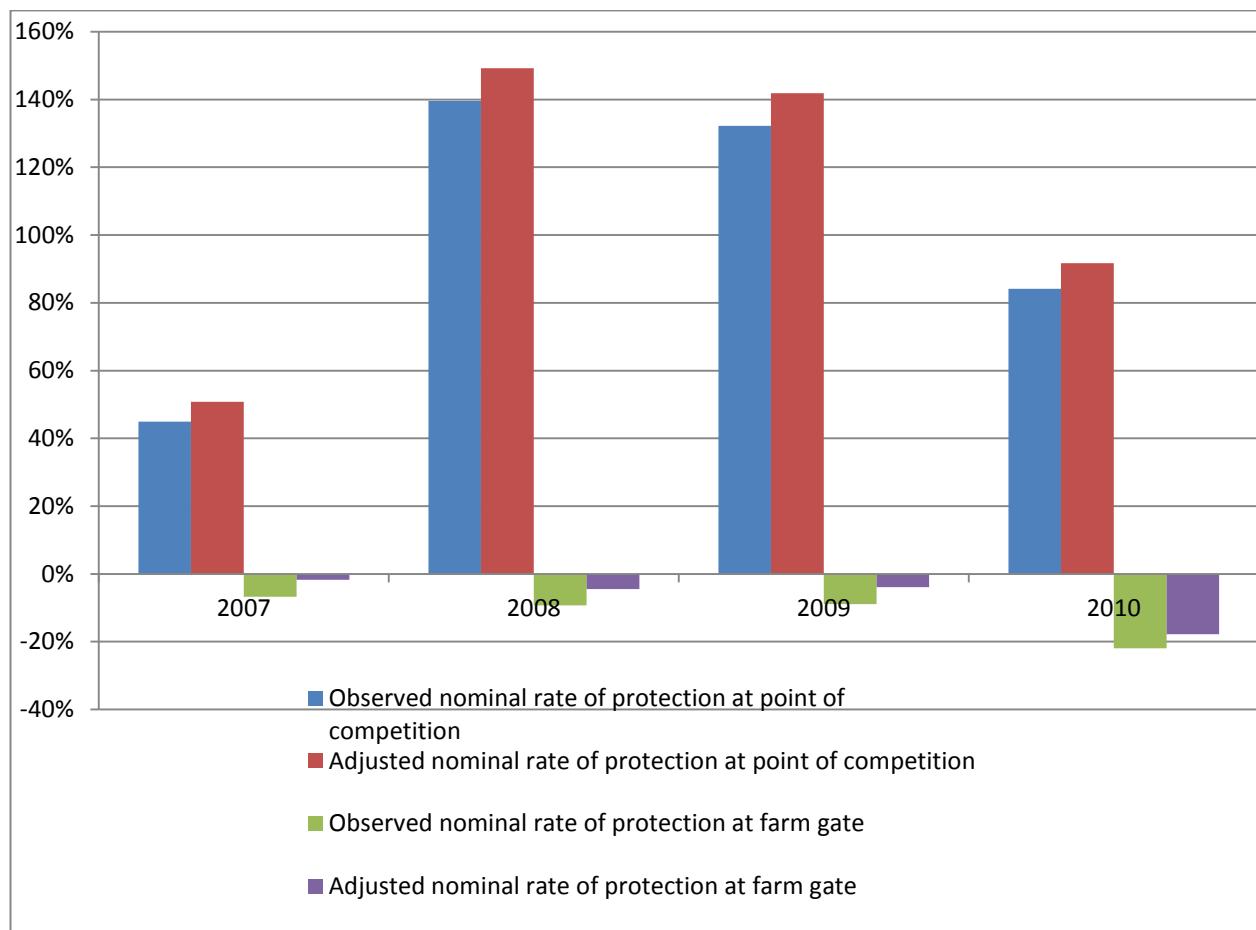


SOURCE: calculation of indicators

Price gaps and nominal rates of protection at farm gate

The observed and adjusted price gaps at farm gate, as well as nominal rates of protection (Figure 14 and 15), are negative for the timeframe under review (2007-2010), showing a disincentive for farmers during the entire period. The adjusted price gap and nominal rate of protection at farm gate are lower (in absolute terms) as compared with the observed, showing that the disincentive for farmers is lower when market inefficiencies are taken into consideration. Price gap and nominal rate of protection at farm gate reach their maximum in 2010, with a peak of observed 6,899 Naira/tonne and -22 percent respectively. The increase of the gap between 2007 and 2010 shows that the disincentive for farmers is growing, despite the policies in place during those years to support production.

Figure 15. Observed and adjusted nominal rates of protection at wholesale and farm levels



SOURCE: calculation of indicators

5. PRELIMINARY CONCLUSIONS AND RECOMMENDATIONS

MAIN MESSAGE

The positive price gap at point of competition between 2007 and 2010 shows an incentive for traders, while the negative gap at farm gate for the same years shows a disincentive for farmers during the entire timeframe under consideration.

The incentive for traders peaked in 2008, suggesting that traders profited the most from the spike in international prices.

On the other hand farmers have consistently received disincentives, reaching a negative peak in 2010. Thus policies in place between 2007 and 2010 did not seem to benefit particularly farmers

PRELIMINARY RECOMMENDATIONS

Preliminary recommendation can be provided when detailed and disaggregated information on access costs becomes available.

LIMITATIONS

Conflicting information on trade, tariffs, import and export bans.

Data gaps on farm gate, retail and wholesale prices.

Similarly, the understanding of the value chain and trade flow/pathways within the country has been limited from the scarcity of in-depth value chain analysis.

FURTHER INVESTIGATION AND RESEARCH

In-depth value chain analysis would be needed to have a better understanding of pathways across different states.

Given the high tariffs and import prohibitions for most of the years under review, the incentive and disincentive analysis could strongly benefit from an in-depth study of informal trade and its pathways.

Considering the data gaps on prices (farm gate, retail and wholesale), and the conflicting and partial information on trade flows (imports and exports), more accurate data could provide a better understanding of incentives and disincentives.

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ANNEX I: Methodology Used

A guide to the methodology used by MAFAP can be downloaded from the MAFAP website or by clicking [here](#).

ANNEX II: Data and calculations used in the analysis

DATA	Unit	Symbol	trade status	Year	2007	2008	2009	2010
					m	m	m	m
Benchmark Price								
Observed	XXX/TON	P _{b(int\$)}			268.04	288.37	225.72	247.97
	Adjusted	XXX/TON	P _{ba}					
Exchange Rate								
Observed	YYY/XXX	ER _o			125.80	118.55	148.90	150.30
	Adjusted	YYY/XXX	ER _a		125.80	118.55	148.90	150.30
Access costs border - point of competition								
Observed	YYY/TON	ACo _{wh}			6,233.00	6,247.00	6,401.00	6,979.00
	Adjusted	YYY/TON	ACa _{wh}		4,675.00	4,685.00	4,801.00	5,234.00
Domestic price at point of competition								
	YYY/TON	P _{dwh}			57,896.00	96,862.00	92,905.00	81,459.00
Access costs point of competition - farm gate								
Observed	YYY/TON	ACo _{fg}			12,830.00	12,830.00	12,830.00	12,830.00
	Adjusted	YYY/TON	ACa _{fg}		12,661.00	12,661.00	12,661.00	12,661.00
Farm gate price								
Externalities associated with production	YYY/TON	P _{dfg}			25,290.00	25,030.00	24,750.00	24,520.00
Budget and other product related transfers	YYY/TON	BOT						
Quantity conversion factor (border - point of competition)	Fraction	QT _{wh}			1.00	1.00	1.00	1.00
Quality conversion factor (border - point of competition)	Fraction	QL _{wh}			1.00	1.00	1.00	1.00
Quantity conversion factor (point of competition - farm gate)	Fraction	QT _{fg}			1.00	1.00	1.00	1.00
Quality conversion factor (point of competition - farm gate)	Fraction	QL _{fg}			1.00	1.00	1.00	1.00

CALCULATED PRICES	Unit	Symbol	2007	2008	2009	2010	
Benchmark price in local currency							
	Observed	YYY/TON	P _{b(loc\$)}	33,719.43	34,186.26	33,609.71	37,269.89
	Adjusted	YYY/TON	P _{b(loc\$)a}	33,719.43	34,186.26	33,609.71	37,269.89
Reference Price at point of competition							
	Observed	YYY/TON	RPO _{wh}	39,952.43	40,433.26	40,010.71	44,248.89
	Adjusted	YYY/TON	RPA _{wh}	38,394.43	38,871.26	38,410.71	42,503.89
Reference Price at Farm Gate							
	Observed	YYY/TON	RPO _{fg}	27,122.43	27,603.26	27,180.71	31,418.89
	Adjusted	YYY/TON	RPA _{fg}	25,733.43	26,210.26	25,749.71	29,842.89

INDICATORS	Unit	Symbol	2007	2008	2009	2010	
Price gap at point of competition							
	Observed	YYY/TON	PGO _{wh}	17,943.57	56,428.74	52,894.29	37,210.11
	Adjusted	YYY/TON	PGA _{wh}	19,501.57	57,990.74	54,494.29	38,955.11
Price gap at farm gate							
	Observed	YYY/TON	PGO _{fg}	(1,832.43)	(2,573.26)	(2,430.71)	(6,898.89)
	Adjusted	YYY/TON	PGA _{fg}	(443.43)	(1,180.26)	(999.71)	(5,322.89)
Nominal rate of protection at point of competition							
	Observed	%	NRPO _{wh}	44.91%	139.56%	132.20%	84.09%
	Adjusted	%	NRPA _{wh}	50.79%	149.19%	141.87%	91.65%
Nominal rate of protection at farm gate							
	Observed	%	NRPO _{fg}	-6.76%	-9.32%	-8.94%	-21.96%
	Adjusted	%	NRPA _{fg}	-1.72%	-4.50%	-3.88%	-17.84%

Nominal rate of assistance	Observed	%	NRAo	0.06756149	0.09322316	0.08942769	0.2195778
	Adjusted	%	NRAa	-1.72%	-4.50%	-3.88%	-17.84%

Decomposition of PWAfg	Unit	Symbol	2007	2008	2009	2010
International markets gap	YYY/TON	IRG	-	-	-	-
Exchange policy gap	YYY/TON	ERPG	-	-	-	-
Access costs gap to point of competition	YYY/TON	ACG _{wh}	1,558.00	1,562.00	1,600.00	1,745.00
Access costs gap to farm gate	YYY/TON	ACG _{fg}	(169.00)	(169.00)	(169.00)	(169.00)
Externality gap	YYY/TON	EG	-	-	-	-
Market Development Gap	YYY/TON	MDG	1,389.00	1,393.00	1,431.00	1,576.00
Market Development Gap	%	MDG	0.05	0.05	0.06	0.05



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