



MAFAP SPAANA

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

ANALYSIS OF INCENTIVES AND DISINCENTIVES FOR GROUNDNUTS IN GHANA

Draft Version

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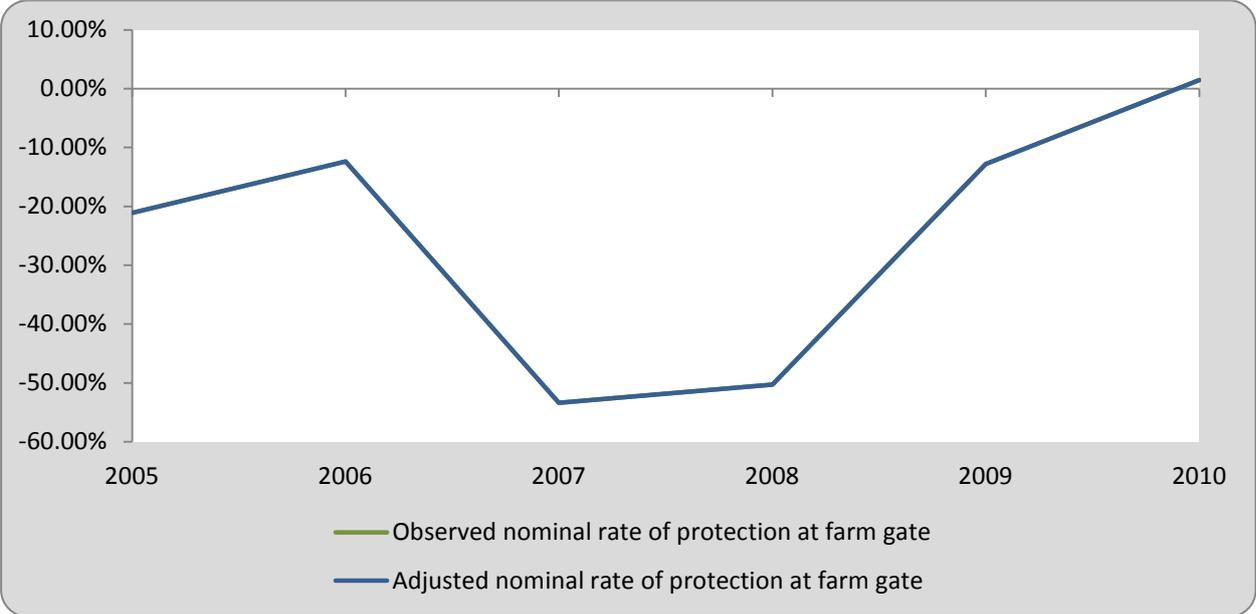
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SUMMARY OF THE NOTE

Product: Groundnuts
 Period analyzed: 2005 – 2010
 Trade status: Export in all years

- Exports are negligible, vast majority of production is absorbed by internal demand.
- Total production from 209000 tons in 2000 to 530887tons in 2010 mostly grown by smallholders.
- Important commodity for both food security and income generation
- The commodity is not targeted by any specific government policy



The observed Nominal Rate of Protection (NRP, green line) indicates that farmers have not received price incentives except for year 2010 under the prevailing cost structure in the value chain

Our results show that disincentives, when they exist, arise from 1) lack of government intervention 2) lack of access to better agronomic practices 3) vulnerability of farmers to weather conditions and diseases resulting in low quality of the product.

Notwithstanding the disincentives, production has increased in most years due to the crop being essential to the country’s diet, thus creating a high demand.

Actions to be taken to reduce disincentives could include 1) Investing in new crop varieties 2) Investing in adequate storage facilities and rural infrastructure such as roads

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1. PURPOSE OF THE NOTE

This technical note aims to describe the market incentives and disincentives for Groundnuts in Ghana. The note is a technical document and serves as input for the MAFAP Country Report.

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 to which extent incentives (positive gaps) or disincentives (negative gaps) are present at farm gate and wholesale level. In relative terms, the price gaps are expressed as Nominal Rates of Protection. 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 production, consumption, trade and policies affecting the commodity and then provides a detailed description of how the key components of the price analysis have been obtained. The MAFAP indicators are then calculated with these data and interpreted in the light of existing policies and market characteristics. The analysis that has been carried out is commodity and country specific and covers the period 2005-2010. The indicators have been calculated using available data from different sources for this period 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 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

Groundnuts are an important crop throughout Sub-Saharan Africa which comprises 40% of the world's groundnut harvested area, but only contributes 26% of the world's groundnut production (ICRISAT 2012). Groundnuts are a versatile crop that can be consumed raw or cooked and can be used to make oil. It serves as a nutritious component of diets in developing countries and as a cash crop to provide income for developing country farmers (Carlberg, 2008)

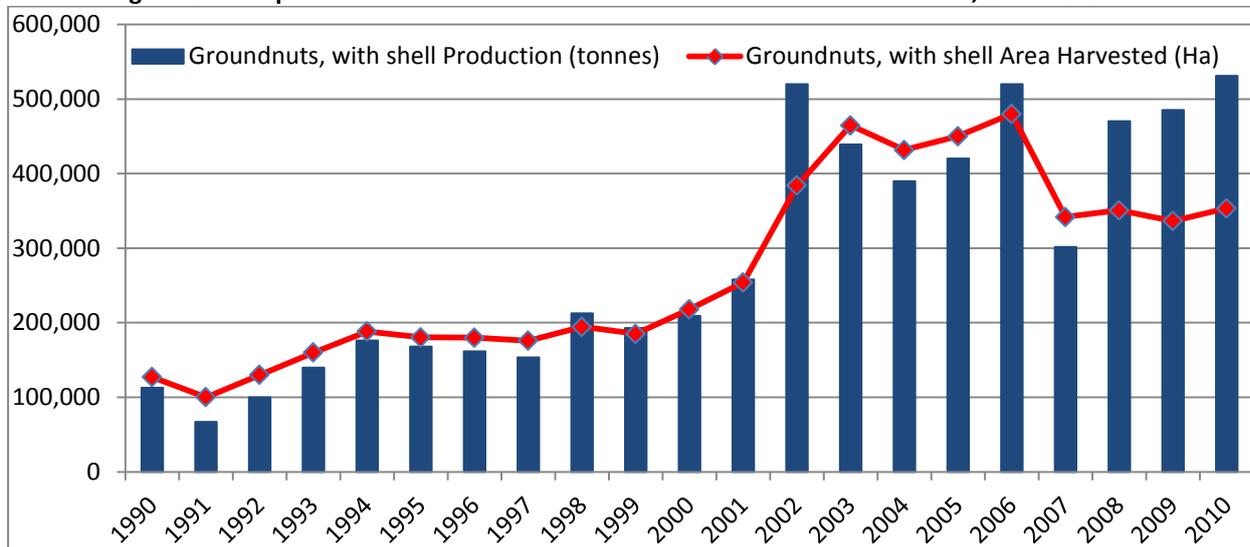
Groundnuts are an important crop for both household consumption and cash crop purposes in Ghana (Debrah and Waliyer, 1996) and play a major role in the Ghanaian diet as one of the main sources of vegetable protein.

Groundnuts may be contaminated by Aflatoxins, a group of toxins which are produced by certain mould, and make groundnuts unsafe for human consumption. Only recently awareness has been raised on this issue. The problem of aflatoxin contaminated groundnut is associated to production and post-harvest handling.

PRODUCTION

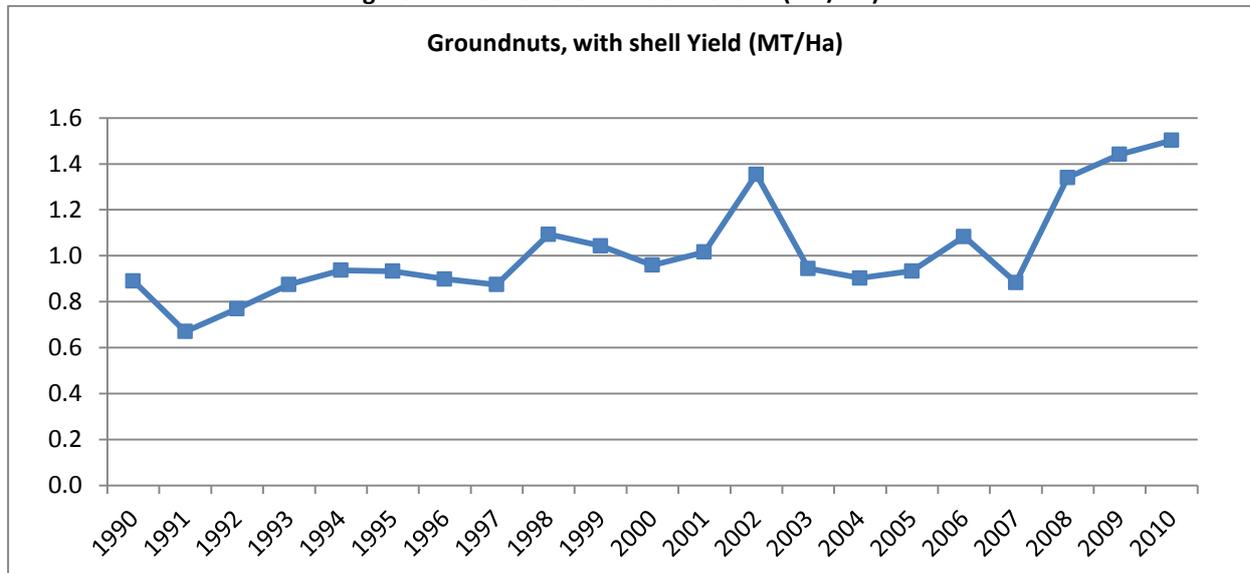
Groundnut area grew by 47% between 1999 and 2010, while actual production grew by 69% over the same period.

Figure 1: Total production volume and area harvested of Groundnut in Ghana, 1990 - 2010



Source: FAOSTAT, 2012

Figure 2: Yield of Groundnut in Ghana (MT/HA)



Source: FAOSTAT, 2012

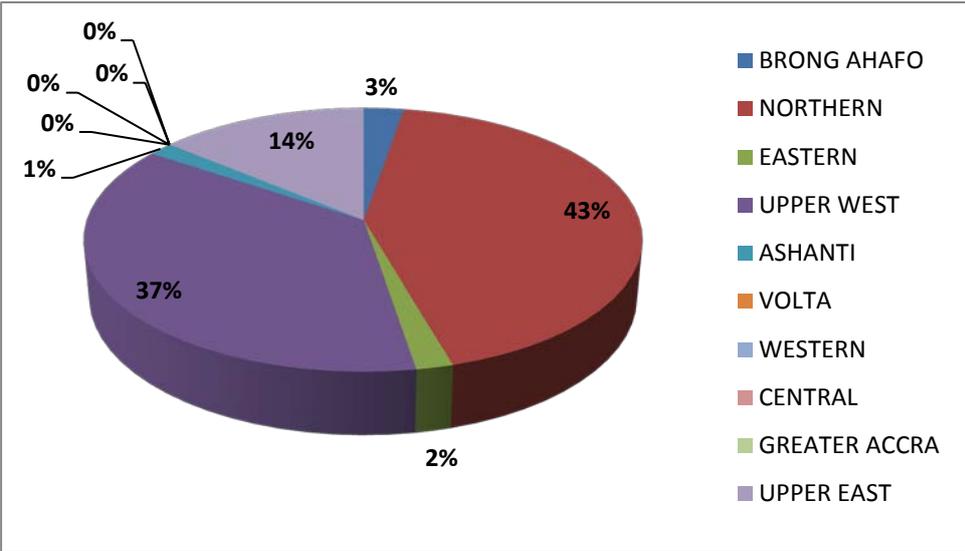
Almost half of the production of groundnuts is concentrated in the Northern region of Ghana which is made up of three separate administrative regions (Northern, Upper East and West regions) which altogether account for 94% of groundnuts production in Ghana. The region is located in the Guinea Savannah agro-ecological zone. The rainy season is mono-modal, starting in April/May and ending in September/October with an annual rainfall varying between 900 and 1,100 mm.

The majority of groundnuts production is made by small-scale farmers with less than two hectares of arable land (MOFA, 1997).

The Northern region of Ghana is one of the main groundnuts production areas in West Africa together with: i. the area expanding from Cameroon to northern Benin through to central Nigeria; ii. Guinea and part of Casamance; iii. Mali, Côte d'Ivoire and the western part of Burkina Faso. These areas show similar productivity patterns with yields per hectare of around 1 tonne on average (Tsigbey et al., 2003)

Groundnuts are considered as a strategic crop given the positive effects that growth of this sub-sector generates in terms of poverty reduction in the Northern region of Ghana.

Figure 3. Production of Groundnut per region in Ghana (2010, %)



Source: MOFA, 2012

CONSUMPTION/UTILIZATION

Groundnuts are mainly produced in the northern regions of Ghana and consumed in urban areas in the south.

Table 1. Groundnuts commodity balance (tonnes)

| | 2009 |
|-----------------------------------|---------|
| Production (tonnes) | 485,100 |
| Import Quantity (tonnes) | 28 |
| Stock Variation (tonnes) | 0 |
| Export Quantity (tonnes) | 2,542 |
| Domestic supply quantity (tonnes) | 482,586 |
| Seed (tonnes) | 26,960 |
| Waste (tonnes) | 14,553 |

Source: FAOSTAT Commodity Balances, 2012

Groundnuts play an important dietary role in most developing countries, especially Ghana, where they provide high-quality cooking oil and an important source of protein for both humans and animals (Awuah, 2000). Groundnut is eaten in several forms: raw; roasted; and made into cookies, flakes and candies (McWatters and Cherry, 1982).

Being a crop groundnut is promoted by nutritionists in Ghana as a good supplement to animal protein.

MARKETING AND TRADE

As it can be seen in Table 2 , groundnut is a crop that is commercialized by famers irrespectively of their farm size, with significant shares of farmers selling their product even among the small scale producers.

Table 2: Market participation* for selected crop producers

| holding size | maize | rice | sorghum | millet | Groundnuts |
|--------------|-------|------|---------|--------|------------|
| <0.5 ha | 53% | 26% | 62% | 15% | 50% |
| 0.5-1.0 ha | 55% | 39% | 33% | 12% | 59% |
| 1-2 ha | 56% | 43% | 30% | 11% | 56% |
| 2-3 ha | 58% | 52% | 55% | 34% | 78% |
| 3-4 ha | 58% | 65% | 67% | 29% | 78% |
| 4-5 ha | 63% | 62% | 61% | 40% | 81% |
| > 5 ha | 59% | 62% | 69% | 46% | 85% |
| all | 57% | 54% | 54% | 27% | 72% |

* Share of producing households who market some proportion of their production

Source: IFPRI-GSSP on data from Ghana Statistical Service, 2007

Domestic prices for groundnuts are characterised by a significant fluctuation within the year but also across years. This might be attributable to the high seasonality of groundnuts production and the high dependency of groundnuts production from rainfall patterns being groundnuts a rain fed crop.

Moreover, price transmission between central markets in producing areas in the North and consuming areas in the south is very low due to the poor road network between the north and south markets as well as poor information and communication technology.

Information on international trade flows is contradictory across sources of secondary data, FAOSTAT and UNComtrade. Despite discrepancies, according to both FAOSTAT and UNComtrade, Ghana is a net exporter of groundnuts in all years under analysis. The only exception is year 2010 when according to UNComtrade Ghana is a net importer. However, the data from UNComtrade could not be considered reliable as unit values of both imports and exports in 2010 are clearly outliers.

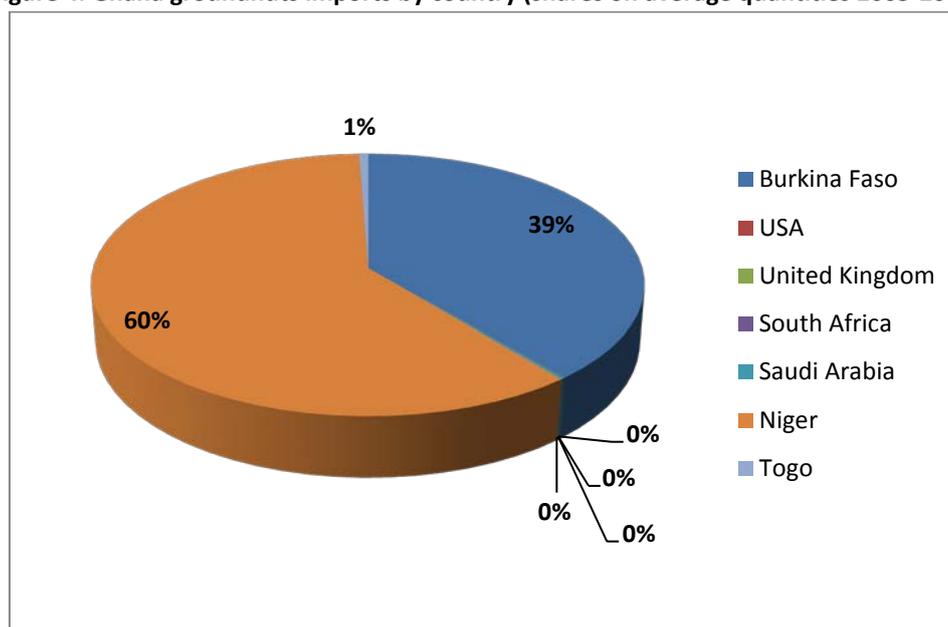
According to MOFA, in 2010 Ghana had a 187k metric ton production surplus, equal to 39% of total production. This evidence corroborates the hypothesis that Ghana can be considered as a net exporter of groundnuts for the whole period under analysis, including year 2010.

Table 3: Import and export quantities for unshelled groundnuts in Ghana (MT)

| UNCOMTRADE | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 |
|-----------------------|--------------|--------------|--------------|--------------|--------------|---------------|
| Export (MT) | 424.2 | 844.5 | 745.8 | 607.9 | 110.5 | 45.2 |
| Import (MT) | N/A | 4.0 | 0.0 | 0.4 | 0.0 | 192.9 |
| Net Trade (MT) | 424.2 | 840.5 | 745.8 | 607.5 | 110.5 | -147.6 |
| FAOSTAT | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 |
| Export (MT) | 6,461 | 3,318 | 1,323 | 647 | 203 | 837 |
| Import (MT) | 0 | 0 | 0 | 95 | 6 | 244 |
| Net Trade (MT) | 6,461 | 3,318 | 1,323 | 552 | 197 | 593 |

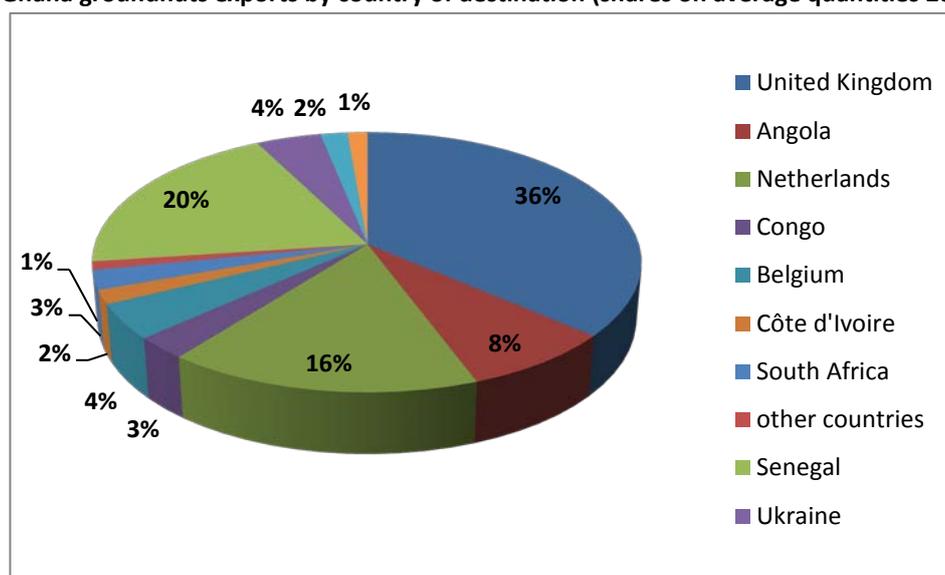
Source: FAOSTAT and UNComtrade, 2012

Figure 4. Ghana groundnuts imports by country (shares on average quantities 2005-2010)



Source: UNCOMTRADE, 2012

Figure 5: Ghana groundnuts exports by country of destination (shares on average quantities 2005-2010)

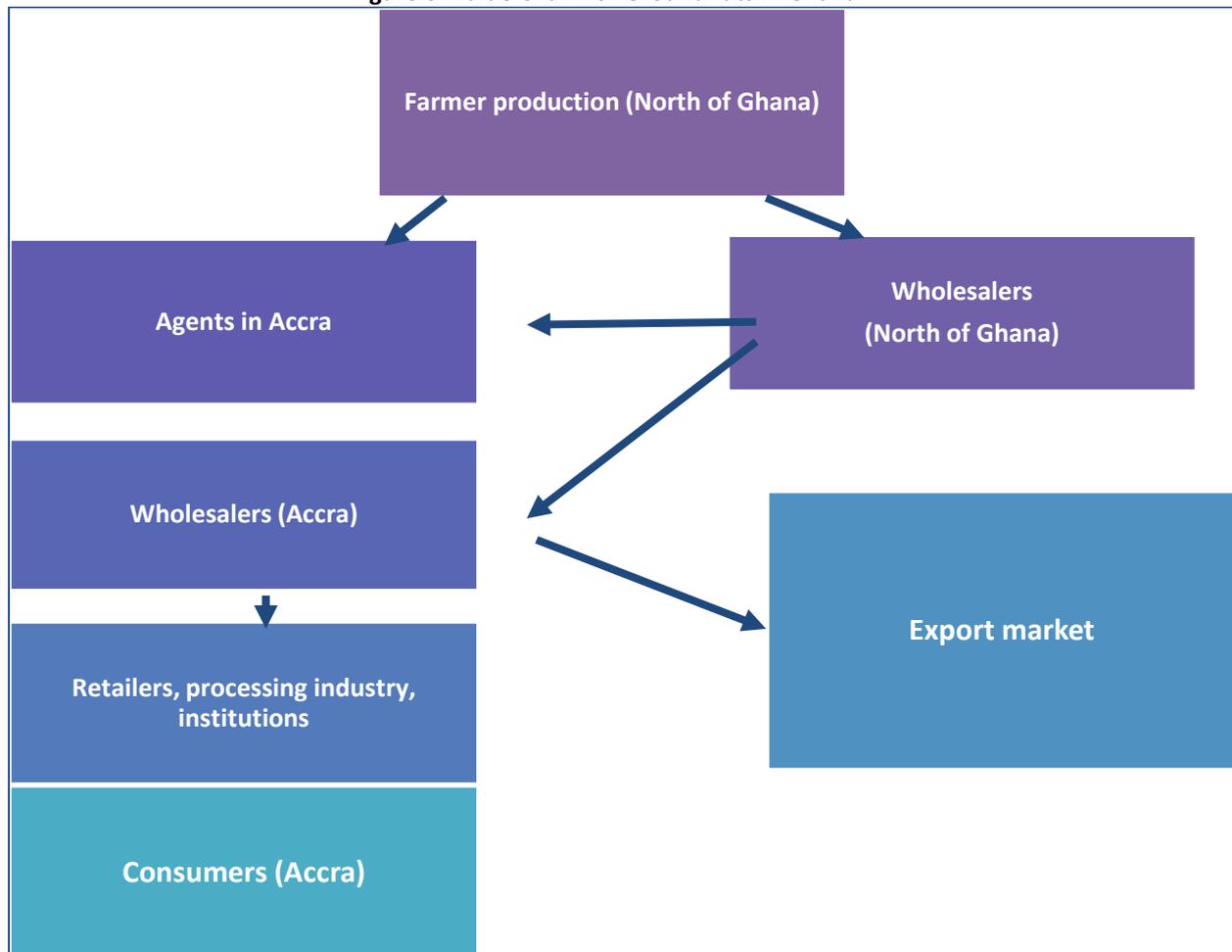


Source: UNCOMTRADE, 2012

DESCRIPTION OF THE VALUE CHAIN AND PROCESSING

The marketing of groundnuts in Ghana falls under the traditional marketing system. This system exists purely for the marketing of food crops. Itinerant traders are responsible for assembling, storage and transporting the purchased produce to the consuming areas where groundnuts are delivered to wholesalers at the current market prices. The privatization of the petroleum industry in Ghana and the recent increases in petroleum prices have led to exorbitant transport charges. Traders pay on average, between ₵200 (£0.022) for those who use pull carts in the village markets and ₵2300 (£0.26) on a bag of groundnuts transported to the urban market on a minibus. A survey indicates that the highest price paid by a trader to transport a bag of groundnuts to the urban market, probably from Kpassa to Accra, which according to the traders, could take 3 days because of the bad nature of the road, is ₵10,250 (£1.14). Costs of marketing are also significant. At the village markets, wholesalers and retailers buy the groundnuts at a relatively cheap price and sell it at higher price. On average the cost of distributing groundnuts between farmers and the final buyers amounted to 28 percent of the retail prices for groundnuts primarily due to the high cost of transport to markets.

Figure 6: Value Chain for Groundnuts in Ghana



Source: adapted from Mockshell and Egyir, 2010

The returns to labour from producing groundnuts comfortably exceed those from the maize-sorghum intercrop in a “normal” season. Indeed, MoFA data show that production of groundnuts has been increasing rapidly in Northern Region in recent years (mainly based on area expansion), whilst production of maize and sorghum has declined (due to yield falls as well as small contraction in area).

This suggests that relative returns may nevertheless play some part in farmers cropping choices (Al-Hassan and Poulton, 2010).

Table 4: Indicative Budgets for Maize-Sorghum Intercrop and Groundnuts in Northern Region

| | Normal Year Scenario | | | Bad Year Scenario | | |
|----------------------|----------------------|---------|------------|-------------------|---------|------------|
| | Maize | Sorghum | Groundnuts | Maize | Sorghum | Groundnuts |
| Yields (kg/ha) | 820 | 710 | 880 | 600 | 550 | 610 |
| Price (US\$/ton) | 200 | 200 | 500 | 300 | 300 | 660 |
| Gross Rev. (US\$/ha) | 306 | | 440 | 345 | | 403 |
| Cash Costs | 77.8 | | 96 | 77.8 | | 96 |
| Net Rev. (US\$/ha) | 228.2 | | 344 | 267.2 | | 307 |
| Labour (days/ha) | 95 | | 103 | 95 | | 103 |
| Returns to labour | 2.4 | | 3.4 | 2.8 | | 3.0 |

Notes: yield figures are 2000-2004 averages and minima respectively in Northern Region (source: MOFA); maize-sorghum Intercrop assumes full yields are achieved for each crop; cash costs and labour input estimates are based on MoFA indicative budgets; maize prices are indicative purchase prices for a deficit household.

POLICY DECISIONS AND MEASURES

Background

While cassava is widely known as a food security crop (Prudencio and Al-Hassan, 1994), the importance of groundnut and cowpea in bridging the hunger gap in northern Ghana is less well known in policy circles. Also, because they are high protein sources, and have an inherent value in enhancing nutrition security. The potential of groundnut and cowpea to improve soil nitrogen and to generate vegetative material for livestock feeding are additional benefits from increasing the production of these crops.

Groundnuts are mentioned in objective 1 Food security, emergency preparedness, and reduced income variability of the Food and Agriculture Sector Development Policy (FASDEP II). The strategy aims at increasing area, yield and production of the major staple crops. However no specific policy for groundnuts has been developed.

In recent years the private sector has been involved in the development of projects and programmes targeting groundnuts farmers. ICRISAT, for example developed a strategy helping Ghanaian agro-dealers to build successful businesses, and helping groundnut farmers boost production. Under this project, technical and business management training as well as demand creation activities (field days/demonstrations) were conducted between 2008 and 2011 in order to stimulate the use of hybrids and varieties and improved agronomic practices by farmers.

Trade Policy

Exports of groundnuts are negligible, no trade policy is in place

Inputs

Even though groundnuts have been regarded to be relatively resistant to pests attack relative to cowpea, long storage affects seed quality. Very little or no fertilizer is used in production, this could

be due to farmers inability to purchase fertilizer or lack of knowledge on the use of fertilizer among others’.

DATA REQUIREMENTS, DESCRIPTION AND CALCULATION OF INDICATORS

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.

TRADE STATUS OF THE PRODUCTS

Groundnuts are an export commodity for all years of the period under review.

BENCHMARK PRICES

Observed

The basis for calculating a reference parity price to determine whether Ghanaian groundnut farmers receive market incentives or disincentives is to establish a benchmark border price. Given the significant discrepancies across sources of information about trade flows, the FOB price of groundnuts was constructed using the Argentina FOB price which was adjusted to account for the freight cost up to the port of Tema (Accra) which is considered as the point of competition for groundnuts in Ghana. The freight costs for groundnuts were estimated using the international freight costs for maize extracted from IGC, from US Gulf to South Africa. These were reduced proportionally to the distance between Argentina and Tema (Accra) port in Ghana.

Table 5: FOB prices of Ghana unshelled groundnuts, 2005 – 2010

| | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 |
|---|------|------|------|-------|------|------|
| Unit value of groundnuts exports from Argentina (FOB Price USD/MT) | 619 | 657 | 923 | 1,214 | 814 | 901 |
| Average annual cost of freight (USD/MT) | 35 | 45 | 65 | 80 | 40 | 60 |
| Estimated annual cost of freight for groundnuts Argentina-Ghana (USD/tonne) | 21 | 27 | 39 | 48 | 24 | 36 |
| Estimated Ghana Groundnuts FOB Price (USD/MT) | 640 | 684 | 962 | 1262 | 838 | 937 |

Source: UNCOMTRADE and IGC

Adjusted

No adjustments to the benchmark price have been made.

DOMESTIC PRICES

In this note, Accra is taken as the point of competition and thus the wholesale market.

Table 6: Wholesale prices of unshelled groundnuts, 2005-2010 (in GHCs/tonne)

| | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 |
|--|-------|-------|-------|--------|--------|--------|
| Wholesale prices of unshelled groundnuts in Accra Urban area, GHC/MT | 739.4 | 837.5 | 839.2 | 1290.7 | 1632.1 | 1893.6 |

Source: MOFA

Table 7: Farm gate prices of unshelled groundnuts, 2005 – 2010, in GHC/tonne

| | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 |
|---|-------|-------|-------|-------|-------|--------|
| Farm gate prices of unshelled groundnuts in Tamale, Northern Region, GHC/MT | 351.4 | 421.1 | 343.5 | 566.4 | 822.0 | 1085.8 |

Source: MOFA

EXCHANGE RATES

Observed

Ghana has a floating exchange rate regime for its currency, the Ghana cedi. With the 2006 Foreign Exchange Act Ghana shifted away from exchange controls. In July 2007, the national currency was redenominated by setting 10,000 cedis to 1 new Ghana cedi¹.

The exchange rate between the Ghanaian Cedi and the United State Dollar is taken from the IMF database on exchange rates. The average of the exchange rate for each year has been calculated from the monthly data reported in the database.

Table 8 : Exchange rate GHC/USD

| | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 |
|--|------|------|------|------|------|------|
| National Currency per US Dollar (principal rate, period average) | 0.91 | 0.92 | 0.94 | 1.06 | 1.41 | 1.43 |

Source: IMF

Table 8 above shows a consistent stability of Cedi. Over the period 2005-2008, the cedi was resolute against the dollar. In 2009 to 2010, the global financial crisis, among other factors, pushed the cedi marginally. According to the IMF country report (IMF Country Report No. 11/131) the aftermath of the global crises led to a decelerated GDP growth and the inflow from portfolio capital and remittance also declined. This eventually led to the depreciation in the exchange rate.

Adjusted

No exchange rate adjustment was needed.

¹ Prices used for the analysis have all been converted in the new currency. Specifically, prices in years 2005 and 2006 were divided by 10,000

ACCESS COSTS

From Farm Gate to Wholesale

Observed

Access costs data for groundnuts were not available. Data obtained from a value chain study on bambara groundnuts were used as a basis to estimate access costs as this legume is considered as having more similarities with groundnuts than any other cereal commodity. In particular, transport costs were adapted to account from the distance between Tamale in the Northern region and Accra which is around 434km.

Table 9: Observed access costs from farm gate to wholesale

| | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 |
|-------------------------|--------------|---------------|---------------|---------------|---------------|---------------|
| Wholesale margin | 5.52 | 6.16 | 7.16 | 8.61 | 10.04 | 11.78 |
| Transport | 85.11 | 95.08 | 110.56 | 132.89 | 154.98 | 181.76 |
| Other costs | 5.64 | 6.30 | 7.32 | 8.80 | 10.27 | 12.04 |
| TOTAL | 96.26 | 107.54 | 125.05 | 150.31 | 175.29 | 205.58 |

Source: adapted from Food Research Institute (FRI), 2002

From Wholesale to point of competition

Observed

Due to the lack of specific information on access costs for groundnuts from wholesale to point of competition, access costs estimated for cocoa were used as a proxy.

Table 10: Observed access costs from wholesale to point of competition

| | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 |
|---------------------------|-----------------|-----------------|-----------------|----------------|---------------|-----------------|
| Trucking transport | 24.46953 | 24.7442 | 25.2517 | 28.56222 | 38.0376 | 38.63781 |
| Handling | 7.250232 | 7.331616 | 7.481984 | 8.46288 | 11.2704 | 11.44824 |
| Terminal handling | 9.06279 | 9.16452 | 9.35248 | 10.5786 | 14.088 | 14.3103 |
| TOTAL | 40.78256 | 41.24034 | 42.08616 | 47.6037 | 63.396 | 64.39635 |

Source: COCOBOD, 2012

EXTERNALITIES

No externalities have been taken into account in the analysis.

BUDGET AND OTHER TRANSFERS

In the analysis, the farm input subsidy programme has been mentioned as a source of budgetary transfers to farmers in Ghana. However, additional research will have to be carried out to determine the amounts of the programme specifically targeted towards groundnut production, if any. These estimates will be included in a future update of this technical note.

QUALITY AND QUANTITY ADJUSTMENTS

Unshelled groundnuts is the product considered for the analysis which corresponds to the most exported item. Hence no adjustment was made in terms of quality and quantity.

DATA OVERVIEW

Following the discussions above here is a summary of the main sources and methodological decisions taken for the analysis of price incentives and disincentives for Groundnuts in Ghana.

Table 11: Sources of data used in the calculations of indicators

| Concept | | Description | |
|---|--------|---|-----------------|
| | | Observed | Adjusted |
| Benchmark price | | <i>Argentina FOB price adjusted to account for the freight cost up to the port of Tema (Accra)</i> | N.A. |
| Domestic price at point of competition | | <i>Average annual wholesale prices for unshelled groundnuts in Accra Urban Areas supplied by MOFA</i> | N.A. |
| Domestic price at farm gate | | <i>Average annual farm gate prices for unshelled groundnuts in Tamale supplied by MOFA</i> | N.A. |
| Exchange rate | | <i>Annual average of exchange rate as reported by IMF.</i> | |
| Access cost from border to point of competition | | <i>Access costs for cocoa provided by COCOBOD, 2012</i> | |
| Access cost from farm-gate to border | | <i>Adapted from access costs calculated in Plahar (2002) value chain study on bambara nuts</i> | |
| QT adjustment | Bor-Wh | | 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 this analysis is summarized below.

Table 12: Data and values used in the calculations of indicators

| | | Year | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 |
|---|-------------|---------------|----------|----------|----------|----------|----------|----------|
| | | trade status | x | x | x | x | x | x |
| DATA | <i>Unit</i> | <i>Symbol</i> | | | | | | |
| Benchmark Price | | | | | | | | |
| Observed | USD/TON | $P_{b(ints)}$ | 640.00 | 684.00 | 962.00 | 1,262.00 | 838.00 | 937.00 |
| Adjusted | USD/TON | P_{ba} | | | | | | |
| Exchange Rate | | | | | | | | |
| Observed | GHC/USD | ER_o | 0.91 | 0.92 | 0.94 | 1.06 | 1.41 | 1.43 |
| Adjusted | GHC /USD | ER_a | 0.91 | 0.92 | 0.94 | 1.06 | 1.41 | 1.43 |
| Access costs border - wholesale | | | | | | | | |
| Observed | GHC /TON | AC_{owh} | 40.78256 | 41.24034 | 42.08616 | 47.6037 | 63.396 | 64.39635 |
| Adjusted | GHC /TON | AC_{awh} | | | | | | |
| Domestic price at wholesale | GHC /TON | P_{dwh} | 739.38 | 837.50 | 839.19 | 1,290.65 | 1,632.11 | 1,893.57 |
| Access costs wholesale - farm gate | | | | | | | | |
| Observed | GHC /TON | AC_{ofg} | 96.26 | 107.54 | 125.05 | 150.31 | 175.29 | 205.58 |
| Adjusted | GHC /TON | AC_{afg} | | | | | | |
| Farm gate price | GHC /TON | P_{dfg} | 351.35 | 421.08 | 343.51 | 566.43 | 822.00 | 1,085.83 |
| Externalities associated with production | GHC /TON | E | | | | | | |
| Budget and other product related transfers | GHC /TON | BOT | | | | | | |
| Quantity conversion factor (border - point of competition) | Fraction | QT_{wh} | | | | | | |
| Quality conversion factor (border - point of competition) | Fraction | QL_{wh} | | | | | | |
| Quantity 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 are 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.

Table 13: MAFAP price gaps for groundnuts in Ghana 2005-2010 (GHC per tonne)

| | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 |
|--|------|------|-------|-------|-------|------|
| Trade status | x | x | x | x | x | x |
| Observed price gap at point of competition | 198 | 249 | (23) | 1 | 514 | 618 |
| Adjusted price gap at point of competition | 198 | 249 | (23) | 1 | 514 | 618 |
| Observed price gap at farm gate | (94) | (59) | (394) | (573) | (121) | 16 |
| Adjusted price gap at farm gate | (94) | (59) | (394) | (573) | (121) | 16 |

Source: Own calculations using data as described above.

Table 14: MAFAP nominal rates of protection (NRP) for groundnuts in Ghana 2005-2010 (%)

| | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 |
|---|------|------|------|------|------|------|
| Trade status | x | x | x | x | x | x |
| Observed nominal rate of protection at point of competition | 37% | 42% | -3% | 0% | 46% | 48% |
| Adjusted nominal rate of protection at point of competition | 37% | 42% | -3% | 0% | 46% | 48% |
| Observed nominal rate of protection at farm gate | -21% | -12% | -53% | -50% | -13% | 1% |
| Adjusted nominal rate of protection at farm gate | -21% | -12% | -53% | -50% | -13% | 1% |

Source: Own calculations using data as described above.

Table 15 : MAFAP Market Development Gaps for groundnuts in Ghana 2005-2010 (GHC per tonne)

| | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 |
|--|------|------|------|------|------|------|
| International markets gap | - | - | - | - | - | - |
| Exchange policy gap | - | - | - | - | - | - |
| Access costs gap to point of competition | - | - | - | - | - | - |
| Access costs gap to farm gate | - | - | - | - | - | - |
| Externality gap | - | - | - | - | - | - |
| Market Development Gap | - | - | - | - | - | - |

Source: Own calculations using data as described above.

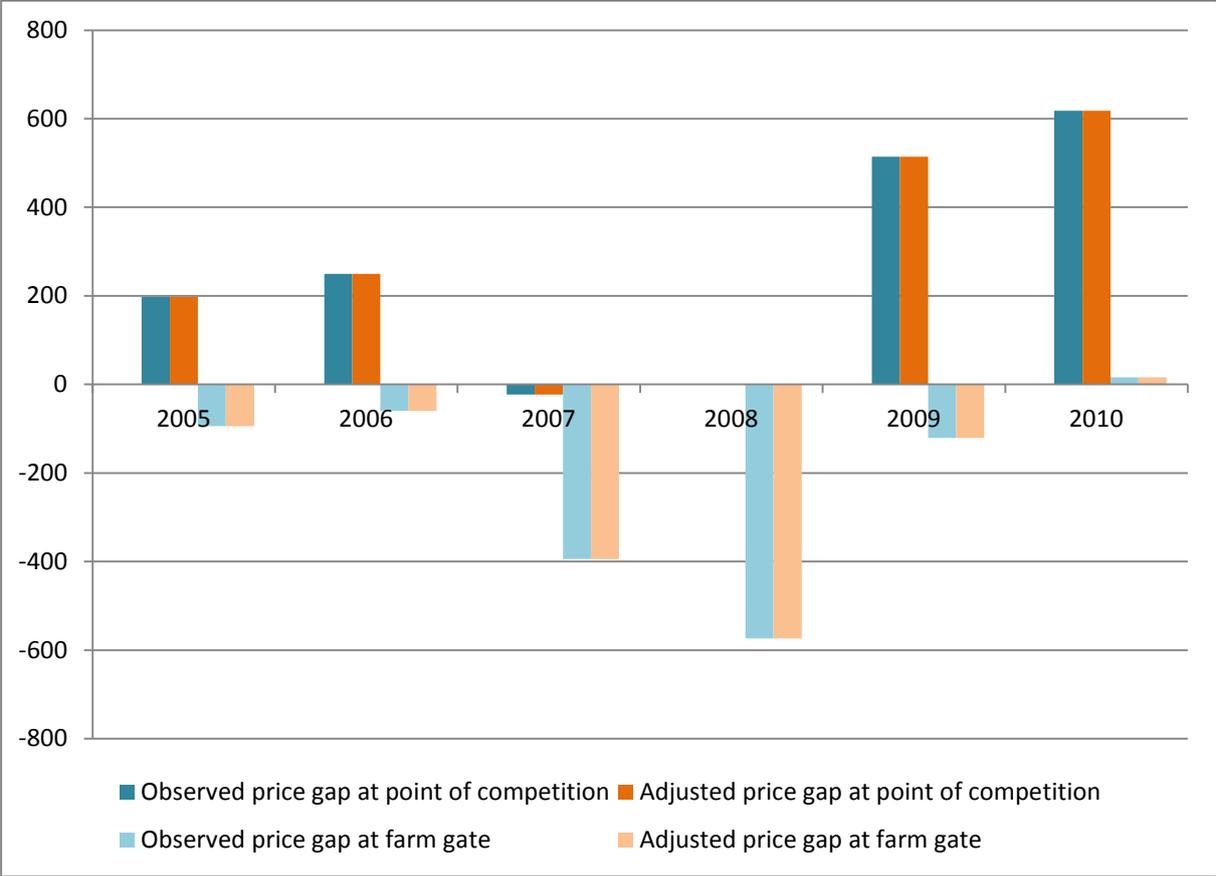
3. INTERPRETATION OF THE INDICATORS

Price gaps at the farm gate are negative for all years under review with the exception of 2010. The negative peak was reached in 2008, this coincided with a sharp drop in production and quality of the commodity.

There seems to be a decrease in disincentives between 2008 and 2010, where the farm gate price gap becomes slightly positive. Revealing an alignment of domestic prices with the reference price. This positive trend signifies that despite the lack of policies, under normal circumstances the sector has a huge potential. With further support prices could stabilize and lose their volatile quality.

Price gaps at the wholesale level are positive for the whole period under analysis except in 2007. The pick value was reached in 2010. Wholesalers have also been affected by the volatility of the commodity’s production and quality.

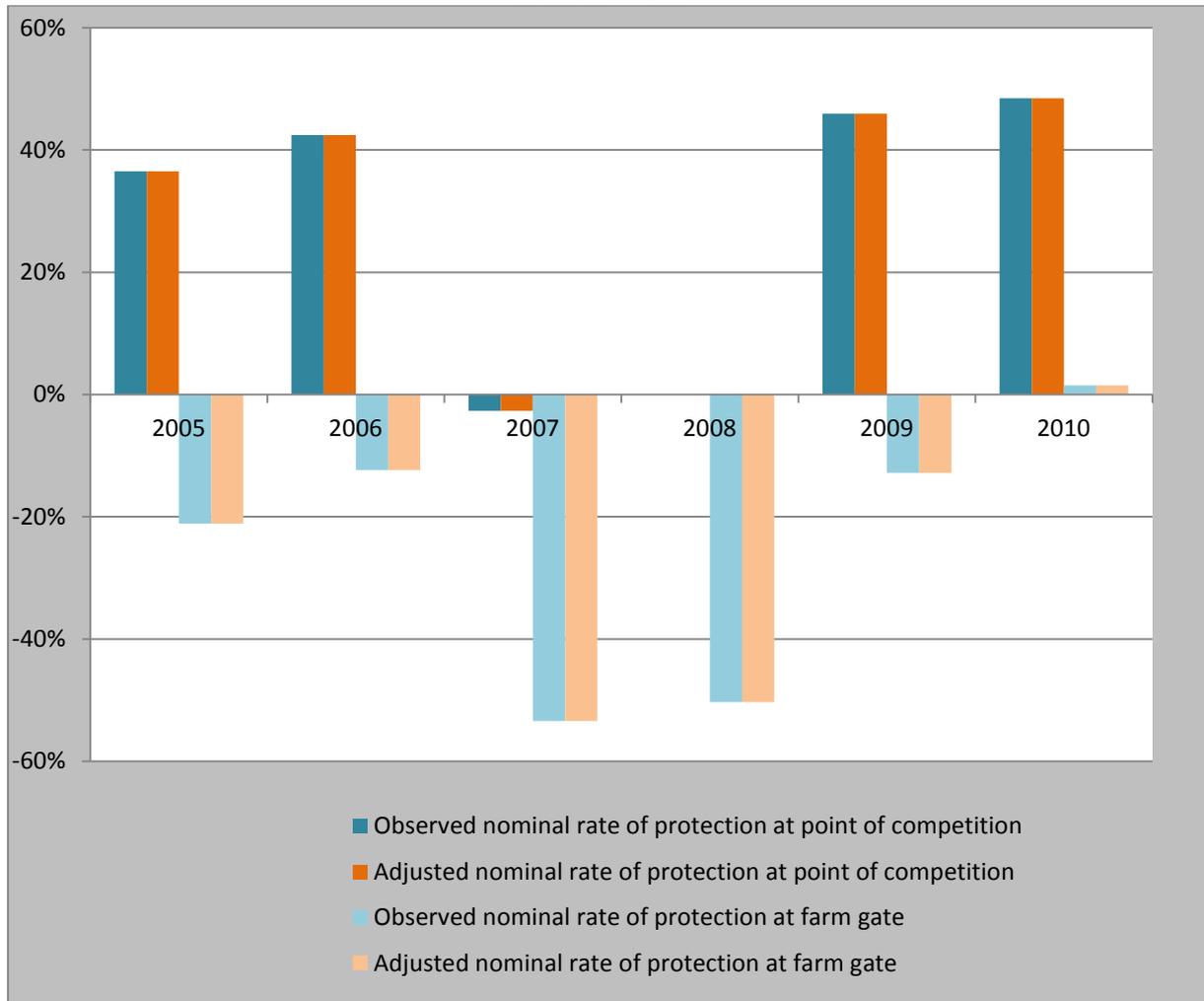
Figure 7: Observed and adjusted price gaps for groundnuts at wholesale and farm gate in Ghana 2005-2010 (GHC/tonne)



Regarding the NRPs at the farm gate, they are negative in all years except in 2010 indicating non protection to groundnuts producers throughout 2005 and 2009. Improvements in the quality of the groundnuts in recent years, have helped farmers to progressively gain higher prices.

NRPs at the wholesale level are positive in 2005 and 2006 and again in 2009 and 2010. In 2008 the NRP reached 0%, indicating that the price received by wholesaler was aligned with the export parity.

Figure 8: Observed and adjusted nominal rate of protection at wholesale and farm gate for groundnuts in Ghana 2005-2010



4. PRELIMINARY CONCLUSIONS AND RECOMMENDATIONS

MAIN MESSAGE

Despite its importance relating to both food security and income generation, groundnuts have not been targeted by specific policies.

Lack of access to better agronomic practices and adequate storage facilities are a great constraint for farmers who are vulnerable during adverse weather conditions or disease contamination.

Furthermore the bad condition of rural roads rise the costs for both farmers and wholesalers.

The positive trend however, which culminated in 2010 at 1%, indicates that the groundnuts sector has huge potential. Such a crop plays in fact an important role in Ghanaian's diets as a major source of protein.

PRELIMINARY RECOMMENDATIONS

In order to reap some major benefits from the crop, the government may need to target the sector with specific policies. Strategies may include:

- ❖ Training programmes for farmers in better agronomic practices
- ❖ Investment in R&D for groundnut varieties resistant to disease and extreme weather
- ❖ Investment in infrastructure, especially rural roads and adequate storage facilities

Given the importance of groundnuts, further attention to the crop can enhance food security, improved nutrition and livelihood with the resultant effect of poverty reduction, which is the Government's long term objective.

LIMITATIONS

Access costs are estimated from the farm gate to the point of competition, and from the point of competition to the border. No specific information was available on transportation and handling.

FURTHER INVESTIGATION AND RESEARCH

Research on the sector as a whole is scarce. An analysis of the marketing and value chain at all levels could be useful to provide a better picture of the situation as a whole.

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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

| Name of product | | Groundnuts | | Local currency | | GHC | | | | | | | | | |
|---|----------|------------|----------------------|----------------|--------|------|--------------|---------|-------------|-------------|-------------|-------------|------------|---|--|
| International currency | | USD | | | | | | | | | | | | | |
| DATA | | | | Unit | Symbol | Year | trade status | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | Notes | |
| | | | | | | | | x | x | x | x | x | x | | |
| Benchmark Price | | | | | | | | | | | | | | | |
| 1 | Observed | USD/TON | P _{0(int)} | | | | | 640.00 | 684.00 | 962.00 | 1,262.00 | 838.00 | 937.00 | FOB Price | |
| 1b | Adjusted | USD/TON | P _{0a} | | | | | | | | | | | | |
| Exchange Rate | | | | | | | | | | | | | | | |
| 2 | Observed | GHC/USD | ER _c | | | | | 0.91 | 0.92 | 0.94 | 1.06 | 1.41 | 1.43 | | |
| 2b | Adjusted | GHC/USD | ER _a | | | | | 0.91 | 0.92 | 0.94 | 1.06 | 1.41 | 1.43 | | |
| Access costs border - point of competition | | | | | | | | | | | | | | | |
| 3 | Observed | GHC/TON | AC _{0wh} | | | | | 40.78 | 41.24 | 42.09 | 47.60 | 63.40 | 64.40 | cocoa from collection point to port (transport, handling, | |
| 3b | Adjusted | GHC/TON | AC _{0wh} | | | | | | | | | | | | |
| 4 | Observed | GHC/TON | P _{0wh} | | | | | 739.38 | 837.50 | 839.19 | 1,290.65 | 1,632.11 | 1,893.57 | | |
| 4b | Adjusted | GHC/TON | P _{0wh} | | | | | | | | | | | | |
| 5 | Observed | GHC/TON | AC _{0fg} | | | | | 96.26 | 107.54 | 125.05 | 150.31 | 175.29 | 205.58 | | |
| 5b | Adjusted | GHC/TON | AC _{0fg} | | | | | | | | | | | | |
| 6 | Observed | GHC/TON | P _{0fg} | | | | | 351.35 | 421.08 | 343.51 | 566.43 | 822.00 | 1,085.83 | | |
| 6b | Adjusted | GHC/TON | P _{0fg} | | | | | | | | | | | | |
| 7 | Observed | GHC/TON | E | | | | | | | | | | | From PE Analysis | |
| 8 | Observed | GHC/TON | BOT | | | | | | | | | | | | |
| 8a | Observed | GHC/TON | QT _{wh} | | | | | | | | | | | | |
| 8b | Observed | GHC/TON | QL _{wh} | | | | | | | | | | | | |
| 8c | Observed | GHC/TON | QT _{fg} | | | | | | | | | | | | |
| 8d | Observed | GHC/TON | QL _{fg} | | | | | | | | | | | | |
| CALCULATED PRICES | | | | Unit | Symbol | | | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | Formula | |
| Benchmark price in local currency | | | | | | | | | | | | | | | |
| 9 | Observed | GHC/TON | P _{0(loc)} | | | | | 582.40 | 629.28 | 904.28 | 1,337.72 | 1,181.58 | 1,339.91 | [1]*[2] | |
| 10 | Adjusted | GHC/TON | P _{0(loc)a} | | | | | 582.40 | 629.28 | 904.28 | 1,337.72 | 1,181.58 | 1,339.91 | [1]*[2b] | |
| Reference Price at point of competition | | | | | | | | | | | | | | | |
| 11 | Observed | GHC/TON | RP _{0wh} | | | | | 541.62 | 588.04 | 862.19 | 1,290.12 | 1,118.18 | 1,275.51 | [9]-[3] | |
| 12 | Adjusted | GHC/TON | RP _{0wh} | | | | | 541.62 | 588.04 | 862.19 | 1,290.12 | 1,118.18 | 1,275.51 | [10]-[3] | |
| Reference Price at Farm Gate | | | | | | | | | | | | | | | |
| 13 | Observed | GHC/TON | RP _{0fg} | | | | | 445.36 | 480.50 | 737.15 | 1,139.81 | 942.90 | 1,069.93 | [11]-[5] | |
| 14 | Adjusted | GHC/TON | RP _{0fg} | | | | | 445.36 | 480.50 | 737.15 | 1,139.81 | 942.90 | 1,069.93 | [12]-[5] | |
| INDICATORS | | | | Unit | Symbol | | | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | Formula | |
| Price gap at point of competition | | | | | | | | | | | | | | | |
| 15 | Observed | GHC/TON | PG _{0wh} | | | | | 197.76 | 249.46 | (23.00) | 0.53 | 513.93 | 618.06 | [4]-[11] | |
| 16 | Adjusted | GHC/TON | PG _{0wh} | | | | | 197.76 | 249.46 | (23.00) | 0.53 | 513.93 | 618.06 | [4]-[12] | |
| Price gap at farm gate | | | | | | | | | | | | | | | |
| 17 | Observed | GHC/TON | PG _{0fg} | | | | | (94.01) | (59.41) | (393.63) | (573.38) | (120.89) | 15.90 | [6]-[13] | |
| 18 | Adjusted | GHC/TON | PG _{0fg} | | | | | (94.01) | (59.41) | (393.63) | (573.38) | (120.89) | 15.90 | [6]-[14] | |
| Nominal rate of protection at point of competition | | | | | | | | | | | | | | | |
| 19 | Observed | % | NRPO _{wh} | | | | | 36.51% | 42.42% | -2.67% | 0.04% | 45.96% | 48.46% | [15]/[11] | |
| 20 | Adjusted | % | NRPO _{wh} | | | | | 36.51% | 42.42% | -2.67% | 0.04% | 45.96% | 48.46% | [16]/[12] | |
| Nominal rate of protection at farm gate | | | | | | | | | | | | | | | |
| 21 | Observed | % | NRPO _{fg} | | | | | -21.11% | -12.37% | -53.40% | -50.30% | -12.82% | 1.49% | [17]/[13] | |
| 22 | Adjusted | % | NRPO _{fg} | | | | | -21.11% | -12.37% | -53.40% | -50.30% | -12.82% | 1.49% | [18]/[14] | |
| Nominal rate of assistance | | | | | | | | | | | | | | | |
| 23 | Observed | % | NRA _o | | | | | -21% | -0.12365276 | -0.53399602 | -0.50304898 | -0.12821335 | 0.01485943 | (((17)+[8])/[13]) | |
| 24 | Adjusted | % | NRA _a | | | | | -21.11% | -12.37% | -53.40% | -50.30% | -12.82% | 1.49% | (((18)+[8])/[14]) | |
| Decomposition of PWAfg | | | | Unit | Symbol | | | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | Formula | |
| 25 | Observed | GHC/TON | IRG | | | | | - | - | - | - | - | - | | |
| 26 | Observed | GHC/TON | ERPG | | | | | - | - | - | - | - | - | | |
| 27 | Observed | GHC/TON | ACG _{wh} | | | | | - | - | - | - | - | - | [(2)-[2b)]*[1] | |
| 28 | Observed | GHC/TON | ACG _{fg} | | | | | - | - | - | - | - | - | - | |
| 29 | Observed | GHC/TON | ES | | | | | - | - | - | - | - | - | | |
| 29a | Observed | GHC/TON | MDG | | | | | - | - | - | - | - | - | | |
| 29b | Observed | % | MDG | | | | | - | - | - | - | - | - | [25]+[26]+[27]+[28]+[29] MDG/RPafg | |
| Total values | | | | Unit | Symbol | | | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | Formula | |
| 30 | Observed | tons | MPS _o | | | | | - | - | - | - | - | - | [17]*[29] | |
| 31 | Observed | tons | MPS _o | | | | | - | - | - | - | - | - | [17]*[29] | |
| 32 | Adjusted | tons | MPS _a | | | | | - | - | - | - | - | - | [18]*[27] | |



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