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of the United Nations

Technical note

Analysis of price incentives for groundnuts in Malawi 2005–2013

September 2014

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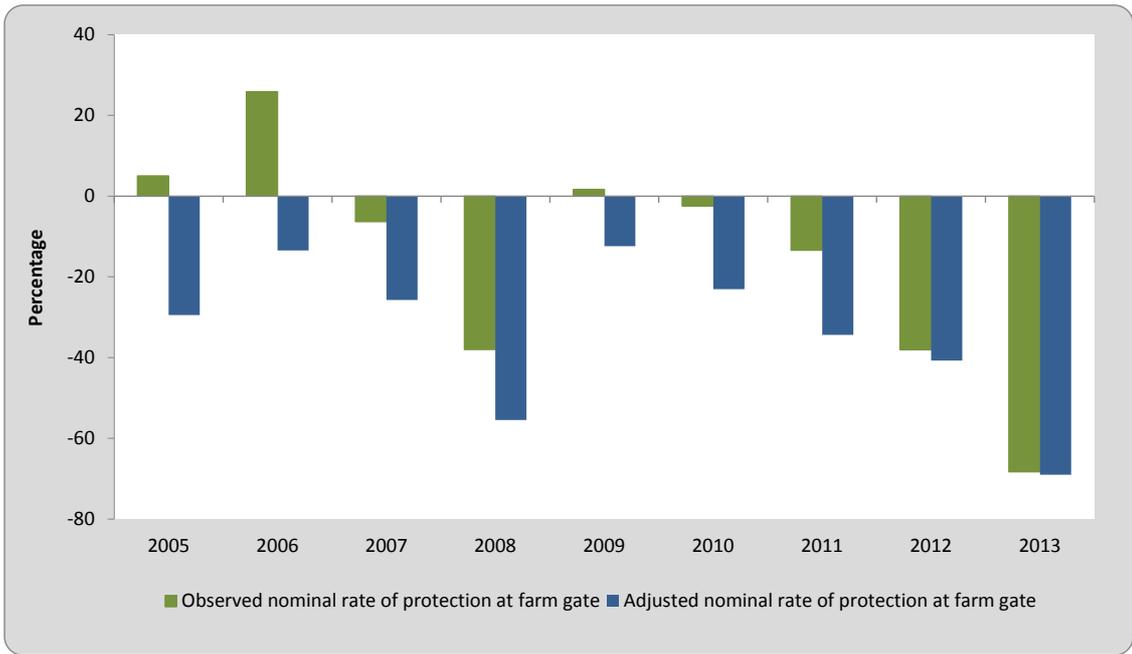
SUMMARY OF THE NOTE

Product: Groundnuts
Period analyzed: 2005-2013
Trade status: Export in all years

COMMODITY CONTEXT

- Groundnuts are mainly produced by smallholder farmers and play a significant role in household income and food security.
- 15 percent of groundnut production is exported, the majority to regional markets.
- Until very recently, groundnut production had not received adequate attention from the government but in the last few years, has become a target commodity for support under the Agricultural Sector Wide Approach (ASWAp), the National Export Strategy (NES) and the Farm Input Subsidy Programme (FISP).
- The National Smallholder Farmer Association of Malawi (NASFAM) was the main exporter of groundnuts until 2011, when NASFAM, with other commercial and development partners, launched the brand Afrinut, a Fair Trade company that has become an important exporter.

Observed and Adjusted Nominal Rate of Protection at Farm Gate for Shelled Groundnuts in Malawi (%), 2005-2013



Source: MAFAP, 2014

The observed Nominal Rate of Protection (NRP, green bars) in the graph above shows how during the review period (2005-2013), smallholder farmers received in average price disincentives to production. The adjusted NRP (blue bars) captures the same elements as the observed NRP in addition to market distortions resulting from inefficiencies in the commodity’s value chain and the exchange rate misalignment.

DRIVING FACTORS

- The neutral situation faced by producers, namely low price incentives and disincentives from 2005 to 2010, with the exception of 2006 and 2008, reflects an efficient value chain that was well integrated, allowing a limited number of intermediaries and control of the costs incurred from farm gate to the export market. Moreover, exports were mainly conducted by NASFAM, a producer association, which empowered producers through collective bargaining.
- Price transmission appeared to be more effective in the years previous to the creation of Afrinut in 2011, when the domestic and international markets became disconnected.
- Poor access to market, namely high transport costs and high price margins paid to exporters, resulted in disincentives to production.
- Overvaluation of the exchange rate resulted in further disincentives to production.

RECOMMENDATIONS

- The analysis reflects the level of price incentives to production for high quality groundnuts. Developing the Agricultural Market Information System (AMIS) in order to systematically collect producer and wholesale prices is needed to identify the national average level of incentives for groundnut producers. This would contribute to the implementation of policy measures in the framework of the NSE which would precisely address the deficiencies of the groundnuts value chain. Moreover, this would help to determine whether price disincentives might counteract the overall objective of the FISP.
- Since the creation of Afrinut, price disincentives to production increased. There is a need to better understand the market structure and the price fixation mechanism of Afrinut and engage in discussions regarding the newly implemented structure to ensure better price transmission between export markets and farm gate in the future.
- As Afrinut is operating in a niche fair trade market and is a major exporter of groundnuts, the possibilities of expansion, replicability and sustainability of this model as well as other models should be further explored.
- It is essential to sustain the current exchange rate policy allowing the kwacha to float against the US dollar to avoid disincentives for agents involved in the export value chain.

1. PURPOSE OF THE NOTE

This technical note is an attempt to measure, analyze and interpret price incentives for groundnuts in Malawi over the period 2005-2013.

For this purpose, yearly averages of domestic 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 reference prices and domestic prices along the commodity's value chain indicate the extent to which incentives (positive gaps) or disincentives (negative gaps) were present at the farm gate and wholesale level. The price gaps are expressed in relative terms as a percentage of the reference price, referred to as the Nominal Rate of Protection (NRP). These key indicators are used by MAFAP to assess the effects of policy and market performance on prices.

This technical note begins with a review of the commodity's production, consumption/utilization, marketing and trade, value chain and policy context (Chapter 2). It also provides a detailed description of how key data elements were obtained and indicators were calculated (Chapter 3). The indicators were then interpreted in light of existing policies and market characteristics (Chapter 4), and key policy recommendations were formulated on the basis of this interpretation (Chapter 5). Finally, the note concludes with a few main messages, limitations of the analysis and areas identified for further research to improve the analysis (Chapter 6).

The results and recommendations presented in this analysis of price incentives can be used by stakeholders involved in policy-making for the food and agriculture sector. They can also serve as input for evidence-based policy dialogue at the national, regional or international level.

This technical note should not be interpreted as an in-depth value chain analysis or detailed description of the commodity's production, consumption/utilization, marketing and trade or policy context. 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 in this technical note is subject to review and validation.

2. COMMODITY CONTEXT

Groundnut is the most important legume produced in Malawi, both in terms of production area and volume, and is largely produced by smallholder farmers. Because of the added nutrient value to the primarily maize based Malawian diet, groundnut is considered to be valuable for improving food security. The crop also has significant economic importance as approximately 40 percent of total production is marketed. As a result, groundnuts are both a source of food and income for smallholder households in Malawi. Until the mid-1990s, groundnuts were considered one of the country's key export crops and an important foreign exchange earner but in 2011, the value of groundnut exports represented only 3 percent of the total value of agricultural exports. While policy support has been neglected over the past decade, groundnut is currently targeted by the Agriculture Sector Wide Approach (ASWAp), the Farm Input Subsidy Program (FSIP) and the National Export Strategy (NES). Moreover, various donors and research institutes are supporting the groundnut value chain as well as taking actions to address toxicity levels due to improper storage.

PRODUCTION

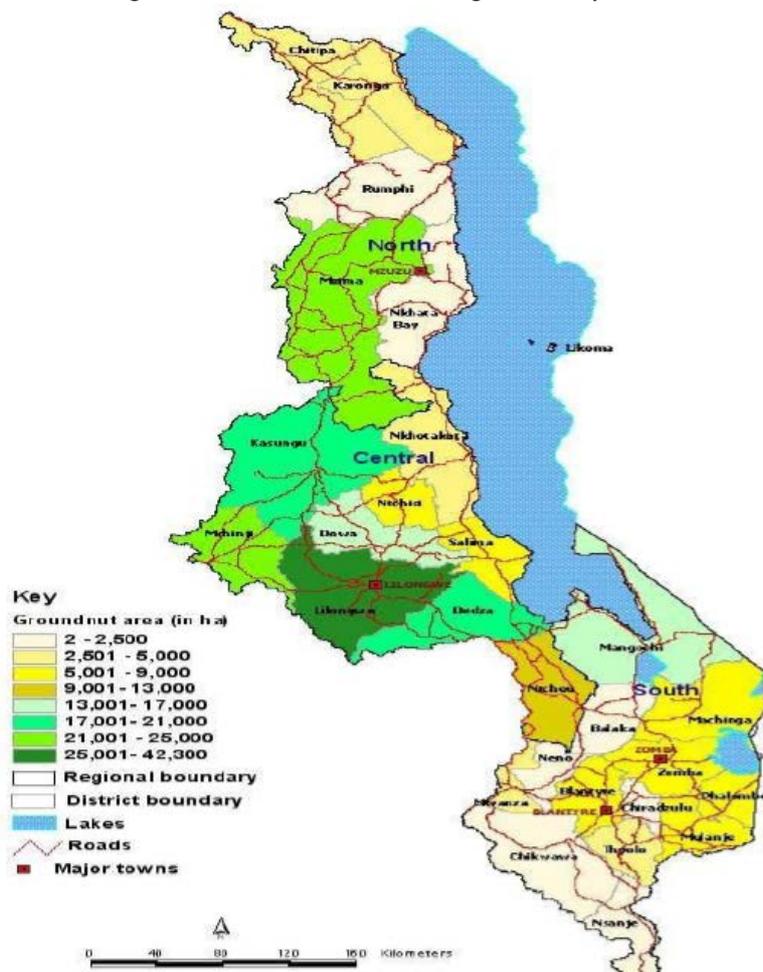
Groundnut is mainly produced by small scale farmers (93 percent) but also by estate farms (7 percent). There are almost 100,000 out of 3.4 million farmers in Malawi who make up the total number of groundnuts growers. The majority of groundnut production relies on rain-fed systems and almost all farming activities are done manually. The average area dedicated to groundnut production is 0.4 ha per groundnut farmer (Sangole, 2010) and area under groundnut cultivation was only 14 percent of the total area under maize cultivation (Simtowe, 2009).

The traditional variety produced in Malawi is the "Chalimbana", a Virginia-type larger groundnut variety with relatively high levels of protein. However, the International Crop Research Institute for the Semi-Arid Tropics (ICRISAT) introduced an improved Chalimbana-type variety in 1990, called CG7. This variety is characterized by higher drought tolerance and a yield potential around 60 percent higher than the Chalimbana. It is also a suitable variety for crop rotation with maize, which is common in Malawi.

The growing season of groundnuts starts November/December when crops are planted and harvesting takes place from mid-April to the end of May. Due to the shelling of the nuts, a protracted period of marketing continues generally until September.

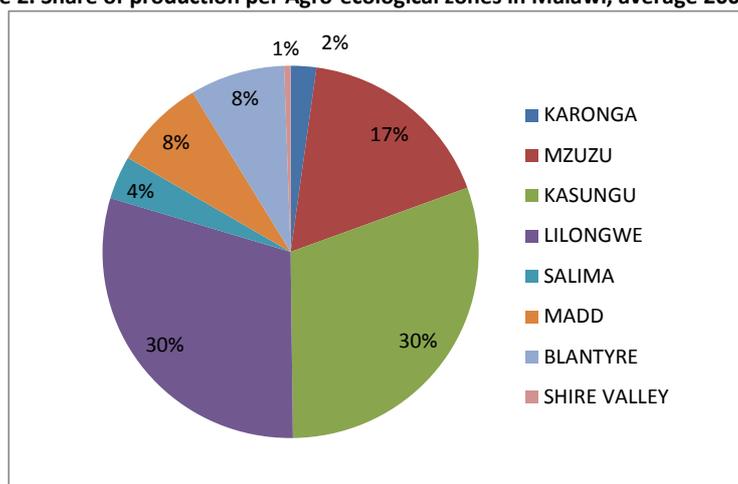
Groundnuts are grown in most of the eight agro-ecological zones in Malawi. However, production is concentrated in the central regions, namely the Lilongwe and Kasungu plain which account for more than half of production (MoAFS, 2013) (Figure 1 and Figure 2).

Figure 1. Distribution of area under groundnuts production in Malawi



Source: ICRISAT, 2009

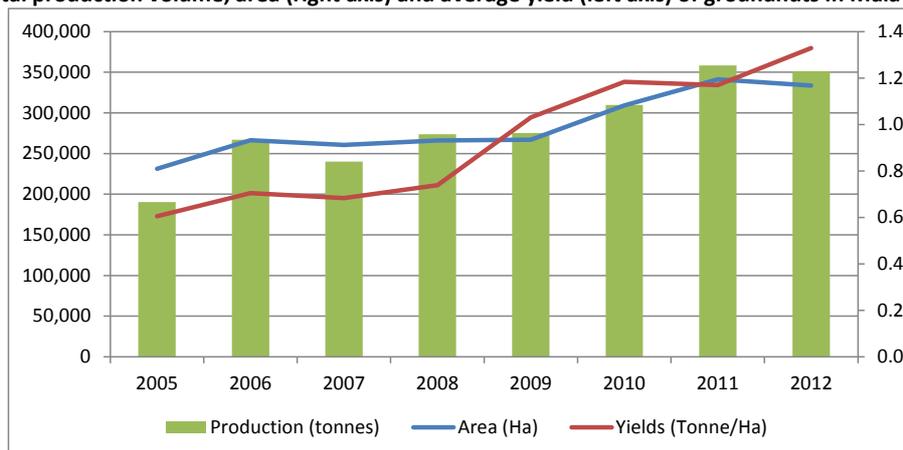
Figure 2. Share of production per Agro-ecological zones in Malawi, average 2005-2012



Source: MoAFS, 2012

In terms of acreage, it is the third commodity in Malawi and approximately 27 percent of the total land dedicated to the production of legumes is used for groundnuts. Production increased significantly during the period 2005-2012 (Figure 3) and total production in 2012 almost doubled that of 2005, surpassing 250,000 tonnes per year since 2007.

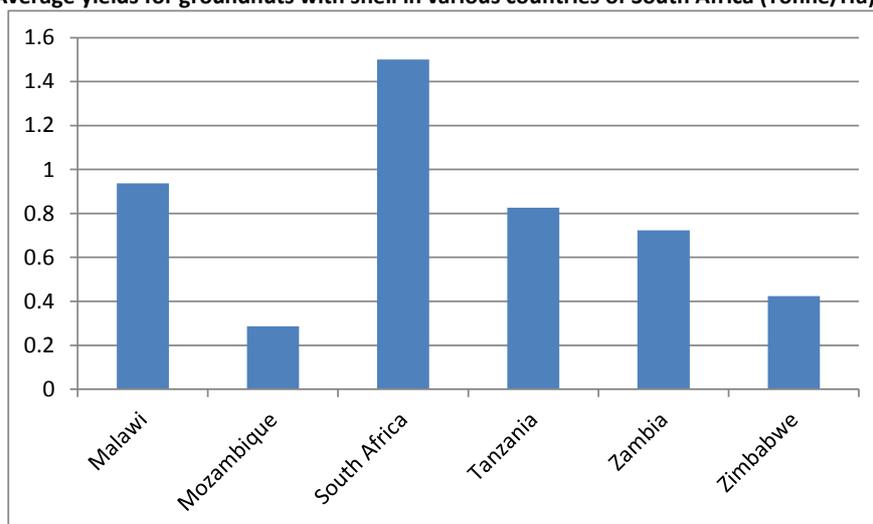
Figure 3. Total production volume, area (right axis) and average yield (left axis) of groundnuts in Malawi, 2005-2012



Source: MoAFS, 2014 (data from FAOSTAT were used for 2009 due to the inconsistencies in the data this year)

Increases are attributed to the expansion of the total area of production, improved post-harvest losses techniques such as the Mandela method as well as improved hybrid varieties (ICRISAT, 2009). Implementation of the FISP, targeting legumes including groundnuts since 2008/09 certainly had a positive impact on yields and compared to neighboring countries, average yields were higher with the exception of South Africa (Figure 4).

Figure 4. Average yields for groundnuts with shell in various countries of South Africa (Tonne/Ha), 2005-2012



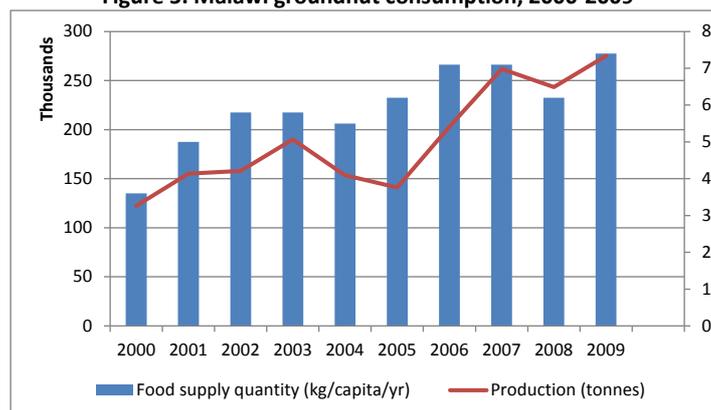
Source: FAOSTAT, 2014

CONSUMPTION/UTILIZATION

It is estimated that from total production, 60 percent is consumed at household level, meaning consumed by the farming families or sold in local markets in the surrounding villages, 25 percent is sold in national markets, and 15 percent is exported.

The annual consumption of groundnuts (shelled equivalent) per head in Malawi in 2009 amounted to 7.4 kg per year (Figure 5). This corresponds to a daily intake of 72 calories, or 3 percent of the total daily caloric intake. Groundnut is considered as an important component of the Malawian diet because of its high nutritional value.

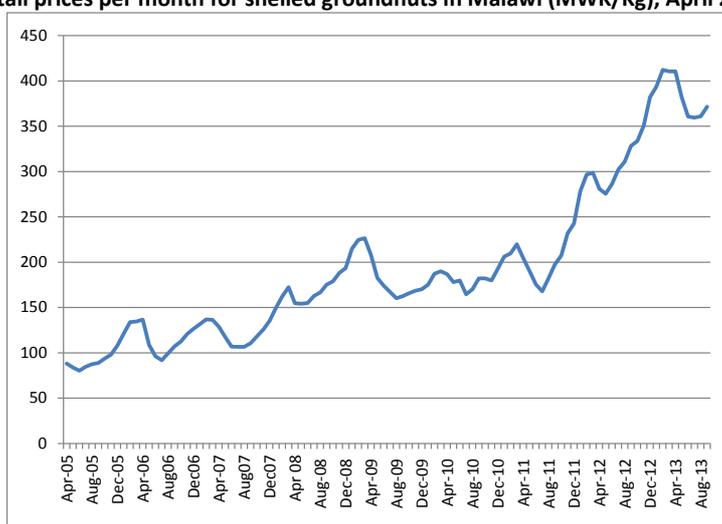
Figure 5. Malawi groundnut consumption, 2000-2009



Source: FAOSTAT, 2014

Consumers face price volatility, directly linked to the seasonality of production, namely prices are low in April- May when harvest is carried out (Figure 6).

Figure 6. Average retail prices per month for shelled groundnuts in Malawi (MWK/Kg), April 2005- September 2013



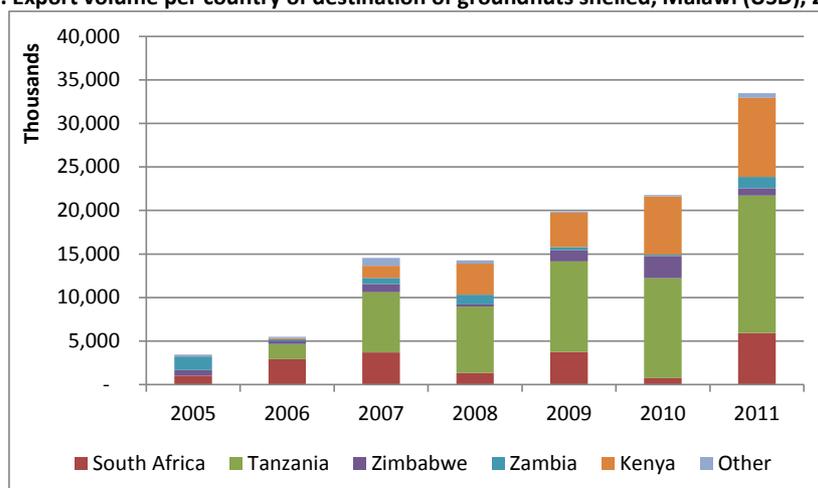
Source: MoAFS, 2014

MARKETING AND TRADE

From independence until the late 1980s, groundnuts were prominent among the major export crops of Malawi. Their production was marketed through the state-owned Agricultural Development and Marketing Corporation (ADMARC), which was the sole trader of groundnuts until 1987 when the monopoly was abolished under Malawi’s reform programs for the agricultural sector.

Under the Special Crops Act, some main export commodities, in particular tobacco, were restricted to estates and smallholder farmers could not obtain licenses to access the production or marketing of these crops. Groundnuts, however, could be produced by smallholders. While Europe used to dominate the export market in the 1970s and 1980s, groundnut is now mainly exported to regional markets, including South Africa, Zimbabwe, Tanzania and Kenya (Figure 7) but export destinations vary across years. For instance, export to Asian countries and more specifically to Singapore represented a significant share of total export value in 2012 while they were limited in the previous years (represented by ‘Other’ in Figure 8).

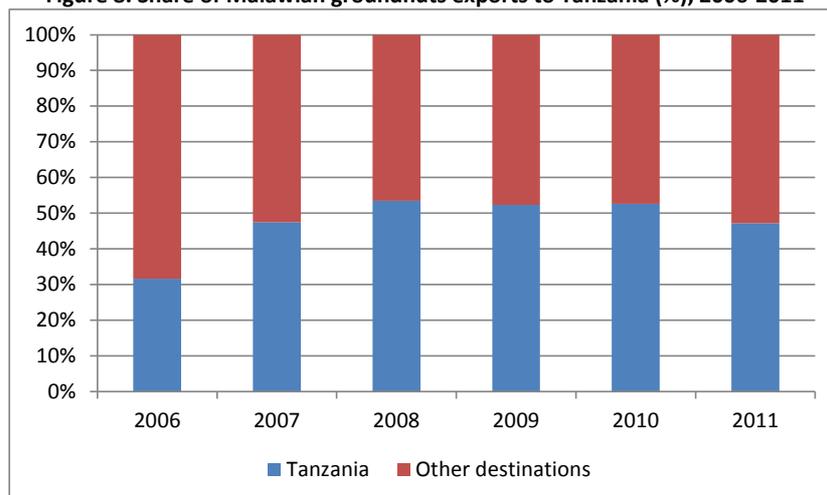
Figure 7. Export volume per country of destination of groundnuts shelled, Malawi (USD), 2005-2012



Source: UNCOMTRADE, 2014 (for 2012, data from the Ministry of Trade were reported)

Tanzania is one of the major destinations for groundnut exports; however, a 10 percent tariff is harming trade (Figure 8).

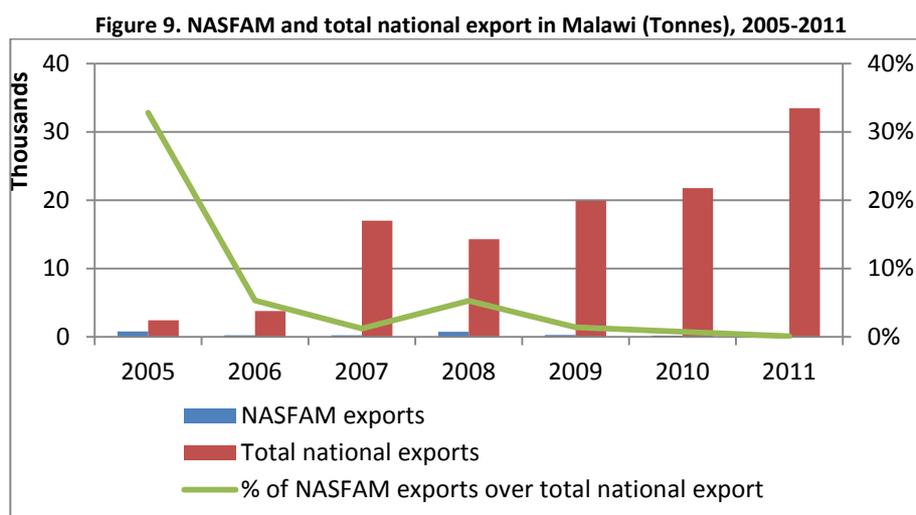
Figure 8. Share of Malawian groundnuts exports to Tanzania (%), 2006-2011



Source: UNCOMTRADE, 2014

With regards to the international markets, there is an MFN tariff barrier of 15 percent with China on groundnuts (which applies to India and Malawi) but this does not create a significant barrier since trade flows with China are limited.

In 2003, NASFAM began to export regionally and has since then been a major buyer and exporter of groundnuts. Indeed, most of NASFAM production is exported. In 2005, NASFAM entered the Fairtrade Market but their share of total groundnut exports continued to decrease from 33 percent in 2005 to less than 1 percent in 2011 (Figure 9). This justifies the 2011 transition of NASFAM and the establishment Afri-nut Ltd, of a joint venture with the British fair-trade organization: Twin. Afri-Nut Ltd is now a groundnut processing plant for the production of groundnut paste (peanut butter) and export of nuts to the United Kingdom.



Source: NASFAM and FAOSTAT, 2014

Rab Processors Ltd. exports groundnut as well. Some nuts are roasted or processed into paste for local consumption while the remainder is exported throughout the region depending on market availability. Farmers World Ltd is also buying nuts from farmers which are graded and packed for local markets and export.

High levels of aflatoxin contamination, inconsistent and unstandardized sizes of kernels have all contributed to the lack of confidence among overseas buyers and thus reduced overseas demand for Malawian groundnuts (Emmott, 2013; Sangole, 2010). Aflatoxins are naturally occurring mycotoxins that are found in moldy grain. Maize, sorghum and groundnuts are particularly susceptible to this harmful and highly carcinogenic fungus.

DESCRIPTION OF THE VALUE CHAIN

As mentioned previously, approximately 60 percent of groundnuts are consumed directly by farmer households or sold by farmers in local markets. The remainder is channeled through the processing, wholesale and retail markets, and approximately 15-20 percent is exported as shelled groundnuts (CYE Consult, 2009).

Small scale groundnut farmers in Malawi can be classified in two categories: those who are integrated in an organized value chain such as NASFAM and those that are not.

Seeds were mainly sourced from the informal sector, (ICRISAT, 2009) while the participation of private sector, national institutions through the Farm Input Subsidy Programme (FISP), and non-governmental organizations such as NASFAM, is low.

From the farm, the marketed groundnuts are channeled through NASFAM or sold to intermediate traders who buy groundnuts directly from farmers in the village. While NASFAM buys only shelled nuts, traders will buy them either shelled or unshelled. The groundnuts are then sold in trading centers to small traders or assemblers to be sold to urban traders or transported to Lilongwe or Blantyre. The main traders are: Rab Processors, Export and Trading Company; Farmers World; and NASFAM.

NASFAM has its own processing facilities and is regarded as the main association dealing with exports of agricultural commodities (Box. 1). There are around 15,000 groundnut farmers that are

members of the association. Despite the stable price for processed groundnuts, prices for raw products at producer level are volatile from year to year. The NASFAM value chain however, allows for better bargaining possibilities (Emmot, 2013).

Box. 1. National Smallholder Farmers' Association and the groundnut production

The National Smallholder Farmers' Association (NASFAM) was established in 1997 and is the largest independent, member-owned smallholder organization in Malawi. Its total membership comprises around 100,000 farmers, of which 15 percent produce groundnuts. Most of these members farm on less than one hectare of land.

The association is split into a Development and Commercial branch. The development branch provides community development and capacity building services, while NASFAM Commercial carries out the marketing of inputs and outputs to and from farmers. NASFAM has been a strong promoter of crop diversification, including groundnut production, away from the high dependency of Malawian smallholders on maize and tobacco.

The association is a main buyer of groundnuts for export but has also invested in a cleaning plant and oil extractor, located in Kanengo, north of Lilongwe, close to the main producing areas. All groundnuts procured are hand-shelled at the farm. NASFAM now partners with ICRISAT to improve productivity through high-yield varieties.

NASFAM's activities are financed by a percentage of the government levy on tobacco, user fees and external donor support.

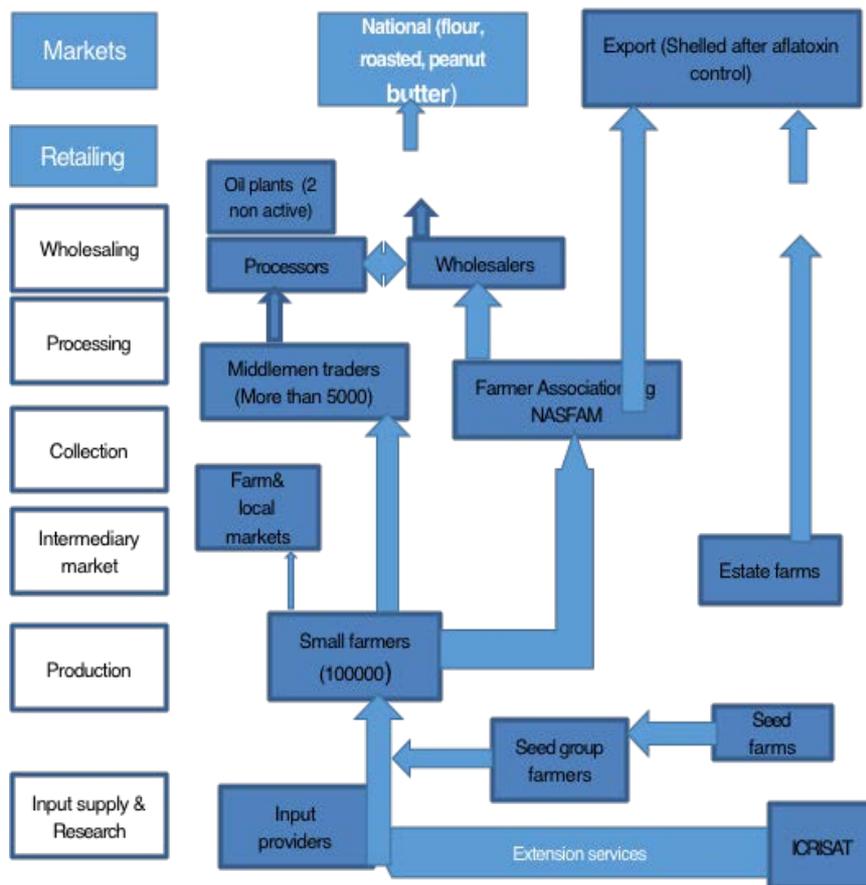
Sources: NASFAM website, Sangole (2010), Nakagawa (2009)

Twin, a fair trade movement, is now collaborating with NASFAM to launch Afri-Nut Ltd. The new brand aims at exporting groundnuts to the UK under Fairtrade terms and for use in nutritional supplements (ready to use therapeutic food). Afri-Nut is a joint-venture financed and co-owned by shareholders from the commercial and development sectors (Twin, 2014).

While NASFAM/Afrinut limited is supplied directly by member farmers, other processors usually procure their raw material through agents and traders who buy directly from farmers. In the period under review, NASFAM processing was limited and consisted mainly of sorting, grading and packing.

Processing by other companies, including Rab Processors, Transglobe, Mulli Borthers and Equator Nuts, engage in roasting as well as the manufacturing of flour and peanut butter. In the period 2007-2010, processors abandoned groundnut oil production due to strong competition from consumable oil imports from neighboring countries. However, in 2010, NASFAM installed an oil extraction plant in Lilongwe which is intended to reinvigorate groundnut oil production in Malawi. Oil seed, including groundnut, production and processing is currently being targeted by the National Export Strategy 2013-2018.

Figure 10. Value chain for Malawian groundnuts



Source: CYE Consult, 2009

While estates sell their groundnuts to processors that mechanically remove the shells of the groundnuts, smallholders supply NASFAM and traders with shelled nuts which they have done by hand. Approximately 30 per cent of total weight is lost as groundnut shells are removed.

It is estimated that of total shelled nuts, 60 per cent were meeting the export quality standards, while the remaining 40 per cent were processed to secondary products such as flour, groundnut cake or peanut butter.

Processed nuts are stored in the facilities of processors or NASFAM before being transported to South Africa for consumption, further processing or export to the European Union. In 2007, NASFAM started the export of fair trade nuts produced in Mchinji district, western central region of Malawi to the United Kingdom.

One of the main challenges for the groundnut value chain in Malawi is the management and control of aflatoxin (Emmott, 2013) (Box 2). A survey carried out by ICRISAT has shown that the major constraint to production according to producers is the high levels of pests and diseases (WB, 2008). To address this issue, NASFAM established a testing facility in 2007 and testing kits have been developed in collaboration with ICRISAT and UNIDO. The ELISA technique is applied despite the fact that it is not recognized by import markets. Groundnut samples are often sent to accredited laboratories in South Africa (ICRISAT, 2009) but due to high transport costs in Malawi, this process can be expensive. An increasing number of testing services on a national and regional basis as well as

improved testing facilities would benefit the export market (WB, 2008). However, as production from a large number of small farmers is consolidated by NASFAM, and contamination may occur also at later stages of the value chain, it is currently impossible to trace the contamination back to the farm of origin.

Box 2. Aflatoxins affecting the Malawian value chain

Aflatoxins are small molecules that are toxic to both humans and animals. Though they appear in several agricultural products, they are most common in groundnuts. Contamination can occur any-time from pre-harvest to storage and can severely threaten the groundnut export potential of Malawi. Increased efforts are being undertaken to strengthen the capacity for aflatoxin testing, which generally takes place before shelling of the nuts.

A study on the aflatoxin levels found in the consignment subjected to EU notification or interception, discovered that 100 percent of the limited amount of export from Malawi between 2000 and 2006 would not have met the Codex Standards¹ (WB, 2008). As a result, whole shipments of groundnut produce can receive physical treatment, be re-dispatched or blocked. In many cases, the destination is changed according to the level of standards of the country of destination.

International donors and international research centers are providing support to enhance seed multiplication and awareness of quality consideration (ICRISAT, 2009). For instance, ICRISAT is involved in the development of new varieties and aflatoxin certification. In 2009, UNIDO developed a project to build capacity in improving aflatoxin management in the groundnut value chain. World Vision has also implemented a seed multiplication programme targeting groundnuts.

POLICY DECISIONS AND MEASURES

Background to Liberalization of groundnut marketing

Until the 1980s, groundnut production and marketing were vertically integrated within a parastatal system. Government policies were designed to control prices of inputs (both seed and fertilizer) as well as outputs, and to subsidize credit. In the 1980s the popular “Chalimbana” variety became increasingly susceptible to diseases. Insufficient attention was given to seed quality and overseas buyers lost their confidence in the quality of Malawian groundnuts; groundnut exports ceased and the total production area declined by approximately two-thirds. In 1987, the parastatal monopoly on groundnut marketing and input supply by the Agricultural Development and Marketing Corporation (ADMARC) was removed as a result of the Government of Malawi’s Agricultural Sector Adjustment Programme. A new high-yielding groundnut variety was introduced by ICRISAT in the 1990s but due to limited seed availability it took until the end of the 90s before farmers began to producing groundnuts again (Jones, 2009). This was reinforced by the development of the processing and marketing capacity of NASFAM, and the inclusion of legume vouchers for subsidized groundnut seed in the Farm Input Subsidy Programme from 2009 onwards.

Groundnut production and the ASWAp

While groundnut was not targeted by the Malawi Growth and Development Strategy (2006-2011), the Government of Malawi presented its Agriculture Sector Wide Approach (ASWAp) in 2010, which

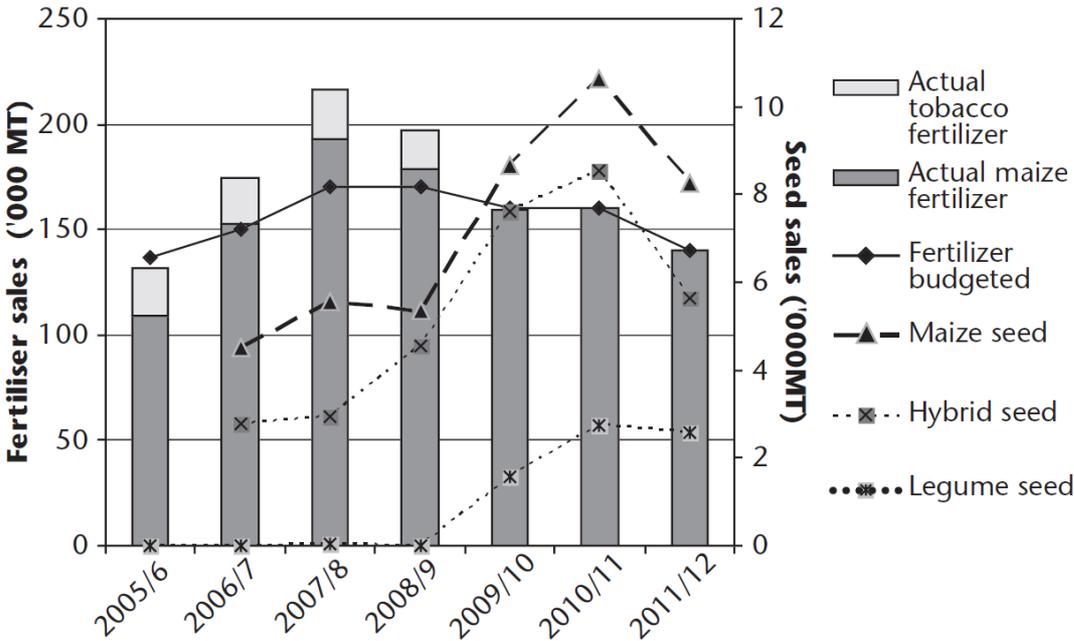
¹ The Codex Alimentarius standards for aflatoxin have been adopted by the EU to protect human health.

focuses on, among other commodities, groundnut production. ASWAp is a priority investment programme for the agricultural sector aimed at increasing productivity, increasing rural agricultural incomes, and diversifying food production in order to improve nutrition at household level. ASWAp identifies groundnut production as an important element of the diversification objective to increase farming revenues and nutrition. Furthermore, the programme will increase the total value of groundnut exports through the promotion of contract farming, farmers associations and cooperatives, the promotion of distribution and utilization of improved seed, fertilizer and chemicals, as well as export promotion (market research studies, buyer/trader meetings etc.). In contrast to tobacco, tea, cotton and sugar, the ASWAp does not mention a specific export volume target.

Farm Input Subsidy Programme (FISP)

Input subsidies (Figure 11) have been an important feature of Malawi’s agricultural sector for decades, until they were largely abolished in the 1990s. Following the Malawi food crisis of 2005 however, a large-scale input subsidy programme was re-introduced during the 2005/6 crop season to tackle some of the key constraints to increased production faced by Malawian smallholder farmers, including low yields and high costs of inputs. Though the FISP focuses mainly on subsidized seed and fertilizer for maize, since 2009 the program also provides a flexible legume seed voucher that can be used for subsidized procurement of groundnut, pigeon pea, soybean or bean seed. As mentioned by Chinsinga (2011), programme donors strongly advocated for the inclusion of legumes in the FISP in order to incentivize legume agriculture, boost farmers’ incomes, improve nutrition and preserve soil health. Total legume seed sales through the voucher system reached 2 000 tonnes in 2010, representing 74 percent of all legume seed coupons (Figure 11). Indeed, groundnut is the main legume targeted by the FISP and coupons for legumes represented 20 percent of the total coupons distributed in 2010. According to NASFAM, by supporting the groundnut value chain, the FISP creates distortion in the seed market.

Figure 11. Total subsidized fertilizer and seed sales in Malawi by year ('000 tonnes), 2005/6-2010-11



Source: Dorward and Chirwa, 2011

National export strategy (NES)

The Malawi National Export Strategy 2013-2018 highlights the need to diversify the export base in order to avoid overreliance on too few export markets and has furthermore prioritized the oil seed sector, including groundnuts, to be one of the pillar export crops. Fair trade groundnuts are considered high value products within potential European and United States markets. Basic groundnuts are currently exported to Tanzania, South Africa and Zambia and soon, in the framework of the NES, are expected to be exported to new regional markets such as Kenya, Rwanda and Zimbabwe. The long term international targets are USA, China, and Japan (NES, 2013).

Despite a high level of exports to Tanzania, there is a 10 percent tariff barrier on the import of groundnuts from Malawi. The NES is therefore suggesting to further negotiate the removal of the barrier to improve comparative advantage and maintain market share.

Trade Policy

A 15 percent tariff is applied by China as well but as a minor trading partner, there is little impact. Since Malawi is part of COMESA and SADC, most of the export administrative procedures are free; there are no tariff or non-tariff charges.

Other policies

The main challenge with international markets is the required quality standard certification linked to aflatoxin levels. At this time there is no clear policy to target the reduction of aflatoxin levels, especially for export of groundnuts, creating a lack of confidence from major world markets. The NSE is thus suggesting to focus policy efforts on this issue (NES, 2012).

3. METHODOLOGY

MAFAP methodology seeks to measure price incentives for producers and other marketing agents in key agricultural value chains. The analysis is based on the comparison between observed domestic prices and constructed reference prices. Reference prices are calculated from the international price of the product at the country's border, where the product enters the country (if imported) or exits the country (if exported). This price is considered the benchmark price free of influence from domestic policies and markets. MAFAP estimates two types of reference prices – observed and adjusted. *Observed reference prices* are those that producers and other marketing agents could receive if the effects of distortions from domestic market and trade policies, as well as overall market performance, were removed. *Adjusted reference prices* are the same as observed reference prices, but also exclude the effects of any additional distortions from domestic exchange rate policies, structural inefficiencies in the commodity's value chain, and imperfect functioning and non-competitive pricing in international markets.

MAFAP's price incentives analysis is based on the law of one price, which is the economic theory that there is only one prevailing price for each product in a perfectly competitive market. This law only applies in the case of homogeneous goods, if information is correct and free, and if transaction costs are zero. Thus, this analysis was conducted for goods that are either perfectly homogeneous or perfect substitutes in the local market in terms of quality, or, failing that, are simply comparable goods. Indicators calculated from reference and domestic prices will, therefore, reveal whether domestic prices represent support (incentives) or a tax (disincentives) to various agents in the value chain.

Domestic prices are compared to reference prices at two specific locations along commodity value chains – the farm gate (usually the main production area for the product) and the point of competition (usually the main wholesale market where the domestic product competes with the internationally traded product). The approach for comparing prices at each location is summarized below, using an imported commodity as an example. In this situation, the country is importing a commodity that arrives in the port at the benchmark price (usually the unit value CIF price at the port of entry). In the domestic market, we observe the price of the same commodity at the point of competition, which is in this case the wholesale market, and at the farm gate. We also have information on observed access costs, which are all the costs associated with bringing the commodity to market, such as costs for processing, storage, handling, transport and the different margins applied by marketing agents in the value chain. These include access costs between the border and wholesale, as well as between the farm gate and wholesale.

The benchmark price is made comparable to the domestic price at wholesale by adding the access costs between the border and wholesale, resulting in the observed reference price at wholesale. This takes into account all the costs incurred by importers and other agents to bring the commodity to market, which in effect, raises the price of the commodity. The reference price at wholesale is further made comparable to the domestic price at the farm gate by deducting the access costs between the farm gate and wholesale, resulting in the observed reference price at farm gate. This takes into account all the costs incurred by farmers and other agents to bring the commodity from the farm to the wholesale market. Mathematically, the equations for calculating the observed

reference prices at wholesale (RP_{owh}) and farm gate (RP_{ofg}) for an imported commodity are as follows:

$$RP_{owh} = P_b + AC_{owh}$$

$$RP_{ofg} = RP_{owh} - AC_{ofg}$$

where AC_{owh} are the observed access costs from the border to wholesale, including handling costs at the border, transport costs from the border to the wholesale market, profit margins and all observed taxes and levies, except tariffs, and P_b is the benchmark price. AC_{ofg} are the observed access costs from the farm gate to wholesale, including handling costs at the farm, transport costs from farm to wholesale market, processing, profit margins and all observed taxes and levies.

The same steps described above can be taken a second time using benchmark prices and access costs that have been adjusted to eliminate market distortions due to exchange rate misalignments, structural inefficiencies in the commodity's value chain² and imperfect functioning and non-competitive pricing in international markets, where possible and relevant. The adjusted benchmark prices and access costs are then used to generate a second set of *adjusted* reference prices, in addition to the first set of *observed* reference prices calculated.

For exported commodities, a slightly different approach is used. In this case, the border is generally considered the point of competition (wholesale), and the unit value FOB price for the commodity is normally taken as the benchmark price. Furthermore, observed and adjusted reference prices at wholesale are obtained by subtracting, rather than adding, the access costs between the border and wholesale. Mathematically, the equations for calculating the observed reference prices at wholesale (RP_{owh}) and farm gate (RP_{ofg}) for an exported commodity are as follows:

$$RP_{owh} = P_b - AC_{owh}$$

$$RP_{ofg} = RP_{owh} - AC_{ofg}$$

After observed and adjusted reference prices are calculated for the commodity, they are subtracted from the domestic prices at each point in the value chain to obtain the observed and adjusted price gaps at wholesale and farm gate. *Observed price gaps* capture the effect of distortions from trade and market policies directly influencing the price of the commodity in domestic markets (e.g. price ceilings and tariffs), as well as overall market performance. *Adjusted price gaps* capture the same as the observed, in addition to the effect of any distortions from domestic exchange rate policies, structural inefficiencies in the commodity's value chain, and imperfect functioning and non-competitive pricing in international markets. Mathematically, the equations for calculating the observed price gaps at wholesale (PG_{owh}) and farm gate (PG_{ofg}) are as follows:

² Structural inefficiencies in commodity value chains may include government taxes and fees (excluding fees for services), high transportation and processing costs, high profit margins captured by various marketing agents, bribes and other non-tariff barriers.

$$PG_{owh} = P_{wh} - RP_{owh}$$

$$PG_{ofg} = P_{fg} - RP_{ofg}$$

where P_{fg} is the domestic price at farm gate, RP_{ofg} is the observed reference price at farm gate, P_{wh} is the domestic price at wholesale, and RP_{owh} is the observed reference price at wholesale.

A positive price gap, resulting when the domestic price exceeds the reference price, means that the policy environment and market functioning as a whole generate incentives (support) to producers or wholesalers. For an imported commodity this could be due to distortions such as the existence of an import tariff. On the other hand, if the reference price exceeds the domestic price, resulting in a negative price gap, this means that the policy environment and market functioning as a whole generate disincentives (taxes) to producers or wholesalers. For an imported commodity this could be due to distortions such as a price ceiling established by the government to keep domestic prices low.

In general, price gaps provide an absolute measure of the market price incentives (or disincentives) that producers and wholesalers face. Therefore, price gaps at wholesale and farm gate are divided by their corresponding reference price and expressed as a ratio, referred to as the **Nominal Rate of Protection (NRP)**, which can be compared between years, commodities, and countries.

The *Observed Nominal Rates of Protection* at the farm gate (NRP_{ofg}) and wholesale (NRP_{owh}) are defined by the following equations:

$$NRP_{ofg} = \frac{PG_{ofg}}{RP_{ofg}} ; NRP_{owh} = \frac{PG_{owh}}{RP_{owh}}$$

where PG_{ofg} is the observed price gap at farm gate, RP_{ofg} is the observed reference price at the farm gate, PG_{owh} is the observed price gap at wholesale and RP_{owh} is the observed reference price at wholesale.

Similarly, the *Adjusted Nominal Rates of Protection* at the farm gate (NRP_{afg}) and wholesale (NRP_{awh}) are defined by the following equations:

$$NRP_{afg} = \frac{PG_{afg}}{RP_{afg}} ; NRP_{awh} = \frac{PG_{awh}}{RP_{awh}}$$

where PG_{afg} is the adjusted price gap at farm gate, RP_{afg} is the adjusted reference price at the farm gate, PG_{awh} is the adjusted price gap at wholesale and RP_{awh} is the adjusted reference price at wholesale.

If public expenditure allocated to the commodity is added to the price gap at farm gate when calculating the ratios, the **Nominal Rate of Assistance (NRA)** is generated. This indicator summarizes

the incentives (or disincentives) due to policies, market performance and public expenditure.³ Mathematically, the Nominal Rate of Assistance is defined by the following equation:

$$NRA = \frac{PG_{afg} + PE_{csp}}{RF_{afg}}$$

where PE_{csp} is commodity-specific public expenditure that has been identified and measured as monetary units per tonne.

Finally, MAFAP methodology estimates the **Market Development Gap (MDG)**, which is the portion of the price gap that can be attributed to “excessive” or inefficient access costs within a given value chain, exchange rate misalignments, and imperfect functioning of international markets. “Excessive” access costs may result from factors such as poor infrastructure, high processing costs due to obsolete technology, government taxes and fees (excluding fees for services), high profit margins captured by various marketing agents, bribes and other non-tariff barriers. Therefore, the total MDG at farm gate is comprised of three components – gaps due to “excessive” access costs, the exchange rate policy gap and the international market gap. When added together, these components are equivalent to the difference between the observed and adjusted price gaps at farm gate.

Similar to the price gaps calculated, the MDG is an absolute measure, which is also expressed as a ratio to allow for comparison between years, commodities, and countries. This relative indicator of the total MDG affecting farmers is derived by calculating the ratio between the total MDG at farm gate and the adjusted reference price at farm gate as follows:

$$MDG_{fg} = \frac{(ACG_{wh} + ACG_{fg} + ERPG + IMG)}{RP_{afg}}$$

where ACG_{wh} is the access cost gap at wholesale defined as the difference between observed and adjusted access costs at wholesale, ACG_{fg} is the access cost gap at farm gate defined as the difference between observed and adjusted access costs at the farm gate, ERPG is the exchange rate policy gap, and IMG is the international market gap.

A more detailed description of the methodology applied in this analysis is available on MAFAP’s website at www.fao.org/in-action/mafap.

³ The NRA indicator was not calculated for any of the commodities analyzed because of insufficient data on public expenditure. However, it will be developed in the forthcoming reports, as the public expenditure analysis is improved and better data are made available.

4. DATA REQUIREMENTS AND CALCULATION OF INDICATORS

To calculate the indicators needed to estimate incentives or disincentives to production (NRP) 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 PRODUCT

Malawi is a net exporter of groundnuts for all years of the period under review (see the section MARKETING AND TRADE).

MARKET PATHWAY ANALYSED

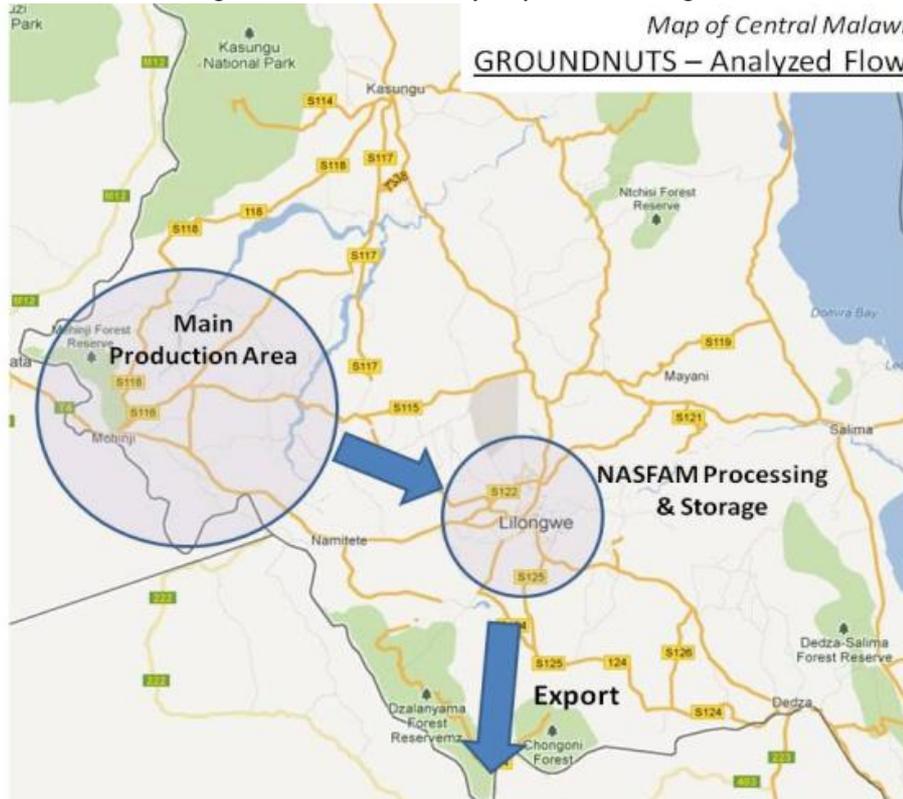
The calculation of MAFAP indicators focuses on the export value chain that is dominated by NASFAM/Afrinut because it is the most structured value chain for which data is available (access costs and prices offered to producers). The association comprises around 15,000 farmers that produce groundnuts, representing approximately 15 percent of the total number of groundnut producers. Moreover, the NASFAM value chain is considered competitive. Prices offered to members are similar to prices offered to non-members yet members benefit from various services such as seed provisioning, shelling machines and training programmes.

The Mchinji district (109 Km away from Lilongwe) situated in Kasungu ADD is the main cultivation area for NASFAM members producing groundnuts. Producers are regionally associated to the Mchinji Area Smallholder Farmers Association (MASFA) belonging to NASFAM. After harvesting, groundnuts transit from Mchinji district to Lilongwe, where NASFAM storage and processing activities take place; then, they are exported through Mozambique and Zimbabwe before reaching the port of Durban (Figure 12).

The price incentive analysis is not conducted at wholesale level, owing to the fact that the NASFAM groundnuts value chain is integrated. Indeed, NASFAM is the main agent from producer level to export.

The main export destination for NASFAM is South Africa where groundnuts can be re-exported to European markets. Therefore, the border considered is the port of Durban, South Africa.

Figure 12. Overview of analyzed product flow of groundnuts



Source: MAFAP, 2014

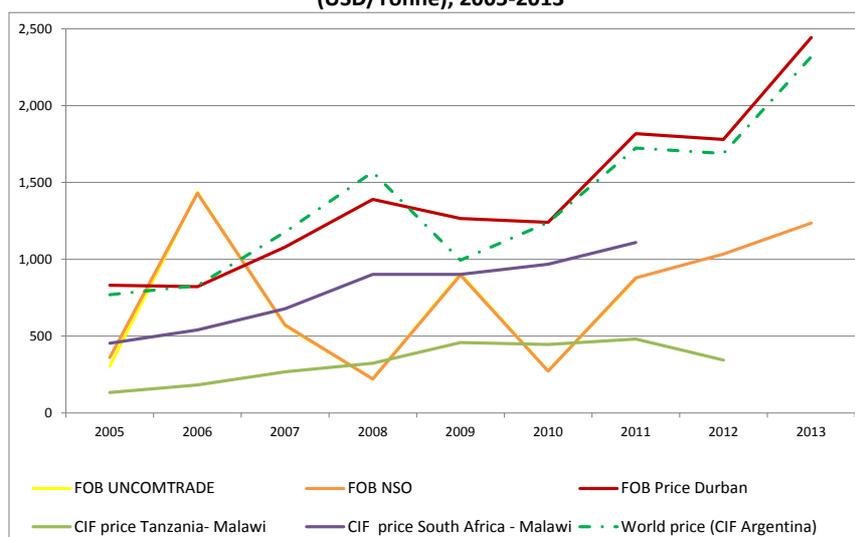
BENCHMARK PRICES

Observed

The basis for calculating a reference parity price to determine whether Malawian groundnut farmers receive market incentives or disincentives is to establish a benchmark border price. Border prices vary both between years and database sources (Figure 13). The export price of South Africa has been selected since NASFAM exports mainly to South Africa and the analysis focuses on the NASFAM value chain. Moreover, other sources have been discarded for the following reasons:

- The price variation across years in the data from the National Statistics Office (NSO) seems unrealistic when compared to national prices (producer and retail prices) and international price (FOB in Durban). Prices provided by NSO are based on export volume and value recorded by national customs. Prices recorded by the Ministry of Trade, available in FAOSTAT, UNCOMTRADE and the Global Trade Atlas are similar.
- The CIF price for Tanzania is particularly low compared to producer and retail prices. This could be due to the difference between the quality of groundnuts produced by NASFAM and the quality of groundnuts exported to the sub-region.
- The FOB price South Africa-Malawi seems to be relevant but when freight and insurance are subtracted from the FOB price, border prices are lower than producer prices for some years - which is unlikely.

Figure 13. Border prices by source in comparison with international and national retail prices for shelled groundnuts (USD/Tonne), 2005-2013



Source: NSO, UNCOMTRADE, NASFAM, GTA, MoAFS, 2014

The FOB price for Durban, South Africa is available in the Global Trade Atlas for the period 2005-2011 and has been constructed for 2012 and 2013 by applying the average annual growth rate of the world reference CIF price for groundnuts, namely the CIF price of Argentina, to the FOB price for South Africa.

Table 1. Border prices for shelled groundnuts in Malawi (USD/Tonne), 2005-2013

	2005	2006	2007	2008	2009	2010	2011	2012	2013
World price (CIF Argentina)	769	829	1,177	1,568	995	1,239	1,724	1,688	2,318
FOB Price South Africa	831	822	1,080	1,390	1,266	1,240	1,818	1,780	2,444

Source: IMF, GTA, 2014

DOMESTIC PRICES

Observed prices at point of competition

As mentioned previously, the trade flow analyzed represents a vertically integrated marketing chain in which NASFAM buys directly from members at producer level for the export market. This means that no regular wholesale market level exists in the marketing chain for which incentives and disincentives are calculated.

Observed prices at producer level

Groundnuts are usually hand shelled by farmers and are therefore procured by NASFAM in shelled form. The producer prices (Table 2) used in the analysis are annual average prices offered by NASFAM until 2010 and then by Afrinut from 2011 to 2013 as they took over NASFAM processing activities for groundnuts after 2011. NASFAM estimates farm gate prices based on profit/cost statements, where both fixed and variable costs are taken into account

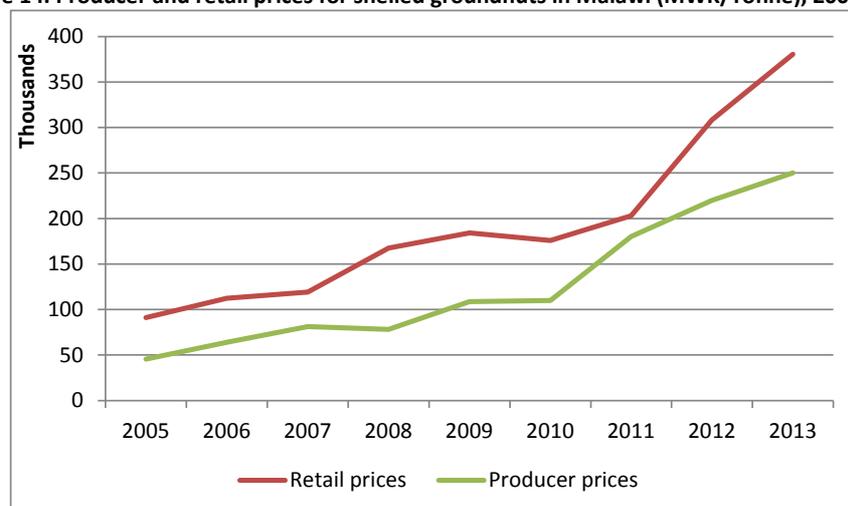
Table 2. Producer prices offered by NASFAM and Afrinut for shelled groundnuts in Malawi (MWK/Tonne), 2005-2013

	2005	2006	2007	2008	2009	2010	2011	2012	2013
Producer prices	45,592	63,926	81,175	77,990	108,699	109,855	180,000	220,000	250,000

Source: NASFAM (2005-2010), Afrinut (2011-2013), 2014

Producer prices offered by NASFAM and Afrinut are consistent with national average retail prices reported by the Ministry of Agriculture and Food Security (MoAFS) except in 2011, which correspond to the transition period between NASFAM and Afrinut.

Figure 14. Producer and retail prices for shelled groundnuts in Malawi (MWK/Tonne), 2005-2013



Source: MoAFS, NASFAM/Afrinut, 2014

EXCHANGE RATES

Observed

The observed exchange rate from the International Monetary Fund (IMF) is used for this analysis (Table 3). The exchange rate from the Reserve Bank of Malawi (RBM) was not available for the whole period.

Table 3. Nominal exchange rate (USD/MWK), 2005-2013

Year	2005	2006	2007	2008	2009	2010	2011	2012	2013
Nominal exchange rate	118	136	140	141	141	150	157	249	364

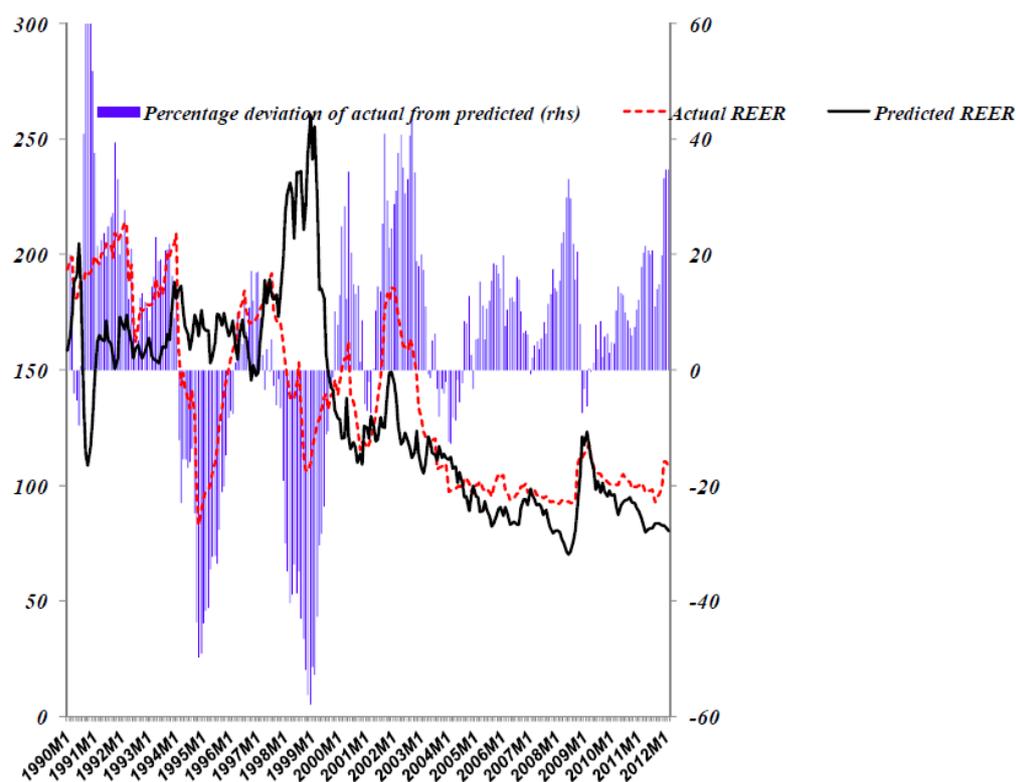
Source: IMF, 2014

Adjusted

Prior to 2012, the government had implemented foreign exchange controls on exchange rate through the RBM between the Malawian Kwacha and the United States Dollar. The Malawi Kwacha has been significantly overvalued since 2005. This is reflected in a dynamic parallel market for foreign exchange until 2012, when the Government of Malawi decided to change its exchange rate policy and allowed its currency to freely float against the US dollar. Therefore, an adjusted exchange rate has been applied from 2005 to 2012 to express the difference between the nominal exchange rate and the exchange rate in the parallel market.

The values used to express the misalignment are the percentage difference of actual Real Effective Exchange Rate (REER) and the predicted REER as estimated by IMF (Figure 15).

Figure 15. Estimation of the exchange misalignment based on the comparison between actual REER and predicted REER in Malawi, 1990 M1- 2012M2



Source: IMF, 2012

Based on the level of misalignment in relative terms, the adjusted exchange rate has been estimated (Table 4).

Data for 2012 are available only for the first two months. Therefore, the misalignment indicated by IMF for 2012 is not taken into account in this analysis because the currency started to float in May and we consider that the floating exchange resulted in minor misalignment from May 2012.

The exchange rate is not adjusted for 2013; no data are available but we consider that the misalignment has been minor due to the implementation of the floating exchange rate in 2012.

Table 4. Adjusted exchange rate USD/MWK, 2005-2013

Year	2005	2006	2007	2008	2009	2010	2011	2012 (Jan-Feb)	2013
Misalignment indicated by IMF(%)	12%	11%	7%	19%	2%	9%	18%	34%	-%
Adjusted exchange rate used in the analysis	133	151	150	167	145	164	185	249	364

Source: IMF, 2012 and MAFAP, 2014

The literature review confirms this level of misalignment; it has been estimated that, by late 2010, the kwacha was overvalued by 10-20 percent (IFPRI, 2013).

ACCESS COSTS

Farm gate to border

Observed access costs

Access costs analyzed include all costs incurred from the farm gate to the processing facilities of NASFAM in Lilongwe and then to the port of Durban, South Africa (Table 5). Access costs were reported by NASFAM and they include association commission and buyers' fees, processing, storage, handling, transport and selling costs, margins, and operational expenses. Export quality management has been done through Hand Picking Selected (HPS) method and in addition, in 2007, NASFAM acquired an Aflatoxin testing laboratory (Emmot, 2013). Costs are reported by NASFAM for the years leading up to and including 2007, whereas the following years were calculated by applying the Consumer Price Index when relevant.

NASFAM pays an agent to handle the administrative export procedures to ensure that the commodity is exported. The cost paid to the agent is around USD 50 which corresponds to the selling and administrative costs. Transport costs to the port of Durban are included, owing to the fact that the border price refers to the export price of groundnut for South Africa. Transport price refers to the price of transport from major city to export port cities (which include Durban) per kilometer per tonne (WB, 2009).

The export value chain of groundnuts is not subject to any duties or government levies.

Table 5. Observed Access cost from producer to border for shelled groundnuts in Malawi, (MWK/tonne), 2005-2013

	2005	2006	2007	2008	2009	2010	2011	2012	2013
Lilongwe North allowance costs									
Association commission	4,000	4,000	4,000	4,000	4,000	4,000	4,000	4,000	4,000
Shunting of groundnuts	813	927	1,000	1,089	1,082	1,076	1,077	1,208	1,276
Buyers fees	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000
Supervision	100	100	100	100	100	100	100	100	100
Labour	407	463	500	545	541	538	538	604	638
Moisture lost	1,600	1,600	1,600	1,600	1,600	1,600	1,600	1,600	1,600
Security	280	280	280	280	280	280	280	280	280
Warehouse and handling	203	232	250	272	271	269	269	302	319
Contingency	122	139	150	163	162	161	162	181	191
Selling and adm costs	15,447	17,610	19,000	20,699	20,560	20,441	20,462	22,958	24,241
Other transport costs	976	1,112	1,200	1,307	1,299	1,291	1,292	1,450	1,531
Transport cost Lilongwe-Durban	21,852	24,912	26,878	29,282	31,686	34,089	36,712	44,360	56,597
Operational expenses									
Inspection charges and quality monitoring	1,100	1,100	1,100	1,100	1,100	1,100	1,100	1,100	1,100
Fumigation	488	556	600	654	649	646	646	725	766
Warehouse costs	1,626	1,854	2,000	2,179	2,164	2,152	2,154	2,417	2,552
Weight loss	886	1,010	1,090	1,187	1,179	1,173	1,174	1,317	1,391
Profit	4,131	4,131	3,800	4,140	4,112	4,088	4,092	4,592	4,848
TOTAL									
	55,031	61,025	64,548	69,598	71,785	74,004	76,658	88,195	102,430

Source: NASFAM, 2014; WB, 2009 and MAFAP, 2014

Adjusted access costs

No duties, levies or taxes have been identified. Moreover, margins, weight loss and moisture were not adjusted since they represent respectively 5 percent, 1 percent and 2 percent of the producer price and are considered reasonable.

However, costs incurred on the segment Lilongwe-Durban were adjusted: the selling price, which corresponds to the price paid by NASFAM to the exporter as a service to handle administrative export procedures, and the transport costs were adjusted to reflect a more efficient market structure (Table 7). Indeed, the literature review (Teravaninthorn, 2008) as well as the Logistic Performance

Index (LPI) provided by the World Bank⁴ estimate that logistic and transport costs are high in Malawi because of the poor quality of infrastructure and the weakness of the market structure.

Thus, the Logistic Performance Index (LPI) is used to adjust the observed selling and transport prices. Owing to the fact that South Africa is a neighboring country and the logistics performance is considered fair (Table 6), its score is used as a benchmark for comparison with Malawi, Mozambique and Zimbabwe, the countries through which groundnuts from Malawi must travel before reaching the South Africa border.

Table 6. Logistic Performance Indexes for Malawi and South Africa, average 2007-2014

	Score	Rank (over 150)
Malawi	2.42	24
Mozambique	2.29	114
South Africa	3.53	91
Zimbabwe	2.29	110

Source: LPI, 2014

Only the segment Lilongwe-South Africa border has been adjusted since the transport price used in the analysis refers to an average transport price from major Malawian cities to export ports, including Durban in South Africa or Beira in Mozambique, and thus access costs already reflect the actual transport costs in South Africa.

⁴ The LPI includes 6 dimensions: (1) efficiency of the clearance process by border control agencies, including customs; (2) quality of trade and transport related infrastructure; (3) ease of arranging competitively price shipment; (4) competence and quality logistic services; (5) ability to track and trace consignments; (6) timeliness of shipments in reaching destination within schedules or expected time delivery.

Table 7. Adjusted access cost from producer to border for shelled groundnuts in Malawi, (MWK/tonnes), 2005-2013

	2005	2006	2007	2008	2009	2010	2011	2012	2013
Lilongwe North allowance costs									
Association commission	4,000	4,000	4,000	4,000	4,000	4,000	4,000	4,000	4,000
Shunting of groundnuts	813	926	1,000	1,087	1,084	1,074	1,076	1,213	1,260
Buyers fees	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000
Supervision	100	100	100	100	100	100	100	100	100
Labour	407	463	500	544	542	537	538	606	630
Moisture lost	1,600	1,600	1,600	1,600	1,600	1,600	1,600	1,600	1,600
Security	280	280	280	280	280	280	280	280	280
Warehouse and handling	203	232	250	272	271	269	269	303	315
Contingency	122	139	150	163	163	161	161	182	189
Selling and adm costs	10,211	11,640	12,559	13,682	13,590	13,512	13,525	15,175	16,024
Other transport costs	976	1,112	1,200	1,305	1,301	1,289	1,291	1,455	1,511
Transport cost Lilongwe-Durban	17,781	20,270	21,871	23,826	25,782	27,738	29,872	36,095	46,053
Operational expenses									
Inspection charges and quality monitoring	1,100	1,100	1,100	1,100	1,100	1,100	1,100	1,100	1,100
Fumigation	488	556	600	652	651	644	646	728	756
Warehouse costs	1,626	1,853	2,000	2,174	2,169	2,148	2,152	2,425	2,519
Weight loss	886	1,010	1,090	1,185	1,182	1,171	1,173	1,322	1,373
Profit	4,131	4,131	3,800	4,131	4,120	4,082	4,090	4,608	4,786
TOTAL									
	45,724	50,411	53,100	57,101	58,935	60,705	62,874	72,194	83,495

Source: NASFAM, 2014; WB, 2009; LPI, 2014 and MAFAP, 2014

BUDGET AND OTHER TRANSFERS

The Malawi Farm Input Subsidy Programme (FISP) has been a source of budgetary transfers to smallholder farmers in Malawi during the period of analysis. A separate study was initiated to analyze the trend of the public expenditures.

QUALITY AND QUANTITY ADJUSTMENTS

In this analysis no quantity or quality adjustments are applied. Groundnuts are hand-shelled at the farm gate level before being transported to NASFAM storage centers. Therefore, all prices used in this analysis refer to shelled groundnuts and no quantity adjustment factor is required. The NASFAM value chain analyzed refers to the export quality groundnuts; therefore, no quality adjustment factors was applied.

DATA OVERVIEW

Following the discussions above, below is a summary of the main sources and methodological decisions taken for the analysis of price incentives and disincentives for groundnuts in Malawi as explained in the Methodology.

Table 8. Data sources and methodological decisions

		<i>Description</i>	
<i>Concept</i>		<i>Observed</i>	<i>Adjusted</i>
Benchmark price		<i>CIF price South Africa/ World Source: Global Trade Atlas</i>	<i>N.A.</i>
Domestic price at point of competition		<i>Integrated export value chain. The point of competition for export is considered to be at border and not at wholesale level.</i>	<i>N.A.</i>
Domestic price at farm gate		<i>Producer price offered by NASFAM and Afrinut for shelled groundnuts. Source: NASFAM</i>	<i>N.A.</i>
Exchange rate		<i>Annual average of exchange rate Source: IMF</i>	<i>Nominal exchange rate adjusted using information from the WB and IMF.</i>
Access cost from farm-gate to border		<i>Costs incurred from the farm gate to the border as reported by NASFAM for 2007 (including the export costs). The previous and following years were calculated using the CPI when relevant.</i>	<i>Adjustment of the selling price and transport costs Lilongwe- border South Africa using the Logistic Performance Index for Malawi, Zimbabwe and Mozambique (WB).</i>
QT adjustment	Bor-Wh	<i>N.A.</i>	<i>N.A.</i>
	Wh-FG	<i>N.A.</i>	<i>N.A.</i>
QL adjustment	Bor-Wh	<i>N.A.</i>	<i>N.A.</i>
	Wh-FG	<i>N.A.</i>	<i>N.A.</i>

SUMMARY OF INDICATORS

Table 9. MAFAP Price Gaps at farm gate for shelled groundnuts in Malawi (MWK/Tonne), 2005-2013

	2005	2006	2007	2008	2009	2010	2011	2012	2013
Trade status	x	x	x	x	x	x	x	x	x
Observed PG	2,181	13,141	-5,466	-47,765	1,775	-2,775	-27,845	-135,201	-538,234
Adjusted PG	-19,052	-9,946	-28,154	-97,092	-15,400	-32,949	-94,176	-151,013	-557,169

Source: MAFAP, 2014

Table 10. MAFAP Nominal Rates of Protection for shelled groundnuts in Malawi, (%), 2005-2013

	2005	2006	2007	2008	2009	2010	2011	2012	2013
Trade status	x	x	x	x	x	x	x	x	x
Observed NRP	5	26	-6	-38	2	-2	-13	-38	-68
Adjusted NRP	-29	-13	-26	-55	-12	-23	-34	-41	-69

Source: MAFAP, 2014

Table 11. MAFAP Market Development Gaps for groundnuts in Malawi, (MWK/Tonne and %), 2005-2013

	Unit	2005	2006	2007	2008	2009	2010	2011	2012	2013
Exchange policy gap	MWK/TONNE									
	/ Shelled groundnuts	-11,926	-12,473	-11,240	-36,830	-4,325	-16,876	-52,547	189	0
Access costs gap to farm gate	MWK/TONNE									
	/ Shelled groundnuts	-9,307	-10,614	-11,448	-12,497	-12,850	-13,299	-13,784	-16,001	-18,935
Total market development gap	MWK/TONNE									
	/ Shelled groundnuts	-21,233	-23,087	-22,688	-49,327	-17,175	-30,175	-66,331	-15,812	-18,935
Market development gap as share of farm gate price	%	-47	-36	-28	-63	-16	-27	-37	-7	-8

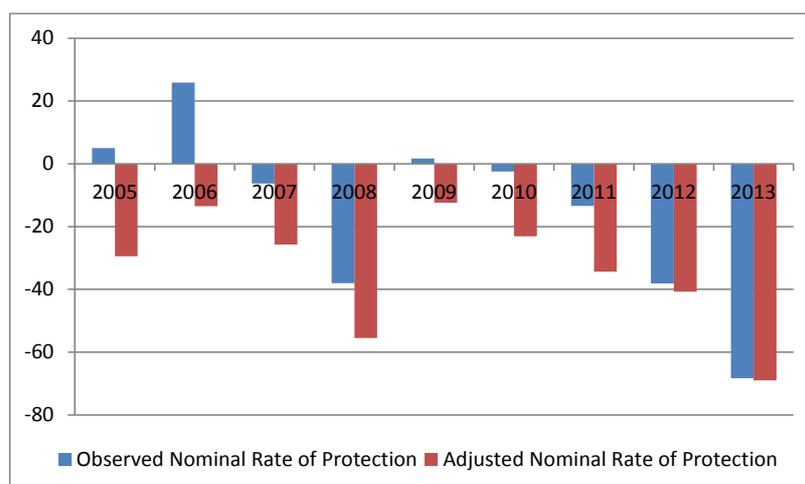
Source: MAFAP, 2014

5. RESULTS AND INTERPRETATION

As mentioned previously, the analysis focuses mainly on the NASFAM and Afrinut value chain, namely export quality groundnuts. Indeed, data from NASFAM were used owing to the fact that producer and wholesale prices are not collected at national level. Due to this factor as well as the fact that only 25 percent of the groundnut production is marketed and 15 percent is exported, the analysis does not reflect the level of price incentives and disincentives received by the majority of groundnut producers. However, identifying the level of price incentives for producers exporting groundnuts is of major interest to the government of Malawi to achieve the objective to increase export of oil from seeds, including from groundnuts. Indeed, groundnuts among other commodities are targeted by the National Export Strategy (NES). Moreover, national policies support groundnut production by targeting legume productivity through the FISP.

MAFAP analysis reveals that the policy and market environment created price disincentives to production between 2005 and 2013. This is indicated by the negative Observed Nominal Rate of Protection (observed NRP) for most of the years (Figure 16). Thereby, producers involved in the NASFAM and then Afrinut marketing system received disincentives of -31 percent on average. Moreover, if inefficiencies along the value chain and the exchange rate misalignment are taken into account (adjusted NRP), the results show that producers received further disincentives during the whole period.

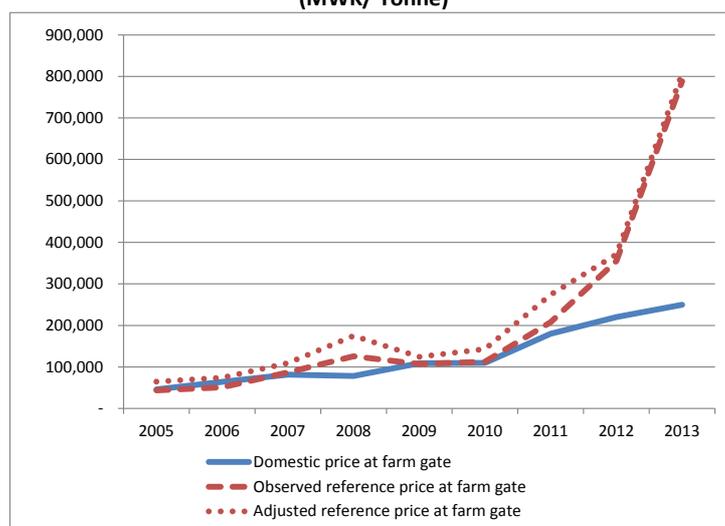
Figure 16. Observed and Adjusted Nominal Rate of Protection at Farm Gate for groundnuts in Malawi (%), 2005-2013



Source: MAFAP, 2014

This means that producers received lower prices than they should have received (Figure 17). The blue bars express the price that producers actually received during the whole period and the observed red bars indicate the price that producers could have received in the absence of policy and market distortions. Additional distortions due to exchange rate misalignment and market inefficiencies are identified (adjusted red lines), resulting in higher price disincentives to producers.

Figure 17. Domestic Price vs. Observed and Adjusted Reference Prices at farm gate for groundnuts in Malawi, 2005-2013 (MWK/ Tonne)



Source: MAFAP, 2014

The analysis covers a period of particular uncertainty due to the transition between NASFAM and Afrinut. This shift seems to have affected the structure of price incentives; disincentives were stable and low during the period under NASFAM, while they strongly increased from 2011 onwards during the period under Afrinut.

Producer prices offered by NASFAM (2005-2010)

Between 2005 and 2010, if market inefficiencies and exchange rate policies are not taken into account (i.e. the observed domain), producers faced a neutral situation overall. In other words, they received a price reflective of the export price and no major price distortion was identified. However, while most years show negligible incentives or disincentives, a more detailed examination of the results reveals extraordinary circumstances in 2006 and 2008.

In 2006, producers received incentives to production reaching 26 percent. Indeed, producer prices offered by NASFAM increased at a rate of 40 percent, while the export price only rose by 14 percent. The reason for such an increase is difficult to determine. The price level at retail remained unchanged and no decrease in supply was observed; actually, production increased. However, NASFAM exports strongly declined by 75 percent between 2005 and 2006 which could indicate a decrease in production of export quality groundnuts, therefore increasing producer prices.

While the situation went back to normal in 2007 with a minor disincentives of -6 percent, producers received relatively strong disincentives in 2008 compared to the rest of the period. Producers received on average 77,990 MWK/ tonne of groundnuts, while in the absence of distortions, they should have received 125,755 MWK/tonne. This is due to the fact that export price rose by 29 percent following the increasing international trend linked to the international food price crisis. This augmentation was not reflected at producer level resulting in price disincentives to production of -38 percent this year.

Apart from these extraordinary circumstances, the favorable price transmission between export prices and producer prices could be explained by the apparent efficiency of the NASFAM market structure, the integrated value chain allowing for reduced access costs and few to no intermediaries.

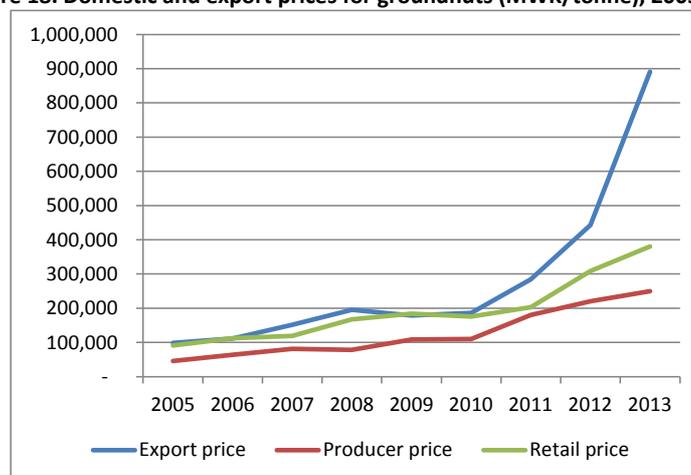
Moreover, NASFAM has its own storage and processing facilities, thereby they control the costs incurred from the farm gate level to the border. As indicated by NASFAM, the level of margins they get is considered low, representing 5 percent of the producer price. The fact that NASFAM is a producer association also allows a price fixation that benefits producers thanks to their bargaining power when negotiating prices.

Producer prices offered by Afrinut (2011-2013)

Twin, a fair trade movement, started a collaboration with NASFAM and other actors from the commercial and development sector to launch the Afrinut brand in 2011. From this date hitherto, disincentives to production progressively increased to reach -68 percent in 2013. It must be specified that, due to the lack of data available, export prices (FOB South Africa) were calculated using international prices (CIF Argentina) since both follow a similar trend. Thus, the export prices are considered reflective of the FOB price for South Africa in 2012 and 2013, but may not fully represent regional prices.

Increasing disincentives to production in 2011, 2012 and 2013 reflect a poor price transmission from regional and international to domestic markets both at retail and farm gate levels. Indeed, while international prices increased by 57 percent on average between 2011 and 2013, retail prices rose by 31 percent and producer prices only by 16 percent (Figure 18). Prior to 2011, price gaps between export and producer prices were on average -6,485 between 2005 and 2010 while the price gap reached -233,760 on average, between 2011 and 2013 (Figure 16).

Figure 18. Domestic and export prices for groundnuts (MWK/tonne), 2005-2013



Source: MAFAP, 2014

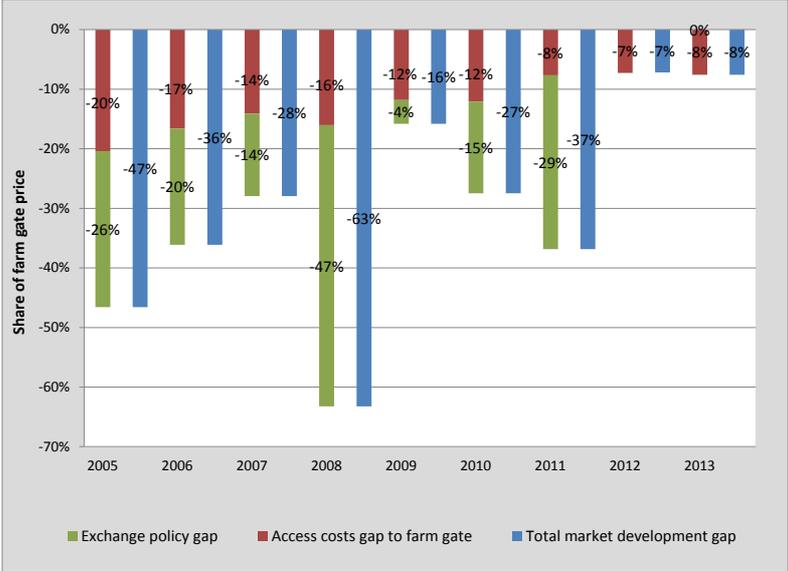
The increasing disincentives are likely linked to the significant structural change in the groundnut export value chain. The newly implemented company involved various commercial and development actors, increasing the number of intermediaries. This shift could have resulted in loss of bargaining power for producers resulting in a less favorable price fixation compared to the previous situation.

However, it is worth noting that, in the framework of the NASFAM and Afrinut value chain, producers received other types of non-monetary incentives that are not considered in the analysis. Indeed, producers benefit from advantages such as technical support, marketing facilities and input delivery.

Adjusted indicators

In addition to measuring the effect of explicit market and policy distortions on producer prices, the MAFAP methodology estimates additional price disincentives due to exchange rate policy and value chain inefficiencies. The Adjusted NRP depicts strong disincentives throughout the period (Figure 16). If access to export markets were improved and the exchange rate misalignment reduced, producers would have received higher prices (Figure 17). This is expressed by the Market Development Gap (MDG). The decomposition indicates that the price gap is attributed to low market performance and to the exchange rate misalignment (Figure 19).

Figure 19. Composition of Market Development Gap for groundnuts in Malawi (%), 2005 -2013



Source: MAFAP, 2014

Inefficiencies from border to farm gate

Inefficiencies considered in this analysis reflect the high cost of selling, namely the cost attributed to the agents in charge of bringing the commodities to the port. Moreover, the adjusted domain reflects the high transport costs from the factory to the port. These additional disincentives represent an average -13 percent of the producer price between 2005 and 2013. If the cost paid to the agent in charge of bringing the commodity to the port had been reduced and market performance had been on par with that of South Africa, producers would have received higher prices.

Exchange rate misalignment

The fact that the Malawi Kwacha was pegged to the dollar from 2007 to 2012 resulted in the overvaluation of the national currency. This exchange rate misalignment has further penalized producers of export commodities, including groundnut producers. On average, the exchange rate misalignment resulted in disincentives of -17 percent of the producer price. In 2008, the misalignment of 19 percent resulted in a distortion of -47 percent of the producer price. It seems that the overvaluation of the exchange rate did not prevent groundnut exports since national export increased during the period.

Owing to the fact that the analysis is focused on groundnuts corresponding to export quality namely 15 percent of the production, it is difficult to precisely determine the link between the level of incentives to production for export quality and the level of national production. Data on production of groundnuts for exports would help to understand the effect of disincentives on production.

As previously mentioned, aflatoxin levels is the main issue affecting the groundnut value chain, both domestic and export. The quality standards of national production did not reach international standards at any point during the period of analysis, understandably, affecting exports. However, this issue is not reflected in the analysis, which is focused on a high quality value chain. As reported by NASFAM, losses during processing are low. Nonetheless, information is lacking on losses at export level, namely at the port of export. With more information on the export side in South Africa, it is likely that a quantity and quantity conversion factor would have been applied to reflect the losses as well as the quality of the Malawian production relative to South African production.

6. RECOMMENDATIONS

This analysis focuses on producers involved in the high value export market due to the lack of information preventing the analysis of the price incentives to production for the remainder of producers. There is a need to further develop the Agricultural Market Information System (AMIS) in place to allow for data collection at farm gate and wholesale levels. This would help to understand the national price dynamics and to identify the level of price incentive received by the majority of groundnut producers. Additionally, this would help to design programmes and policies in the framework of the NES which precisely address the needs of the groundnut value chain and target better price transmission.

The major structural change in the NASFAM value chain and the creation of Afrinut in 2011 seems to have penalized producers by reducing the price transmission between international and domestic markets. Indeed, by marketing their production through NASFAM, farmers have benefited from price bargaining facilities, a situation that has been challenged with the implementation of the recent value chain structure. It is essential to better understand the price fixation mechanism which currently prevails in the Afrinut value chain which could be reconsidered to permit higher price transmission between export and producer prices.

Moreover, it is worth noting again that Afrinut is operating in a niche, fair trade, export market to the UK. Information on the number of farmers involved in the NASFAM and Afrinut value chain is not available but the capacities of expansion of such a value chain is questionable, owing to the nature of the targeted market. Possibilities of expansion, replicability and sustainability of the model could be further explored.

As a landlocked country, poor access to export markets penalized producers of export commodities. Options to reduce export costs should be further explored. For instance, high fees paid to export agents could reflect a lack of competition.

MAFAP analysis does not yet involve the inclusion of FISP efficiency in terms of groundnut productivity in the analysis. However, there is a risk that price disincentive to production in recent years have counteracted the objective of the FISP, namely increasing groundnut production. Identifying the level of incentives for all types of producers is needed to understand the extent to which the majority of producers are penalized.

7. CONCLUSION

MAIN MESSAGE

The analysis has focused on a high quality export value chain and demonstrates how producers of groundnuts in Malawi faced a neutral situation until 2010, reflecting a favorable price transmission from export markets to producers. No major price distortion was identified. There is an exception in 2008, a year of significant disincentives, likely attributable to the increase of international prices in the context of the international food price crisis and to the lack of transmission of high international prices to domestic markets.

However, structural changes in the value chain after 2011, with the introduction of a niche Fair Trade company Afrinut, have negatively affected price transmission between export market and producers. Indeed, international prices increased at a higher rate than domestic prices, resulting in increasing disincentives for producers. There is a need to further analyze the marketing system and the price fixation mechanism used by Afrinut to identify the factors affecting this.

As for other export commodities, poor access to the export market and high transport costs have created further disincentives to producers. Moreover, the exchange rate misalignment, due to the fixed exchange rate policy in place until 2012, has resulted in additional disincentives to production.

LIMITATIONS

- Lack of data on regional, annual producer prices, which would have been representative of the price received by groundnut producers in the major producing areas in Malawi.
- Lack of data on regional, annual wholesale prices, which would have been representative of the price in the major markets for groundnuts in Malawi.
- Lack of data on access costs; costs used reflect only the NASFAM and Afrinut value chain.
- Lack of information on losses due to aflatoxin level in domestic markets.

FURTHER INVESTIGATION AND RESEARCH

There is a need for a fully-fledge data collection initiative on producer prices and marketing costs in order to identify the level of price incentives for producers who do not market their production through NASFAM and Afrinut.

Discussion between actors involved in the NASFAM and Afrinut value chain would help to better understand the price mechanism.

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ANNEX I: Data and calculations used in the analysis

DATA	Unit	Symbol	Year trade status Food security	2005	2006	2007	2008	2009	2010	2011	2012	2013
				x n								
Benchmark price												
Observed	USD/TON	$P_{b(IMS)}$		831	822	1,080	1,390	1,266	1,240	1,818	1,780	2,444
Adjusted	USD/TON	P_{oa}										
Exchange rate												
Observed	MK/USD	ER_o		118	136	140	141	141	150	157	249	364
Adjusted	MK/USD	ER_a		133	151	150	167	145	164	185	249	364
Access costs border - point of competition												
Observed	MK/TON	ACo_{wh}										
Adjusted	MK/TON	ACa_{wh}										
Domestic price at point of competition												
Adjusted	MK/TON	P_{cwh}										
Access costs point of competition - farm gate												
Observed	MK/TON	ACo_{fg}		55,031	61,025	64,548	69,598	71,785	74,004	76,658	88,195	102,430
Adjusted	MK/TON	ACa_{fg}		45,724	50,411	53,100	57,101	58,935	60,705	62,874	72,194	83,495
Domestic price at farm gate												
Adjusted	MK/TON	P_{cwg}		45,592	63,926	81,175	77,990	108,699	109,855	180,000	220,000	250,000
Externalities associated with production	MK/TON	E		-	-	-	-	-	-	-	-	-
Budget and other product related transfers	MK/TON	BOT		-	-	-	-	-	-	-	-	-
Quantity conversion factor (border - point of competition)	Fraction	QT_{wh}		1.00	1.00	1.00	1.00	1.00	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	1.00	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	1.00	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	1.00	1.00	1.00	1.00	1.00
CALCULATED PRICES												
Benchmark price in local currency												
Observed	MK/TON	$P_{b(locs)}$		98,442	111,810	151,189	195,353	178,709	186,634	284,503	443,396	890,664
Adjusted	MK/TON	$P_{b(locs)a}$		110,368	124,283	162,429	232,183	183,034	203,509	337,050	443,207	890,664
Reference price at point of competition												
Observed	MK/TON	RPo_{wh}		98,442	111,810	151,189	195,353	178,709	186,634	284,503	443,396	890,664
Adjusted	MK/TON	RPa_{wh}		110,368	124,283	162,429	232,183	183,034	203,509	337,050	443,207	890,664
Reference price at farm gate												
Observed	MK/TON	RPo_{fg}		43,411	50,785	86,641	125,755	106,924	112,630	207,845	355,201	788,234
Adjusted	MK/TON	RPa_{fg}		64,644	73,872	109,329	175,082	124,099	142,804	274,176	371,013	807,169

INDICATORS		Unit	Symbol	2005	2006	2007	2008	2009	2010	2011	2012	2013
Price gap at point of competition												
	<i>Observed</i>	MK/TON	PG _{0wh}	-98,442	-111,810	-151,189	-195,353	-178,709	-186,634	-284,503	-443,396	-890,664
	<i>Adjusted</i>	MK/TON	PG _{awh}	-110,368	-124,283	-162,429	-232,183	-183,034	-203,509	-337,050	-443,207	-890,664
Price gap at farm gate												
	<i>Observed</i>	MK/TON	PG _{0fg}	2,181	13,141	-5,466	-47,765	1,775	-2,775	-27,845	-135,201	-538,234
	<i>Adjusted</i>	MK/TON	PG _{a fg}	-19,052	-9,946	-28,154	-97,092	-15,400	-32,949	-94,176	-151,013	-557,169
Nominal rate of protection at point of competition												
	<i>Observed</i>	%	NRP _{0wh}	-100%	-100%	-100%	-100%	-100%	-100%	-100%	-100%	-100%
	<i>Adjusted</i>	%	NRP _{a wh}	-100%	-100%	-100%	-100%	-100%	-100%	-100%	-100%	-100%
Nominal rate of protection at farm gate												
	<i>Observed</i>	%	NRP _{0fg}	5%	26%	-6%	-38%	2%	-2%	-13%	-38%	-68%
	<i>Adjusted</i>	%	NRP _{a fg}	-29%	-13%	-26%	-55%	-12%	-23%	-34%	-41%	-69%
Nominal rate of assistance												
	<i>Observed</i>	%	NRA ₀	5%	26%	-6%	-38%	2%	-2%	-13%	-38%	-68%
	<i>Adjusted</i>	%	NRA _a	-29%	-13%	-26%	-55%	-12%	-23%	-34%	-41%	-69%



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