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Technical note:
Analysis of price incentives for tobacco in Malawi 2005–2013

September 2014

Monitoring and Analysing Food and Agricultural Policies (MAFAP)

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CONTENTS

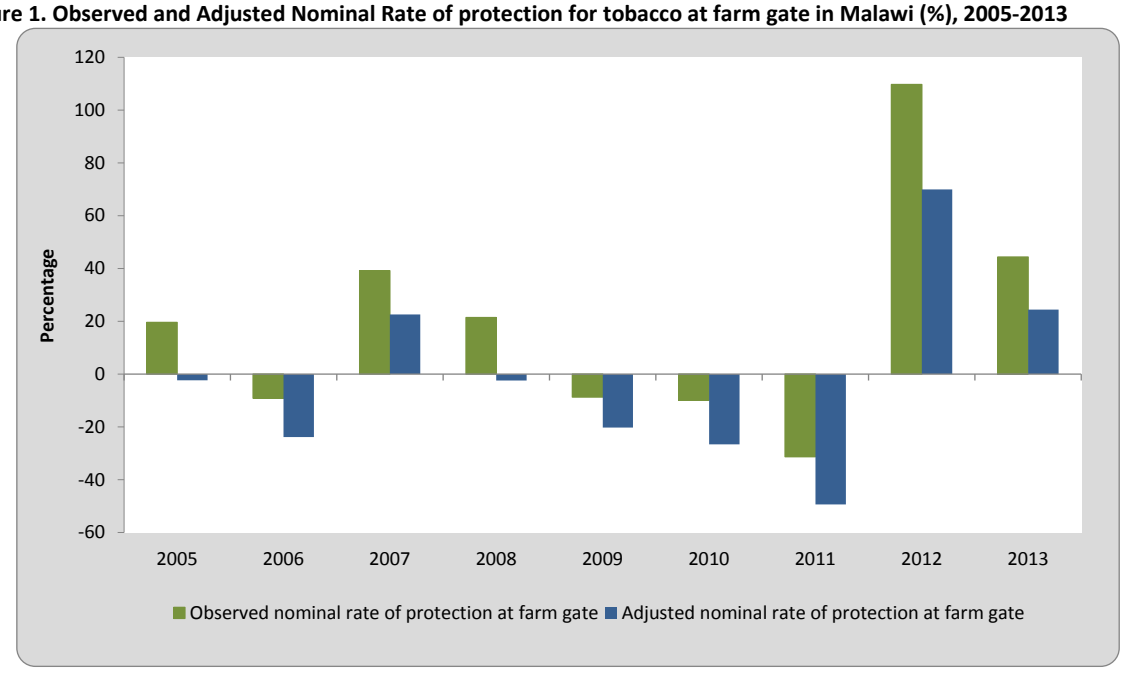
SUMMARY OF THE NOTE

Product: Tobacco
Period analysed: 2005 to 2013
Trade status: Export Commodity

COMMODITY CONTEXT

- Tobacco accounts for 50 percent of total agricultural exports in 2011. Malawi exports semi-processed, unmanufactured tobacco;
- Currently, over 95 percent of tobacco is produced by small farmers. As a result, the crop is of key importance for rural household income and food security;
- Annual production volumes have been irregular in the last decade due to price volatility and variable climate conditions;
- Tobacco is exclusively sold through auction. Sales are controlled and regulated by the Tobacco Control Commission (TCC), a semi-autonomous organ of the Ministry of Agriculture and Food Security.
- One company provides services at the auction floor and the number of buyers is limited.

Figure 1. Observed and Adjusted Nominal Rate of protection for tobacco at farm gate in Malawi (%), 2005-2013



Source: MAFAP, 2014

The observed Nominal Rate of Protection (NRP, green bar) in the graph above measures the effect of policy distortions and overall market performance on price incentives for producers. The adjusted NRP (blue bar) captures the same elements as the observed NRP in addition to any market distortions resulting from inefficiencies in the commodity's value chain and exchange rate misalignment.

DRIVING FACTORS

- Tobacco value chain is affected by a limited price transmission between the export market and auction depriving producers of the opportunities offered by the export market. Domestic prices are more influenced by national factors rather than international price dynamics;
- Incentives observed in some years are a result of exceptional circumstances or short term price measures and supply shocks pushing domestic prices upward. This the case of low production levels, misleading production forecasts and the implementation of a floor price for producers;
- Price distortions between border and auction is attributed to uncompetitive behaviour, namely the monopolistic situation of services at auction and the oligopsonistic position of buyers at auction as well as collusive practices;
- The fixed exchange rate policy in most of the years under consideration, which has resulted in exchange rate misalignment, has further affected producers by -12 percent of the farm gate price on average between 2005 and 2013;
- Inefficiencies in the value chain and excessive taxation (classification levy, hessian scheme and withholding tax) resulted in disincentives for producers by -8 percent of the farm gate price.

RECOMMENDATIONS

- Developing the market information system in order to reflect domestic and international price trends as well as international supply and demand and disseminate this information to producers. This will reduce price uncertainty for producer and allow them to plan their production accordingly;
- Guaranteeing higher price transmission could be realized by increasing competitiveness at auction and improving price regulation. Ensuring effective functioning of the Competition and Fair Trading Commission by securing its independence and enhancing its capacities could contribute to increased competitiveness.
- Increasing producer services such as transport and grading;
- Sustain exchange rate policies which avert exchange rate misalignment.

PURPOSE OF THE NOTE

This technical note is an attempt to measure, analyse and interpret price incentives for tobacco 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 1). Then, the methodology used to build the indicator is explained (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, and key policy recommendations were formulated on the basis of this interpretation (Chapter 4). Finally, the note concludes with a few main messages, limitations of the analysis and areas identified for further research to improve the analysis (Chapter 5).

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.

1. COMMODITY CONTEXT

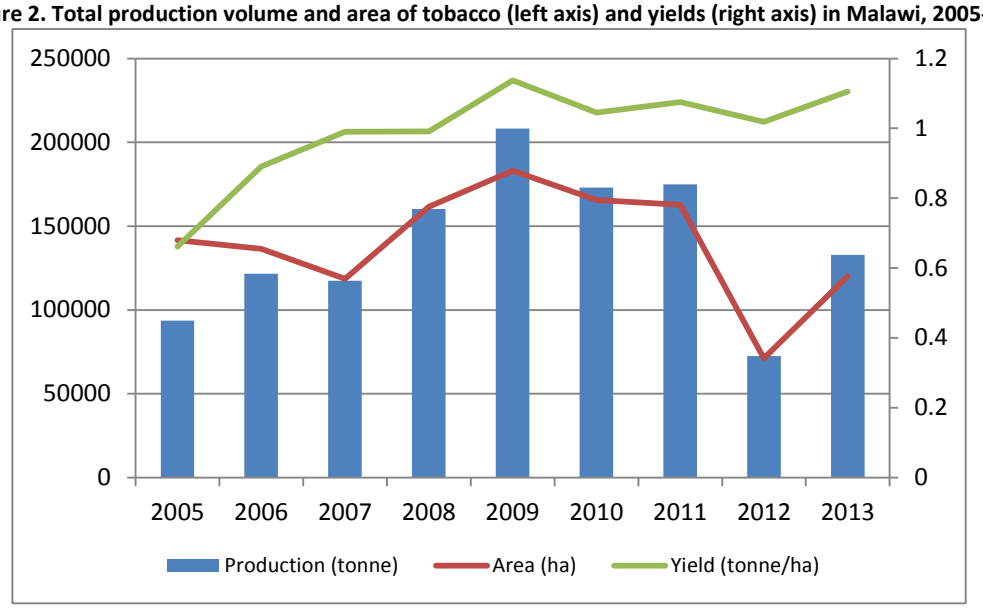
Malawi has a long tradition of tobacco cultivation as a primary economic activity and the cash crop remains the most important in the country. Tobacco production accounted for 50 percent of total agricultural exports in 2011 (FAOSTAT, 2014). Malawi, having realized this dependency on tobacco export, designed national policies aimed at diversifying export products.

Burley tobacco is the main variety, with a share of over 80 percent of total production throughout the period under review. Though traditionally produced by large estates, a series of reforms in the early 1990s increased opportunities for smallholder farmers to participate in the sector. Currently, over 95 percent of tobacco is produced by small farmers. As a result, the crop is not only Malawi's main export earner but also of key importance for rural household income and food security.

PRODUCTION

Total production of tobacco leaf in Malawi has steadily increased over the last two decades but witnessed a sharp decline in 2012. Production fell by 59 percent from 2011 to 2012 because of a significant reduction in area cultivated (Figure 2). In 2013, production increased, reaching 118 million tonnes. In recent years, yields have remained unchanged and the increase in production is mainly the result of an expansion of the total area cultivated.

Figure 2. Total production volume and area of tobacco (left axis) and yields (right axis) in Malawi, 2005-2013



Source: AMIS- MoAFS, 2014

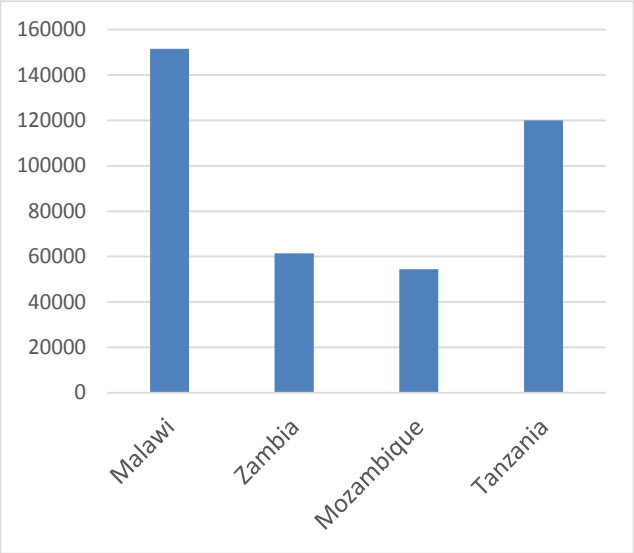
The variation in area cultivated over the last 9 years is mainly attributed to the price dynamics:

- In 2005, low level of production is the result of non-favorable weather conditions;
- From 2006 to 2009, favorable weather conditions and high prices encouraged farmers to produce tobacco;
- In 2009, the government stopped targeting tobacco producers in the framework of the Farm Input Subsidy Programme (FISP) to focus on food crops. Moreover, the production declined because of low prices and erratic rainfall ;

- In 2012, production strongly decreased; producers shifted from tobacco production to more profitable crops due to low prices in the past three to four years (USAID, 2012);
- In 2013, higher prices received in 2012, encouraged farmers to shift back to tobacco production, thus area cultivated increased.

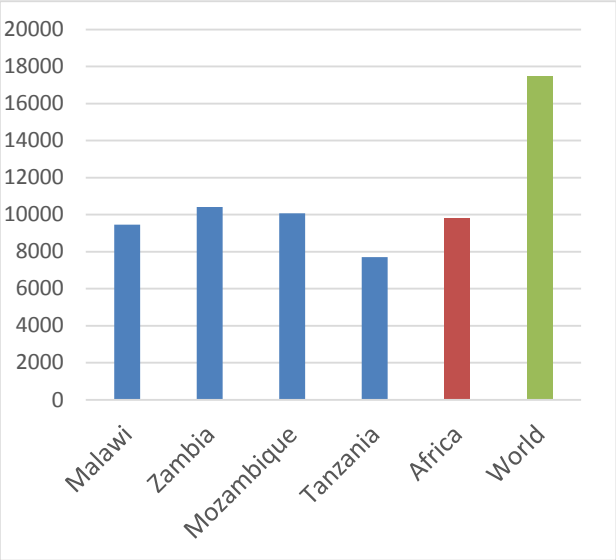
In relation to neighbouring countries (Mozambique, Tanzania and Zambia), Malawi is the largest producer of tobacco (Figure 3). Since yields are at the same level across countries, the high level of production is mainly attributed to the area under production (Figure 4).

Figure 3. Tobacco production in Malawi and neighbouring countries (tonnes), 2012



Source: FAOSTAT, 2014

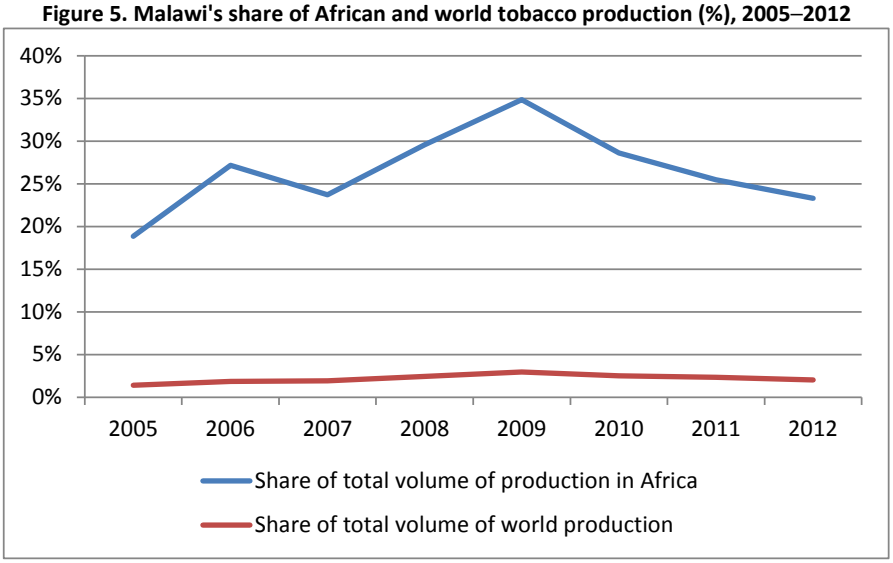
Figure 4. Tobacco yield in Malawi and neighbouring countries (Hg/Ha), 2012



Source: FAOSTAT, 2014

Tobacco produced in Malawi constitutes a notable share of African tobacco production, reaching 30 percent in 2008 (Figure 5). In terms of global tobacco production, Malawi contributed on average 2 percent over the period.

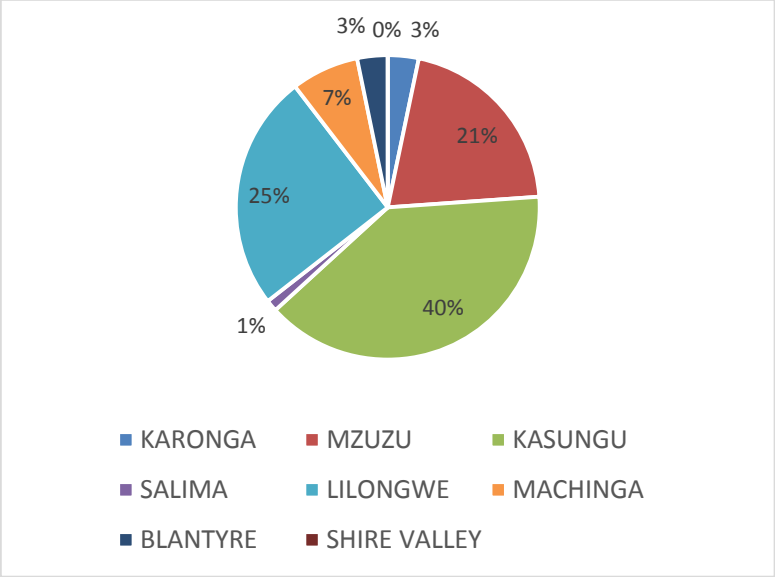
Figure 5. Malawi's share of African and world tobacco production (%), 2005–2012



Source: FAOSTAT, 2014

With regards to the geographic distribution of tobacco production in Malawi, tobacco is cultivated in all Agricultural Development Divisions[1] but is more concentrated in the central part of the country. The central regions of Lilongwe and Kasungu together accounted for more than half of total production (Figure 6).

Figure 6. Tobacco production by ADD (%), 2013

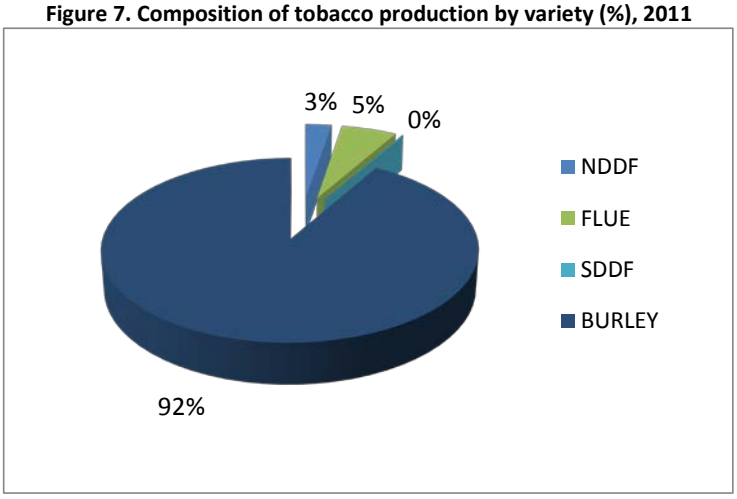


Source: MoAFS, 2014

Tobacco processing, in particular the curing process, determines the quality of tobacco. The five most common curing processes of tobacco in Malawi include burley (air cured), flue cured, northern division dark fire cured (NDDF), southern division fire cured (SDDF) and sun air dried. Currently, burley tobacco is by far the most widely produced variety and accounted for more than 90 percent of total production in 2011 (Figure 7) and 85 percent in 2013. Burley tobacco is almost exclusively produced by smallholders; in 2009, 98 percent of total volume was produced by small growers. On the other hand, the production of flue cured tobacco, which requires a more complex curing process, is dominated by estates. The curing of burley tobacco consists of drying leafs in a well-ventilated barn for approximately six to eight weeks, while flue curing involves exposing the leaves to heat. Both varieties are used for the manufacturing of cigarettes. The production of NDDFS, SDDF and sun air dried varieties has become almost negligible in recent years.

[1] Malawi is sub-divided into eight agro-ecological zones, which form the Agricultural Development Divisions (ADDs).

Figure 7. Composition of tobacco production by variety (%), 2011



Source: MOAFS, 2014

National output of tobacco was tightly controlled by the Government of Malawi before 1990 under the Special Crops Act. All tobacco producers had to obtain a license from the Government regulatory body, the Tobacco Control Commission (TCC). The TCC granted licenses only to estates and landowners. In 1990 the Act was repealed and after further reforms in 1996 all production restrictions were removed. From that moment on, smallholder farmers could grow tobacco freely (Minot et al., 2000). The TCC is still responsible for the regulation of growers and buyers (Box 1).

Box 1. Functions of the Tobacco Control Commission

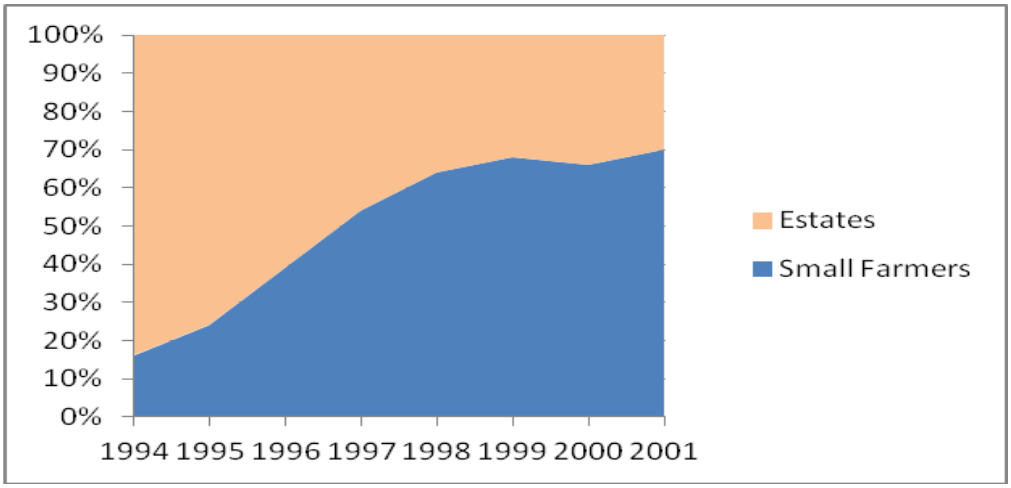
The Tobacco Control Commission functions include regulating the production, manufacture and marketing of tobacco, advising the government on the sale and export of tobacco, promoting and expanding the sale of tobacco, collating statistics relating to tobacco, controlling and regulating the sale of tobacco, registering and licensing tobacco growers and sellers and defining tobacco grades and classes for the purpose of selling and buying.

The TCC suffers from two major weaknesses: a lack of independence affecting its regulatory role and a lack of resources to collect the necessary information and to monitor the performance of the sector.

Source: Chirwa, 2011

These reforms of structural adjustment and market liberalisation had a strong impact on total output and resulted in a structural change of the Malawian tobacco sector. The tobacco sector changed in one decade from an estate-dominated sector to an important commodity for smallholder farmers (Figure 8). In 1990, only 15 percent of production was realized by smallholders. In 2001, this figure had already increased to 70 percent and to 88 percent in 2013 (MoAFS, 2014). Smallholder farmers can operate individually or be members of farmer organizations. The two main associations are the Tobacco Association of Malawi (TAMA) and the National Association of Smallholder Farmers in Malawi (NASFAM). The average farm size of tobacco producers was 1.8-2 ha in 2006 (Harashima, 2008). Several estates reduced their production or exited the tobacco sub-sector altogether as a result of declining yields and profitability (UNDP, 2004).

Figure 8. Share of total tobacco production of estates and smallholder farmers (%), 1994-2001



Source: Jaffee, 2003

CONSUMPTION/UTILIZATION

After the sale of tobacco leaf on the auction floors, the leaves are dried, stemmed and packed for export to buyers, mainly in Europe and the United States. These buyers consist of cigarette manufacturers such as Philip Morris and British American Tobacco which process the unmanufactured leaf to cigarettes for the world market. Despite the fact that tobacco is Malawi's main export crop, no cigarette manufacturing is carried out in the country.

MARKETING AND TRADE

Smallholders are prohibited from direct exportation. Since 2000, all tobacco produced both by estates and smallholder farmers must be marketed through the tobacco auction operated by Auction Holdings Limited (AHL) (Box 3).

At auction floors, tobacco leaf is bought by processing and trading companies that have contract arrangements with foreign cigarette manufacturers. The prices offered by buyers at auction floors are pegged to US dollars.

The auction market is oligopsonistic as two of the seven buyers accounted for around 70 percent of the burley tobacco market in 2010. Limbe Leaf accounts for 30-35 percent; Alliance One International, 34-35 percent; Premier TAMA, 15 percent; JTI 10, 10-15 percent and Malawi Leaf around 8 percent (Moyer-Lee, 2012). The Government created the Malawi Leaf Company Limited to increase competition competitiveness at auction in 2006. Malawi Leaf is a subsidiary of AHL.

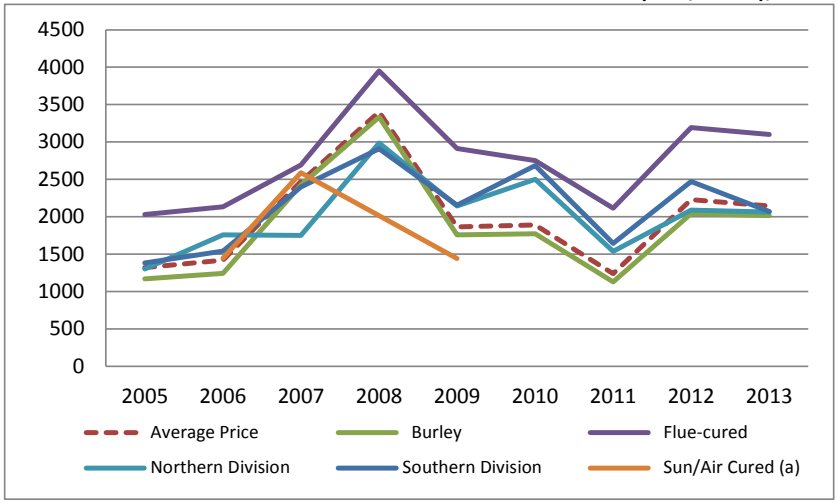
The oligopsony situation creates tension between leaf companies and tobacco farmers because of their ability to set up prices independent of supply and demand forces. There are allegations of collusion over prices which would lead to depressed prices at the expenses of producers (Chirwa, 2011). Low prices are also the results of oversupply and poor grading (Chirwa, 2011). This led to a crisis in customer confidence in the quality of leaf in 2004. The high rejection rate at auction market in the recent years reflects this quality issue. Prices are determined by buyers based on knowledge of domestic output and their assessment of quality (Koester, 2004).

To ensure more remunerative prices to producers, the Government started setting minimum prices for tobacco in 2007 (cf. section POLICY DECISIONS AND MEASURES). Despite the government

intervention, tobacco auction prices had in some cases deviated for the set prices. The policy was abandoned the same year. Due to its position of price taker in the international market since price and demand are set by the international market, Malawi has also limited scope to raise farm incomes through minimum prices.

There is high variability in tobacco prices for all types of tobacco during the period under review (Figure 9). The trend of auction prices for tobacco reflects declining leaf quality, overproduction, and a general decline in global demand. Burley variety is less expensive compared to other varieties. In general, a premium is paid for flue cured tobacco, which is subject to a more complex curing process and which contains higher sugar and nicotine levels.

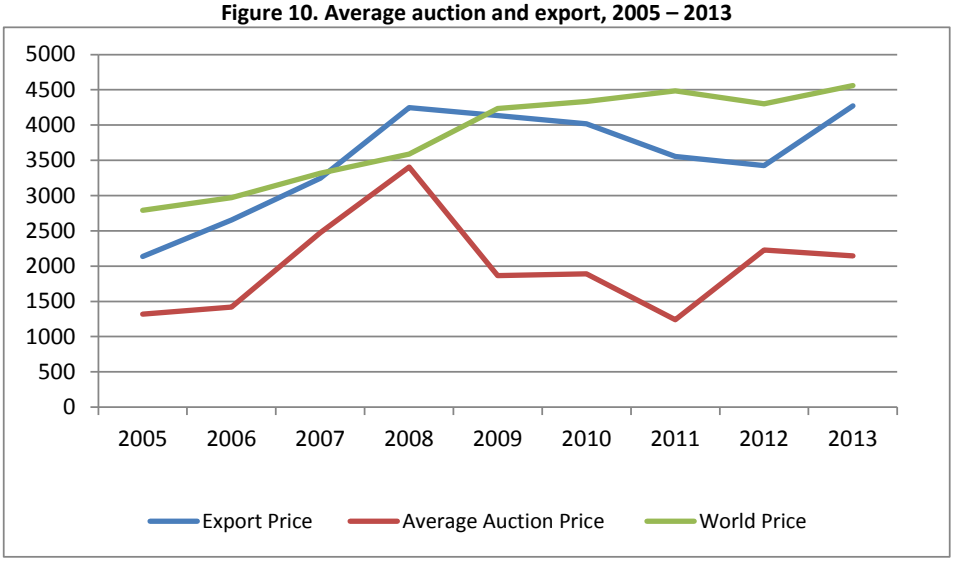
Figure 9. Price at auction floors for the different varieties of tobacco (USD/tonne), 2005-2013



Source: National Statistics Office, 2014

In absolute terms, auction prices cannot be compared to export prices since cured and unprocessed tobacco is marketed at auction floors while unmanufactured but semi-processed tobacco is exported. Nevertheless, the trend of auction and export price followed a similar pattern between 2005 and 2008 (Figure 10). Since 2008 however, auction prices, which are directly connected to producer prices, have decreased more than those at export level. This suggests that the relatively high price that prevailed in the world market, did not transmit to auction and farm gate prices. In other words, the gap between the auction price and the border price widened from 2008 onward.

Figure 10. Average auction and export, 2005 – 2013



Source: National Statistics Office and TCC, 2013

Tobacco can also be marketed through contract farming systems, which also go through the auction system (Box 2). In 2011/12, contract farmers produced 65 000 tonnes, namely 40 percent of total production that year (Moyer-Lee, 2012). In the case that sellers are not satisfied with the price offered, they are allowed to switch directly to the auction market (Chirwa 2011). Unofficial intermediate buyers can also buy from smallholder farmers and sell at auction or to other intermediate buyers. Despite a ban to restrict their activity in early 2000, operations of intermediate buyers are not closely monitored.

Box 2. Contract farming system

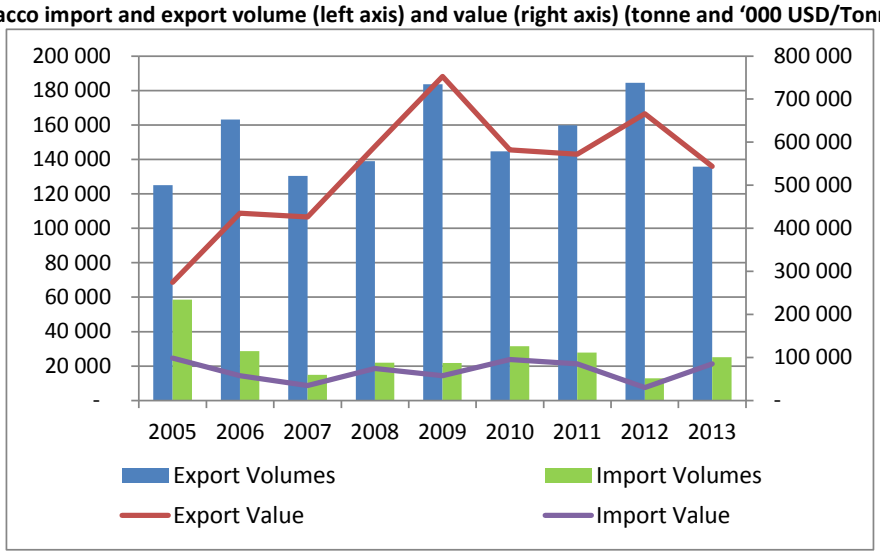
The contract farming scheme in Malawi is growing as it allows buyers to control compliance and traceability. This also implies additional investment for merchants, namely sourcing inputs, promoting better practices, developing relationships with banks for finance, and promoting research in agronomy.

From a farmer perspective, contract farming ensures higher income through better quality leaf and ensures a better marketing channel.

Source: Moyer-Lee, 2012

Tobacco export volumes between 2005 and 2013 have generally increased but export level varied significantly between years both in value and in volume (Figure 11**Error! Reference source not found.**). In 2009, tobacco exports reached their highest volume when over 190 000 tonnes were exported at a total value of USD 750 million. The high level of export reported in 2012 is questionable owing to the low level of production this year. Tobacco imports over the period have been low. As mentioned above, registered tobacco imports mainly come from Mozambique and Zambia and consist of dried leaf that is being processed in Malawi before being re-exported to Europe or the United States

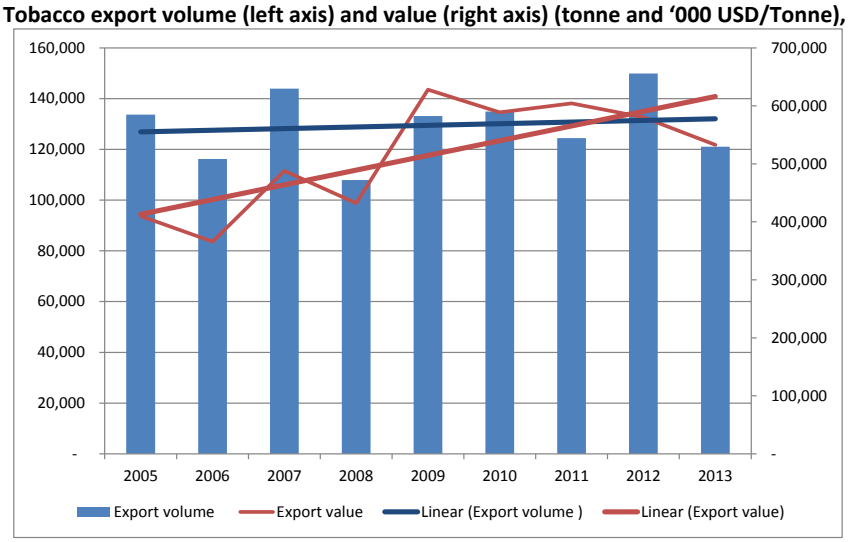
Figure 11. Tobacco import and export volume (left axis) and value (right axis) (tonne and '000 USD/Tonne), 2005-2013



Source: National Statistics Office, 2014

The volume and value of tobacco import reported by trade partners in UNCOMTRADE strongly differ from national statistic. Volume and value reported are lower and trends diverge.

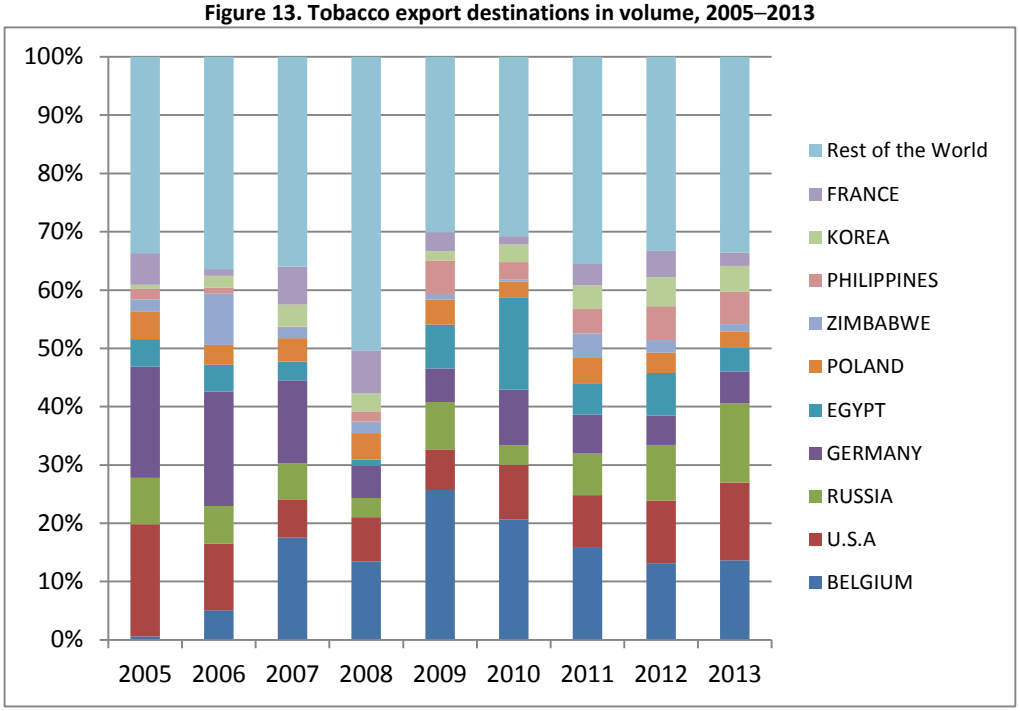
Figure 12. Tobacco export volume (left axis) and value (right axis) (tonne and '000 USD/Tonne), 2005-2013



Source: UNCOMTRADE, 2014

Malawian tobacco is exported to different countries and regions and shares of export destinations varied significantly across years. During the period under review, Belgium represented the largest importer of tobacco from Malawi (Figure 13).

Figure 13. Tobacco export destinations in volume, 2005–2013



Source: TCC, 2014

DESCRIPTION OF THE VALUE CHAIN

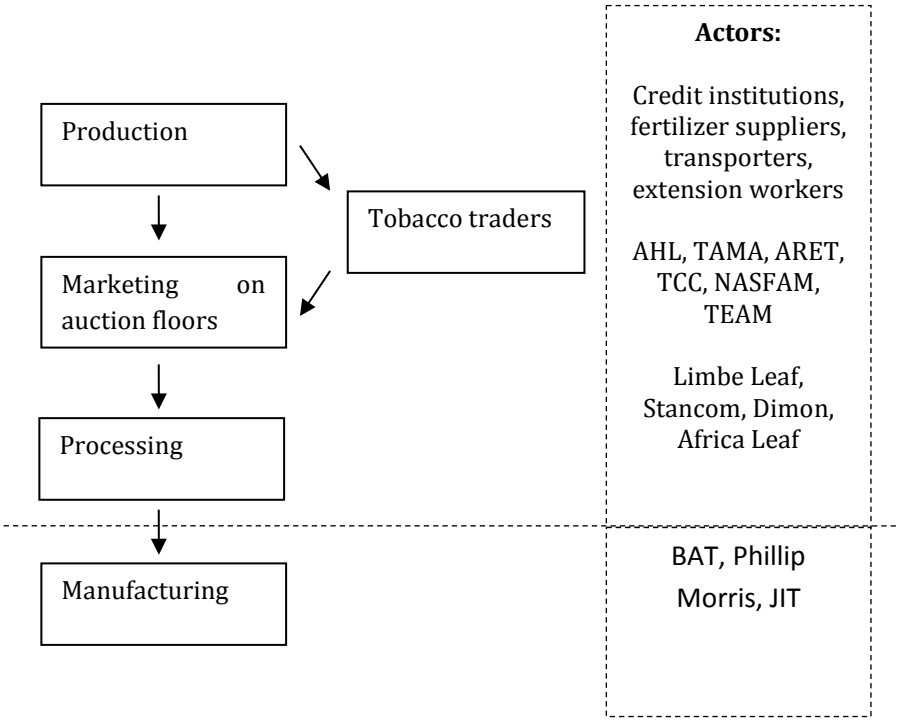
The tobacco value chain is composed of various actors, namely, growers (producers), grower associations, transporters, buyers, grading companies, auction market stakeholders, agents for technical support, and regulatory institutions (Chirwa, 2011).

Extension and other support services to tobacco farmers are provided by the Ministry of Agriculture and Food Security and the Agricultural Research and Extension Trust (ARET). One of ARET's main roles is the production and distribution of high-quality tobacco seed, of which it is the only producer in the country. It also provides agronomic advice to smallholder farmers. ARET is funded by a 1 percent levy on gross proceeds at the auction.

The growing season of tobacco lasts from August to January, when tobacco leaves are harvested, dried and cured. Farmers grade the cured leaves and pack them in hessian bales of approximately 100 kg. Grading is done by farmers; however, Tobacco Investments Limited offers grading services to producers if their production is rejected at the auction floors. Then, bales are transported and marketed on the auction floors.

Individual farmers contract directly with transporters while TAMA and NASFAM members transport their production through coordinated transport services. However, transport services are critical in the tobacco value chain because of the lack of competition (Chirwa, 2011). Indeed, the presence of a brokerage transport association (the Road Transport Operators) that sets up guide prices leads to uncompetitive transport prices. Moreover, the congestion of the auction market results in higher prices due to the waiting period imposed on transporters.

Figure 14. Supply thread for tobacco in Malawi

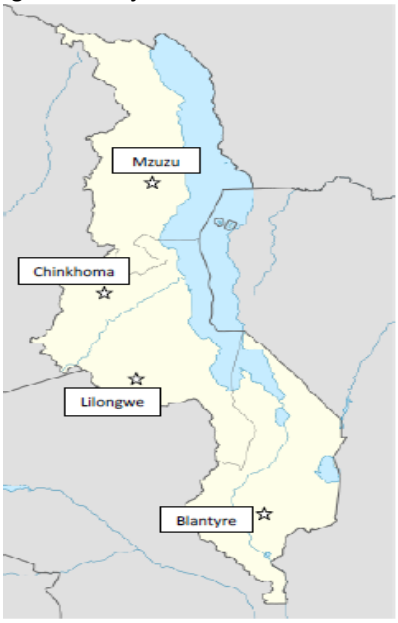


Source: Prowse and Moyer-Lee, 2013

Farmers deliver tobacco to satellite depots in rural areas, where the tobacco is stored until the auction authorizes the depot to deliver the tobacco to auction (Mamudu and Glantz, 2007). In order to get access to the auction floors, smallholders are required to register as a "club" with the Tobacco Control Commission. These clubs usually consist of 12 to 20 producers and are affiliated to one of the two main marketing channels, TAMA or NASFAM. More than 20, 000 clubs are involved in tobacco production (Chirwa, 2011). These associations also provide credit, extension services and transportation to auction floors.

Though unofficial intermediate buying still exists, the vast majority of total production is marketed through the main auction floors: Lilongwe, Mzuzu, Limbe and the recent auction floors in Chikhoma in Kasungu ADDs (Figure 15). Lilongwe auction floors handle larger volumes of tobacco compared to Mzuzu and Limbe auction floors. By opening regional auction floors, the access to auction floors is facilitated by allowing a reduction of transaction costs, in particular transportation. Depending on the level of supply in the market, satellite auction markets are occasionally opened in Kabwafu in the Northern Region, Mphasadzi and Lunyangwa in the Central Region and Mgodi in the Southern Region. However, over the last three years none of the satellite auction markets were opened.

Figure 15. Major auction floors in Malawi



Source: Zant, 2012

The auction is owned entirely by AHL (Box 3), which operates as a monopolist in the tobacco marketing services. This represents a disadvantage for producers in terms of service costs (re-grading if needed, registration, payment to producers).

Box 3. Auction Holdings Limited (AHL)

Auction Holdings Limited (AHL) was created in 1962 by tobacco growers on a "co-operative" basis. Its primary objective was not to optimize dividend payments or share value but to provide a service to tobacco growers on a cost-effective basis and intended to ensure competition amongst buyers and fair sale prices. The AHL was established to address the exploitation of growers under "contract buying" and 'private treaty buying' that pervaded prior to the establishment of AHL in 1962.

AHL is group of companies with subsidiaries dealing with trading of agricultural inputs, purchase of tobacco on auction floors, and re-grading tobacco returned from auction floors. It is also responsible for settlement of payments to growers.

AHL is the only company licensed to offer tobacco auction markets in Malawi. For many years, the company enjoyed a commission of 3.95 percent on all tobacco sold through the floors. However, after 2003 the commission was reduced to 3.25 percent, and further reduced to 2.5 percent in 2005.

The auctioning system is based on the American tobacco auction system in which a start price is determined on the basis of the quality of the leaf. Consequently, buyers can raise their bids to purchase the bale of tobacco. If the final price is not satisfactory, the farmer has the option to reject it and re-offer it (Chirwa, 2011).

AHL is aligned with the Government through shareholding by a state owned company, the Malawi Leaf Company (Chirwa, 2011).

At the auction, bales are purchased by leaf merchants. Then, the leaves are stored and processed by the merchant in one of the tobacco factories to remove the stalks. This process results in a weight reduction of approximately 25 percent (Koester, 2004). Once processed, the tobacco is packed into 180 kg cartons for transport to South Africa or Mozambique, where tobacco is shipped in containers to Asia, Egypt, Europe and the United States for cigarette manufacturing.

Since tobacco growers (estates or smallholder clubs) directly sell at the auction, price determination takes place at the auction floors. Farmers receive payment for their produced leaf only after auction sales have been realized. All duties, levies, taxes, fees and costs are deducted from the auction price. The residual is the price received at the farm gate. In other words, the farm gate price consists of the auction price minus all costs, duties and levies (Table 7).

Once sold at auction floors, tobacco leaf is partly processed and exported (Figure 14). Processing is undertaken to remove the stalks before exporting the leaf to tobacco manufacturers. Buyers also import unprocessed dried leaf from neighbouring countries, in particular Zambia and Mozambique where insufficient processing capacity exists. The leaf is processed in Malawi and then re-exported.

The vertical relationship between the main stakeholders of the tobacco value chain is criticized as it fosters non-competitive behavior. Buyers at the auction floor are involved in processing and export activities. For instance, the producer association TAMA is partially owned by one of the tobacco merchants and AHL has a wholly owned subsidiary which buys tobacco at auction. Most of the large buyers are subsidiaries of international leaf merchants that have their own processing plants and export tobacco in semi-processed form.

POLICY DECISIONS AND MEASURES

There are several policies in place indirectly supporting the regulation and development of the tobacco sector, however, there are no specific policies targeting tobacco.

National strategies

Liberalization of the tobacco market

Tobacco cultivation in Malawi goes back to the end of the 19th century and, as the main source of export earnings, has played a major role in the political economy of the country since its independence in 1964. However, until the 1990s under the Special Crops Act, tobacco enjoyed a special status which limited production of the cash crop to estates and restricted small farmers with customary land or tenants from having access to production and marketing mechanisms (Nsiku and Botha 2007; Prowse 2013). Under the structural reform and adjustment packages promoted by the Bretton Woods Institutions, the Government of Malawi in the 1990s agreed on policy reforms that allowed smallholder farmers to engage in the production and marketing of tobacco. These reforms encompassed the following changes:

- Before 1992, burley tobacco produced by smallholders needed to be sold to the parastatal Agricultural Development and Marketing Corporation (ADMARC). After 1992, this restriction was abolished and clubs of smallholders (as described above) could get direct access to the auction system (Persaud and Meade, 2009);
- In 1996, the allowance system that provided limited production quotas to smallholders was removed. Tobacco could be produced freely;
- Finally, an intermediate buyer system was installed which allowed licensed traders to buy tobacco from producers and sell it at the auction floors. However, because of the strong

increase of intermediate buyers and complaints from estate growers and competitors in the marketing chain, the system was abolished in 2000 (Harashima, 2008).

Agriculture Sector Wide Approach (ASWAp)

The overall aim of ASWAp, the main investment plan for the agricultural sector, is to achieve agricultural growth and poverty reduction. One of the specific objectives of ASWAp is to increase commercial farming revenues through the promotion of higher productivity. Boosting productivity will increase production and export volume of key export commodities including tobacco. To achieve this objective, the strategy planned to promote contract framing, out grower schemes and farmers organizations as well as provide improved technology to enhance output quality.

National Export Strategy (NES)

NES, designed by the Ministry of Industry and Trade for the period 2013-2018, provides a prioritized road map for "developing Malawi' s productive base to allow for both export competitiveness and economic environment" (NES, 2012). The strategy focuses on two groups of commodities: (a) three prioritized export-oriented clusters for diversification namely oil seed products, sugar cane products and manufactures and (b) exports of existing clusters which include tobacco. The objective is to complement tobacco investment made by smallholders with revenues from other commodities such as oil seed. To facilitate land access for oil seed production, there is a plan to engage TCC in developing a programme to complement tobacco production with oil seed production (NES, 2012).

Indeed, there is a need to diversify export owing to the growing vulnerability of the sector due to the anti-tobacco smoking campaigns.

Internal trade

Regulation and licensing through the TCC

Despite liberalization, the tobacco market in Malawi is still a regulated environment in which practically all agents (smallholder clubs, buyers and auction operators) require licenses to operate. The TCC is the market regulator. The TCC operates as a semi-autonomous organ of the Ministry of Agriculture and is funded through a cess levy of 0.1 USD cents on every kilogram of tobacco sold, a classification levy of 0.35 USD cents, and revenue from licensing and registration.

Regulating and promotion of competition

To ensure competition, the Competition and Fair Trading Commission (CFTC) has been established under the Competition and Fair Trading Act of 1998. Its role is to investigate and prohibit anti-competitive practices and unfair trading practices. However, the CFTC activities are constrained by its lack of resources and the lack of independence (Chirwa, 2011).

Price control and monitoring

To counteract the price depreciation at auction, the Government established minimum prices in 2006/07 for raw tobacco. The prices were fixed by the Government, the TCC and tobacco buyers. Prices were established for each grade of tobacco and were supposed to ensure that investment

costs were recovered. However, the policy was lifted in the middle of the marketing season (Chirwa, 2011), tobacco companies preferring to buy tobacco in other countries where tobacco is cheaper.

Foreign trade

Trade policies

Tobacco is not subject to export taxes but the leaf- buying companies require export licenses. Income tax allowance is usually applied to non-traditional export. According to the WTO, the tobacco sector does not benefit from the tax allowance but other sources indicate that a tax allowance of 15 percent of taxable income is in place Export is only allowed for processed leaf, producers cannot export raw tobacco to neighboring countries when domestic price at auction are low (Chirwa, 2011).

Export regulation

The Malawi Bureau of Standards (MBS) is in charge of testing and certifying the quality of tobacco export.

Fiscal Policy

From 2010, on behalf of the Government, AHL reduced the withholding tax of 3 percent of gross proceeds of all tobacco sales, both from estates and smallholder clubs. Before 2010, the withholding tax amounted to 7 percent but smallholder clubs were exempt. As a result, medium size farmers and estate growers registered under clubs to avoid the tax payment (Chirwa 2011). The Government therefore removed the tax exemption but lowered the rate in an effort to reduce evasion and increase tax revenues. In 2010, withholding tax on tobacco amounted to USD 10.8 million, about 8 percent of total domestic revenues budgeted.

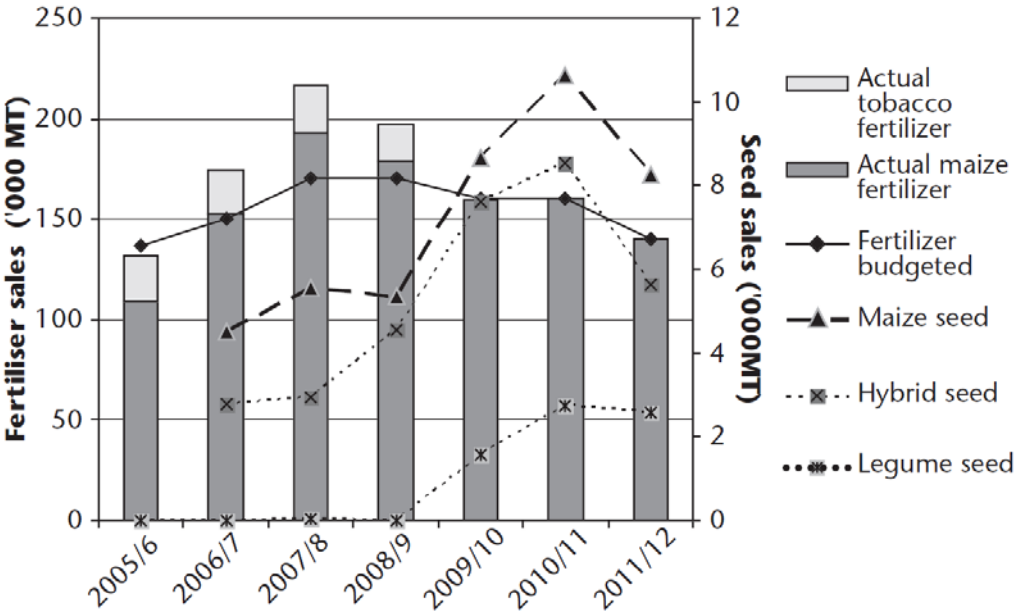
Main support programme

Farm Input Subsidy Programme (FISP)

Input subsidies 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 2005/06 crop season to tackle some of the key constraints to increased production faced by Malawian small farmers, including low yields and high costs of inputs.

Vouchers were provided for tobacco fertilizer in order to improve small farmers' incomes through increased production of burley tobacco (Figure 16). However, the government decided to exclude tobacco smallholder farmers from the programme in 2009/10 to focus on food crops.

Figure 16. Total subsidized fertilizer and seed sales in Malawi by year ('000mt), 2005/06-2010/11



Source: Dorward and Chirwa (2011)

From 2005 to 2009, on average, 13 percent of fertilizer subsidized targeted tobacco while the rest targeted maize. The FISP has benefited approximately to 100 000 small tobacco farmers (Dorward et al, 2010). Each cropping season, around 20 000 metric tonnes of subsidized fertilizer was provided through a voucher scheme. The beneficiaries identified by the Village Development Committees received two vouchers allowing them to buy a 50 kg bag of fertilizer for each coupon at a reduced price of MWK 1450 (further reduced to MWK 950 from the 2006/07 season onwards). This represented a discount of 75 percent on the market value of the fertilizer.

Hessian exchange scheme

A Hessian Levy is paid by producers and directly deducted from the production price paid to tobacco growers, the levy allows producers to be provided with new hessian when they are worn out. The Hessian scheme is managed by TAMA. In 2010, the fee was 30 cents USD per bale (Prowse, 2011). The scheme is criticized for its lack of transparency in terms of management (Chirwa, 2011). Moreover, while all producers pay the tax, not all benefit from the scheme.

2. 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 $\left(RP_{ofg}\right)$ 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 chain[2] 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 $\left(RP_{ofg}\right)$ 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 $\left(PG_{ofg}\right)$ are as follows:

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

[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.

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

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:

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

[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.

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:

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

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.

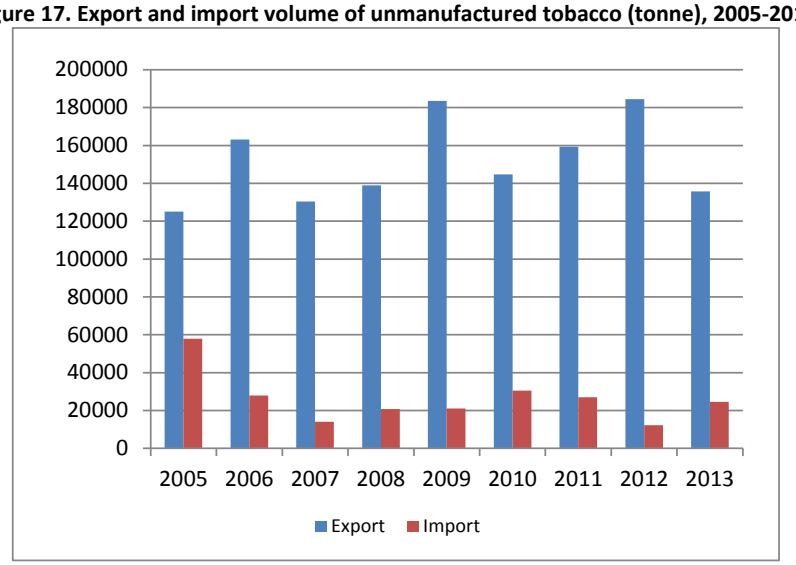
3. DATA REQUIREMENTS AND CALCULATION OF INDICATORS

To calculate MAFAP's price incentives indicators, several types of data are needed. This section presents the data that was obtained and methodological decisions that were taken in the analysis.

TRADE STATUS OF THE PRODUCT

Malawi is a net exporter of unmanufactured tobacco (Figure 17). Malawi exports mainly semi-processed leaf which corresponds to the category 'unmanufactured tobacco' according to the HS code system (code number: 2401).

Figure 17. Export and import volume of unmanufactured tobacco (tonne), 2005-2013

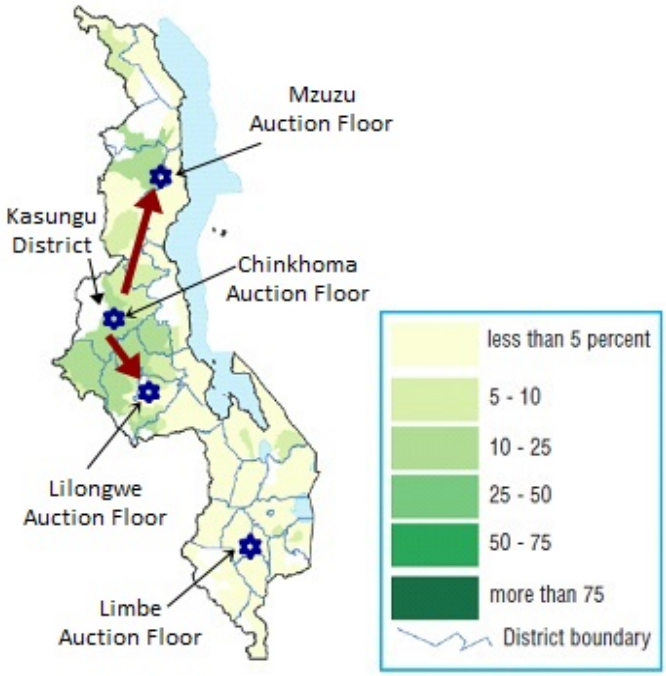


Source: National Statistic Office, 2014

MARKET PATHWAY ANALYSED

The Kasungu Agricultural Development District (ADD) is the major area of production and thus has been selected as the producing region for the analysis (Figure 18). Farmers are not allowed by the government to sell their production outside the auction system. As a result, farmers from Kasungu ADD sell unprocessed tobacco at Lilongwe, Mzuzu and Chikhoma auction floors (Figure 18). The point of competition considered is the auction floor in Lilongwe since it is the largest market in the country.

Figure 18. Tobacco Auction Markets and Smallholder Tobacco Production Intensity (%)



Source: NSO and IFPRI, 2002 and Author, 2014

Malawi exports unmanufactured tobacco through the ports of Beira, Mozambique and Durban, South Africa. Despite the fact that the cost of export through Durban is higher, two-thirds of production is transported to South Africa (Jaffee, 2003). Indeed, transport and logistic infrastructure are more reliable in South Africa.

BENCHMARK PRICES

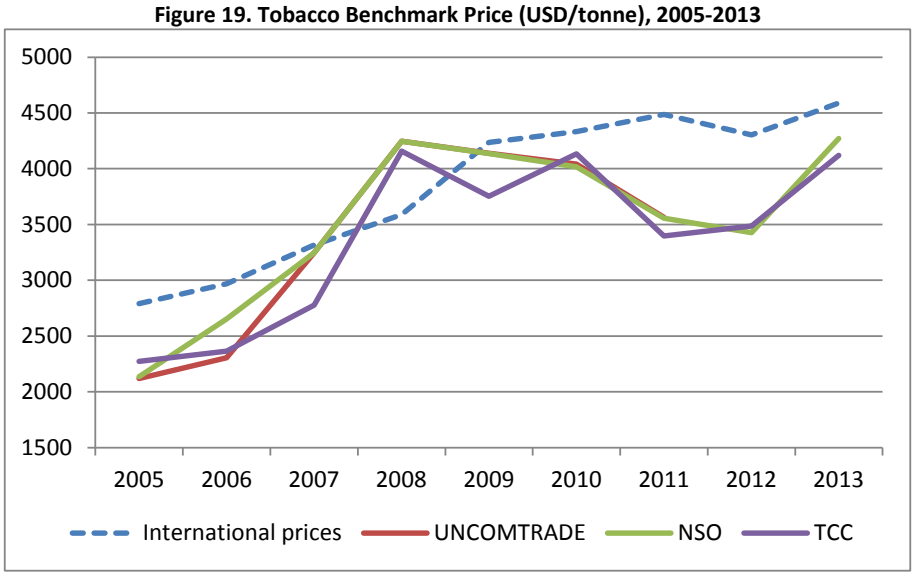
Observed

The basis for calculating a reference price to determine whether Malawian tobacco farmers receive market incentives or disincentives is to establish a benchmark border price, which represents the price for tobacco free of domestic policy and market distortions.

Since Malawi is considered a net exporter of tobacco during the period 2005-2013, the benchmark price is the FOB price for unmanufactured tobacco. The export price is reported by UNCOMTRADE, NSO and TCC as the average unit value of all varieties of unmanufactured tobacco exported from Malawi and it is calculated based on the total custom value and the total volume of exports.

Inconsistencies among the different sources (Figure 19) led to the decision to use the average price indicated by TCC and NSO.

Figure 19. Tobacco Benchmark Price (USD/tonne), 2005-2013



Source: TCC, NSO and COMTRADE, 2014

Table 1. Tobacco Benchmark Price (USD/tonne), 2005-2013

Year	2005	2006	2007	2008	2009	2010	2011	2012	2013
TCC	2,273	2,363	2,778	4,157	3,754	4,133	3,396	3,487	4,121
NSO	2,135	2,652	3,246	4,247	4,137	4,018	3,555	3,427	4,271
Average	2,204	2,508	3,012	4,202	3,945	4,076	3,475	3,457	4,196

Source: TCC, 2014 & NSO, 2014

Adjusted

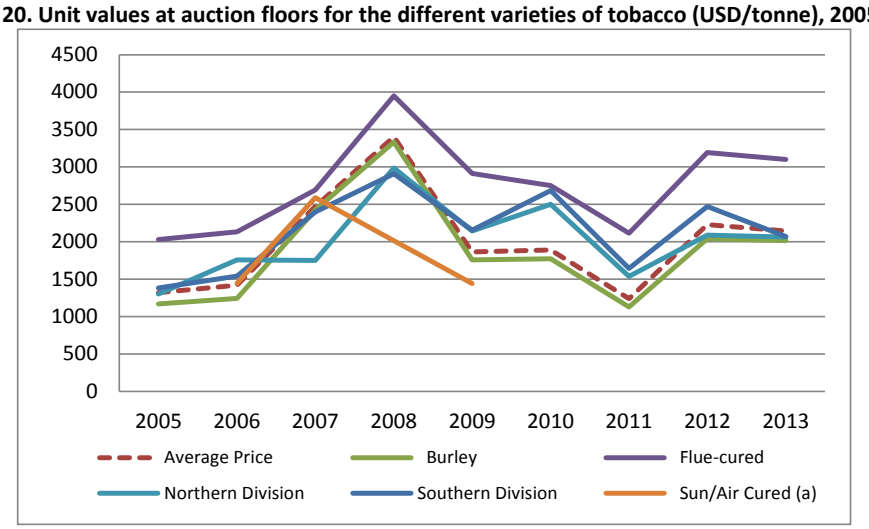
No adjustment to the benchmark price is made.

DOMESTIC PRICES

Observed prices at point of competition

As mentioned previously, the auction floor in Lilongwe is considered the point of competition. Prices at auction floor are reported by NSO, TCC and the Reserve Bank of Malawi (RBM). These institutions report unit values based the total value and volume of the different varieties of tobacco sold at auction floor and the weighted average is calculated using the volume of production sold (Figure 20). Since Burley is the main variety exported, the average unit value is close to the unit value obtained for Burley.

Figure 20. Unit values at auction floors for the different varieties of tobacco (USD/tonne), 2005-2013



Source: NSO, 2014

Unit values reported by NSO and TCC follow the same trend while unit values provided by RBM vary from 2005 to 2008. As the main source quoted in official reports, data from RBM are used in this analysis. Data from RBM in 2013 was not available and so data from TCC have been used instead.

Table 2. Unit values at point of competition used in the analysis (USD/tonne), 2005-2013

	2005	2006	2007	2008	2009	2010	2011	2012	2013
Observed unit values at auction floor for unmanufactured tobacco	1,120	1,050	1,730	2,420	1,870	1,890	1,240	2,230	2,145

Source: RBM, 2014 (prices for 2005-2012) and TCC, 2014 (prices for 2013)

Observed prices at farm gate

Producers receive the residual of the auction price after deducting all cost incurred between farm gate and auction, namely the classification, research, TCC, auction holding and hessian levies; transport from satellite to depot and from depot to auction; association fees and withholding taxes. Details are provided in the access costs section. Therefore, owing to the lack of precise information on prices at farm gate level, the producer price is estimated by subtracting the access costs identified between auction and farm gate from the auction price (Table 3). It is assumed in this analysis that price at auction are transferred to producers.

Table 3. Observed farm gate prices for unmanufactured tobacco (MWK/tonne), 2005-2013

	2005	2006	2007	2008	2009	2010	2011	2012	2013
Producer price	101,045	107,086	200,594	292,322	197,639	213,021	129,051	442,357	629,048

Source: MAFAP, 2014

EXCHANGE RATES

In MAFAP analyses, the exchange rate is usually used to convert the reference price in local currency and thus to analyze the effect of the exchange rate at both levels: point of competition and farm gate. However, as mentioned above, negotiations at auction level are carried out in dollar in Malawi. The exchange rate policies do not affect the price at point of competition, while at producer level

they do since they are paid in local currency. Therefore, the exchange rate is only applied for the second part of the analysis.

Observed

The observed exchange rate from the International Monetary Fund (IMF) was chosen for this analysis (Table 4) as the exchange rate from the Reserve Bank of Malawi (RBM) was not available for the whole period.

Table 4. 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

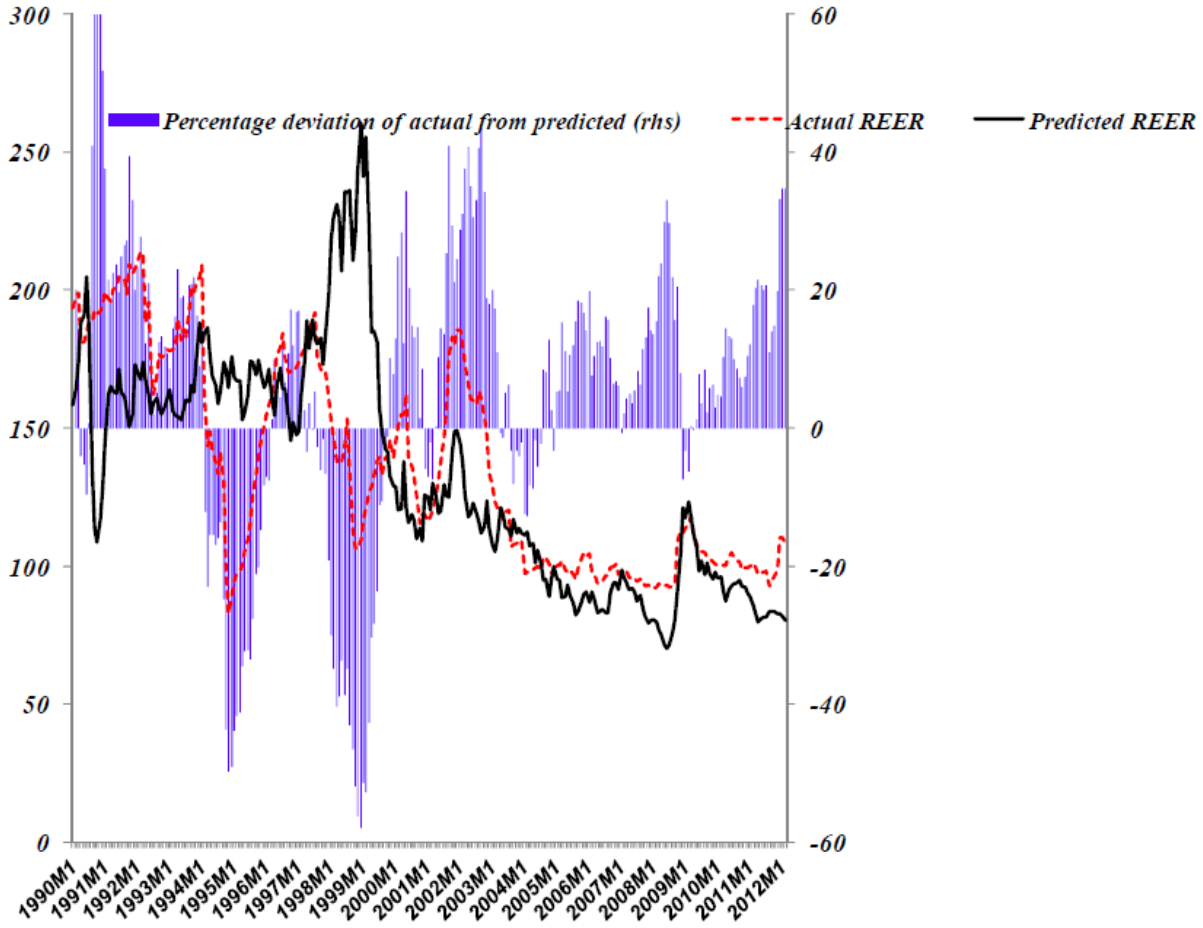
Source: IMF, 2014

Adjusted

Prior to 2012, the government had implemented foreign exchange controls on the 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 21).

Figure 21. Estimation of the exchange misalignment based on the comparison between actual REER and predicted REER in Malawi, 1990 M1- 2012M2



Based on the level of misalignment in relative terms, the adjusted exchange rate has been estimated (Table 5).

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 2012 and tobacco was mainly exported after May. Indeed, 57 percent of the annual export volume in 2012 occurred between May and December. We consider that the floating exchange rate 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 was minor due to the implementation of the floating exchange rate in 2012.

Table 5. 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

Observed access costs

Point of Competition to border

Observed access costs from the auction to the border include the buyer commission, the processing and packaging costs, interest on working capital, and transport costs from auction to border (Table 6). Costs in relative and absolute terms are reported in a value chain analysis on the tobacco industry in Malawi (Koester, 2004) and the transport costs are indicated in a study on transport costs produced by the World Bank (WB, 2009).

To determine the processing cost and the transport costs indicated in absolute value for the following and previous years, different approaches have been used:

(i) The Consumer Price Index indicated by the WB has been applied to estimate the processing and packaging costs and the transport costs.

(ii) Commission fee and interest rate shares from Koester (2004) were applied to calculate actual amounts for the following years (2005-2013).

Table 6. Observed access costs between auction and border (USD/tonne), 2005-2013

		Value	2005	2006	2007	2008	2009	2010	2011	2012	2013
Average Auction Price (US$/tonne)			1321	1420	2473	3403	1865	1891	1239	2228	2145
Commission	Buyer commission at auction	4%	56	60	105	145	79	80	53	95	91
Processing	Leaf processing and packaging	2004: 430 USD/tonne	496	565	610	663	719	773	832	1,008	1,270
Interest	Interest on working capital	9%	119	128	223	306	168	170	111	200	193
Transport	Transport (Lilongwe-Mwanza)	2008: 0.07 USD/Km/tonne	23	23	24	26	28	29	30	23	19
Observed Access Costs auction to border			695	777	962	1,141	995	1,052	1,025	1,326	1,574

Source: MAFAP, 2014

Farm Gate to Point of Competition

Observed access costs from the farm gate to point of competition including the various levies, marketing and packaging costs are provided in a comparative value chain analysis of tobacco in Malawi (Prowse, 2011). This analysis reports the access costs in 2004 and 2009 and we observed that the costs have evolved slightly during the period under review.

The transport costs were estimated based on those indicated by the WB (WB, 2009). They include the cost of transport from farm to satellite depot and from depot to auction. The CPI from the WB has been used to estimate the transport costs for the previous and following years.

Charging withholding tax on smallholder tobacco was introduced in 2009.

Table 7. Observed access costs between farm gate to auction (MWK/tonne), 2005-2013

		2005	2006	2007	2008	2009	2010	2011	2012	2013
Nomimal Exchange Rate		118	136	140	141	141	150	157	249	364
Average Auction Price (US/tonne)		1,120	1,050	1,730	2,420	1,870	1,890	1,240	2,230	2,145
Average Auction Price (MWK/tonne)		132,630	142,814	242,126	340,065	263,982	284,420	194,079	555,506	781,752
Classification Levy	0.35c USD/kg	414	476	490	492	494	527	548	872	1,275
Research Levy	1% of gross proceeds	1,326	1,428	2,421	3,401	2,640	2,844	1,941	5,555	7,818
TCC Levy	0.1c/kg	118	136	140	141	141	150	157	249	364
Satellite to auction	2.5% of gross proceeds	3,316	3,570	6,053	8,502	6,600	7,110	4,852	13,888	19,544
Farm to satellite depot	2008:228 MWK/Tonne/Km	3,068	3,498	3,774	4,111	4,449	4,786	5,154	6,228	7,946
Satellite to auction	2008:228 MWK/Tonne/Km	22,158	25,260	27,255	29,692	32,129	34,567	37,226	44,981	57,390
Association Fee	0.7c/kg	829	952	980	984	988	1,053	1,096	1,744	2,551
Withholding Tax	7% of gross proceeds	NA	NA	NA	NA	18,479	19,909	13,586	38,885	54,723
Hessian Scheme	0.3c/100kg	355	408	420	422	424	451	470	747	1,093
Observed access costs		31,585	35,729	41,532	47,743	66,343	71,399	65,028	113,150	152,704
Observed Farm Gate Price		101,045	107,086	200,594	292,322	197,639	213,021	129,051	442,357	629,048

Source: MAFAP, 2014

Adjusted Access Cost

Point of Competition to border

The literature review as well as the Logistic Performance Index (LPI) computed by the World Bank[4], 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 transport prices. Owing to the fact that South Africa is a neighboring country, where logistics performance is considered fair (Table 8), its score is used as a reference for Malawi.

Table 8. Logistic Performance Indexes for Malawi and South Africa (average 2007-2014)

	Score	Rank (over 150)
Malawi	2.42	24
South Africa	3.53	91

Source: LPI, 2014

The ratio between the two indexes is used to adjust the transport costs.

[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 9. Adjusted access costs between auction and border (USD/tonne), 2005-2013

	2005	2006	207	2008	2009	2010	2011	2012	2013
Observed Access Costs auction to border	695	777	962	1,141	995	1,052	1,025	1,326	1,574
Reduction of transport costs	7	7	8	8	9	9	9	7	6
Adjusted Access Costs auction to border	687	769	955	1132	986	1043	1016	1319	1568

Source: MAFAP, 2014

Farm gate to Point of Competition

The access costs from farm gate to point of competition were reduced by using the information on potential costs reduction provided in a value chain analysis (Jaffe, 2003). According to this source, classification levy, transport, the hessian tax could be reduced and the withholding tax removed. Moreover, since some of the observed access cost components are determined in dollars, they are converted in kwacha using the adjusted exchange rate to reflect the exchange rate misalignment. Using the adjusted exchange rate increases the access costs of the research levy, the TTC levy, the auction holding levy and the association fee.

Table 10. Change in adjusted access costs between farm gate and auction (MWK/tonne), 2005-2013

		2005	2006	2007	2008	2009	2010	2011	2012	2013
Observed access costs (MWK/tonne)		31,585	35,729	41,532	47,743	66,343	71,399	65,028	113,150	152,704
Reduction of classification levy	Reduction of 0.25 cUSD/kg	282	325	339	325	350	363	362	623	911
Research levy	Calculated with the Adj Ex. Rate	-161	-159	-180	-641	-64	-257	-358	0	0
TTC levy	Calculated with the Adj Ex. Rate	-14	-15	-10	-26	-3	-14	-29	0	0
Auction Holding Levy	Calculated with the Adj Ex. Rate	-402	-398	-450	-1,603	-160	-643	-896	0	0
Satellite to auction	30USD/Km/tonne	3,983	4,536	4,511	5,010	4,337	4,923	5,563	7,473	10,932
Association Fee	Calculated with the Adj Ex. Rate	-100	-106	-73	-185	-24	-95	-202	0	0
Removing withholding Tax	Removing 100%	NA	NA	NA	NA	18,479	19,909	13,586	38,885	54,723
Hessian Scheme	Reduction of 0.25cusd/kg	289	332	345	338	351	369	377	623	911
Adjusted access costs (MWK/tonne)		27,709	31,215	37,050	44,526	43,077	46,844	46,626	65,545	85,227

Source: MAFAP, 2014

BUDGET AND OTHER TRANSFERS

The FISP supported tobacco farmers from 2006 to 2009. The MAFAP public expenditure analysis allows to identify the total budget allocated per year to the FISP. Based on the information from Dorward and Chirwa, 2011, the share of total expenditure allocated to tobacco was estimated which made it possible to compute tified. Nominal Rate of Assistance based on public expenditure per tonne of tobacco produced.

Table 11. Public expenditure allocated to tobacco in the framework of the FISP, 2005-2013

	2005	2006	2007	2008	2009	2010	2011	2012	2013
Total public expenditure (MWK)	0	1,444,415	1,222,452	1,350,368	1,976,850	0	0	0	0
Expenditure per tonne (MWK/tonne)	0	11,878	10,412	8,427	9,497	0	0	0	0

Source: MAFAP, 2014

QUALITY AND QUANTITY ADJUSTMENTS

A quantity adjustment of 0.76 has been applied between auction and border (Prowse and Moyer-Lee, 2013). This corresponds to the weight loss during leaf processing.

DATA OVERVIEW

Following the discussions above, the table below summarizes the main data sources used and methodological decisions taken for the analysis.

Table 12: Data sources and methodological decisions

		Description	
Concept		***Observed***	***Adjusted***
Benchmark price		*Annual average FOB price of unmanufactured tobacco* *Source: TCC &NSO*	
Domestic price at point of competition		*Annual average auction prices of all tobacco varieties* *Source: Reserve Bank of Malawi and TCC.*	*N.A.*
Domestic price at farm gate		*Annual average price calculated using the auction price and costs incurred between farm gate and auction.* *Source: Reserve Bank of Malawi, TCC, Prowse, (2011) and WB (2008).*	*N.A.*
Exchange rate		*Nominal exchange rate* *Source: IMF, 2014*	*Adjusted exchange rate calculated using the exchange rate misalignment* *Source: IMF (2012)*
Access cost from the point of competition to the border		*Total access costs provided in a value chain analysis and a study on transport costs. Following years calculated using the CPI (IMF).* *Source: Koester (2004) and WB (2008)*	*Transport costs were adjusted using the LPI.* *Source: LPI, 2014*
Access costs from the point of competition to farm gate		*Total access costs provided in a value chain analysis and a study on transport costs. Fixed costs during the period under review and transport costs calculated for the previous and following years using the CPI.* *Source: Prowse, (2011) and WB (2008)*	*Various items were reduced based on the information on potential cost reduction.* *Source: Jaffee, 2003*
QT adjustment	Bor-PoC	*Weight losses during processing: quantity adjustment of 0.76* *Source: Prowse and Moyer-Lee (2013),*	
	PoC –FG	*N.A.*	*N.A.*
QL adjustment	Bor- PoC	*N.A.*	*N.A.*
	PoC –FG	*N.A.*	*N.A.*

SUMMARY OF INDICATORS

Table 13. MAFAP Price Gaps for Tobacco in Malawi, 2005-2013

	2005	2006	2007	2008	2009	2010	2011	2012	2013
Trade status for the year	x	x	x	X	x	x	x	x	x
Observed price gap at point of competition (USD/tonne)	139	-79	403	367	-134	-156	-376	929	530
Adjusted price gap at point of competition (USD/tonne)	132	-87	396	359	-143	-165	-385	922	524
Observed price gap at farm gate (MWK/tonne)	16,509	-10,798	56,423	51,596	-18,863	-23,465	-58,866	231,382	193,189
Adjusted price gap at farm gate (MWK/tonne)	-2,407	-33,546	36,989	-7,384	-50,262	-77,332	-125,708	182,016	123,492

Source: MAFAP, 2014

Table 14. MAFAP Nominal Rates of Protection and Assistance for Tobacco in Malawi, (%), 2005-2013

	2005	2006	2007	2008	2009	2010	2011	2012	2013
Trade status for the year	x	x	x	x	x	x	x	x	x
Observed NRP at point of competition	14	-7	30	18	-7	-8	-23	71	33
Adjusted NRP at point of competition	13	-8	30	17	-7	-8	-24	70	32
Observed NRP at farm gate	20	-9	39	21	-9	-10	-31	110	44
Adjusted NRP at farm gate	-2	-24	23	-2	-20	-27	-49	70	24
Observed NRA at farn gate	20	1	46	25	-4	-10	-31	110	44
Adjusted NRA at farn gate	-2	-15	29	0	-16	-27	-49	70	24

Source: MAFAP, 2014

Table 15. MAFAP Market Development Gaps for Tobacco in Malawi, (USD and MWK), 2005-2013

	2005	2006	2007	2008	2009	2010	2011	2012	2013
Trade status for the year	x	x	X	x	x	x	x	x	x
Access costs gap to competition point (ACGwh)	-867	-988	-1,067	-1,159	-1,257	-1,350	-1,453	-1,762	-2,220
Access costs gap to farm gate (ACGfg)	-3,876	-4,514	-4,482	-3,217	-23,266	-24,555	-18,402	-42,730	-67,477
Exchange rate policy gap (EXRP)	-16068	-15931	-18000	-64113	-6389	-25718	-35846	0	0

Source: MAFAP, 2014

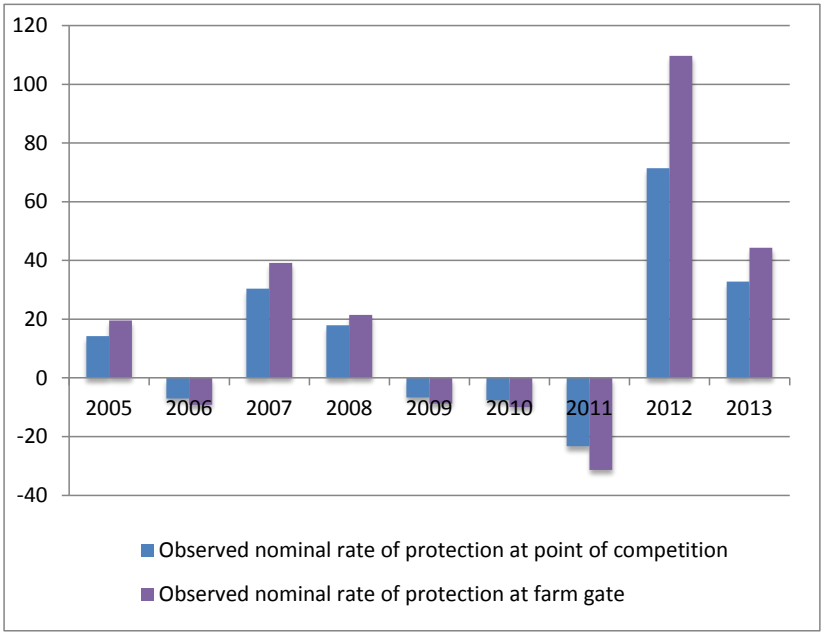
4. RESULTS AND INTERPRETATION

Tobacco is the first cash crop in Malawi and despite the recent policy effort to reduce export dependence on tobacco by promoting the production of other cash crops, tobacco still accounts for on average 68 percent of the total value of agricultural exports between 2005 and 2011. However, volumes of production are influenced by domestic price level. Thereby, such analysis is particularly appropriate since it allows to precisely identify the effect of market and policy distortions on domestic prices.

Owing to the lack of information on producer price, the analysis of incentives to production is based on the producer price that producers are supposed to receive in the prevailing market structure. This means that the analysis only reflects the effects of price distortions existing between the auction and the export market at auction and farm gate level.

If not major price distortions are considered between the auction and the production area, the MAFAP analysis shows that the sector is barely supported by the policy and market environment with incentives of 8 percent (observed NRP), on average between 2005 and 2013. However, yearly indicators show a mixed situation where producers alternatively received price disincentives and incentives to production. By default, trends of incentives at producer level follow the same trend as at auction (Figure 22).

Figure 22. Observed Nominal Rate of Protection for tobacco in Malawi at point of competition and farm gate (%), 2005-2013



Source: MAFAP, 2014

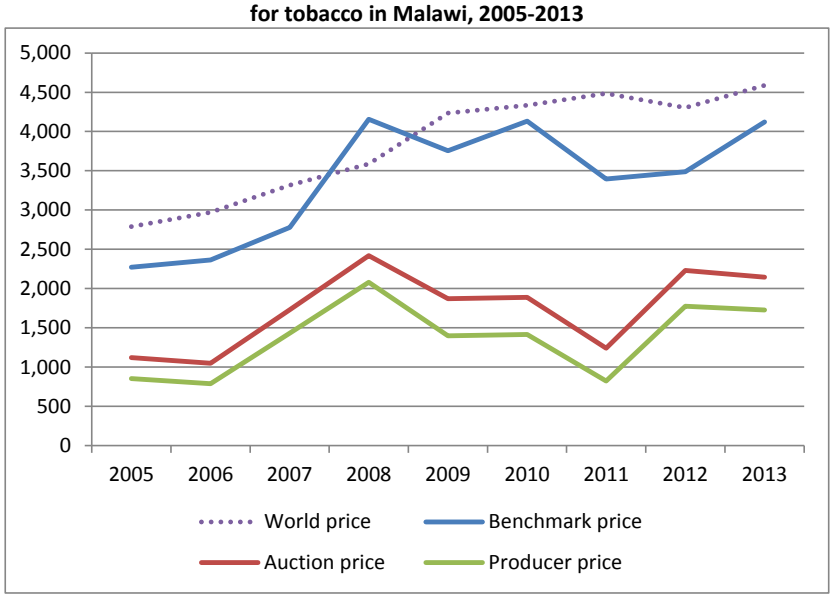
In 2005, domestic agricultural price were high in the context the national food crisis due to non-favourable weather conditions. Hailstorms as well as the prolonged dry period caused damages to the tobacco production (FAO-WFP, 2005). Thereby, high price at auction compared to export price resulted in incentives to production of 20 percent. As for cotton, the domestic price increase in 2005 benefited to producers.

In 2006, no major factor of price distortion was observed and producer faced price disincentives of -8 percent. Export price slightly increased while the auction price declined increasing the price gap between domestic and export price. This situation reflects the existence of barriers to price transmission between the export market and the auction.

In 2007, domestic price increased at a higher rate than the export price resulting in price incentives of 39 percent. This is explained by the implementation of a floor price in 2006/07 which led to a domestic price increase. However, this has negatively impacted the competitiveness of the Malawian tobacco as export price increased. The implementation of the floor price had the expected result: it counteracted the price depreciation at auction level (auction price increased by 87 percent) and as consequence at farm gate level. However, the price policy was abandoned during the season due to the negative impact on export level (Chirwa, 2011).

In 2008, price incentive was still observed and amounted at 21 percent. Auction and export price peaked exceeding international price for tobacco (CIF US) (Figure 23). The mistaken crop forecast strongly influenced price level this year. Indeed, the low forecast of annual production steered one main buyer to offer high price outbidding most of the buyers (Chirwa, 2011).Therefore, by competing for market share, buyer offered higher prices. In terms of price, the situation benefited to the whole sector including producers. However, export volume was lower this year while production level was high.

Figure 23. World unmanufactured tobacco prices and benchmark prices, auction prices and producer price (USD/tonne) for tobacco in Malawi, 2005-2013



Source: TTC, 2014; MAFAP, 2014 and GEM, 2014[5]

In 2009, 2010 and 2011, producers received disincentives of on average -17 percent. The fixed exchange rate regime allowed export price to remain high compared to the previous years. However, price increase of export price did not translate in domestic price increase which resulted in disincentives for producers. Domestic price decline during the period is attributed to high production level which resulted in oversupply. Thereby, the fixed exchange rate affected the competitiveness of

[5] The world price corresponds to the CIF price for unmanufactured tobacco computed by the USDA department of agriculture and indicated in the Global Economic Monitor database (GEM-WB).

the sector by maintaining high export price but producers did not benefit from the exchange rate policy. Barriers to price transmission between export price and auction price are observed.

In 2012, the situation was peculiar with a major modification of the exchange rate regime as well as a significant decline in production level this year. These two elements significantly affected the price dynamic. The implementation of the floating exchange rate in mid-2012 allowed for a strong devaluation of the local currency. As a consequence, export price remained low and while the export volume significantly increased, the total value decreased (Figure 12). However, domestic trends show a different picture. Auction price skyrocketed by 80 percent which is attributed to the significant decline of production in 2012. Indeed, because of the low domestic price during 3 consecutive years, producers switched to more profitable crops, the area cultivated decreased by -56 percent. Therefore, the opposite trends of export price and auction price resulted in strong price incentives to production reaching 110 percent. Moreover, it is likely that the domestic price increase helped contain export price level while the devaluation could have led to lower export price. The modification of the exchange rate regime and devaluation of the Malawi currency could also have resulted in higher demand from buyers which could have contributed to push domestic price upwards.

In 2013, incentives remained high (observed NRP of 44 percent). Despite the fact that production recovered, auction price barely decreased maintaining incentives to producers. Nonetheless, export price increased following international price trend resulting in lower disincentives compared to the previous year.

Export prices of tobacco in Malawi follow a unique trend that differs from international prices. Furthermore, export and domestic price follow different trends reflecting a limited price transmission even a disconnection between the domestic market and the export market in some years. Therefore, domestic price trend are more influenced by domestic factors and local price dynamics than international dynamics. Two main factors can explain the limited price transmission:

(1) The market is considered non-competitive because of the monopolistic situation of the auction floors, AHL being the only actor providing services and the oligopsonistic situation of the buyers, namely, few merchants operating in the export market. Moreover, the vertical and consolidated linkages between service providers, buyers, processors, exporters and manufacturers hinder competition as it is likely that this results in price collusion at auction floor. The regulatory functions of the national institutions are also not satisfactory because of a lack of independence and resources.
(2) Transaction costs are high, especially transportation costs (Tchale, 2011). Transportation services suffer from a lack of competition and structural inefficiencies. The various access costs between farm gate and auction are deducted from the producer price. Therefore, high transaction costs are borne by producers.

Thereby, when the value chain was not affected by exceptional circumstances (food crisis in 2005, mistaken production forecast in 2006, production decline in 2012) or by price policy measure (minimum producer price in 2007), producers received disincentives to production of an average -15 percent. As mentioned previously, this reflects only the price distortions between the export market

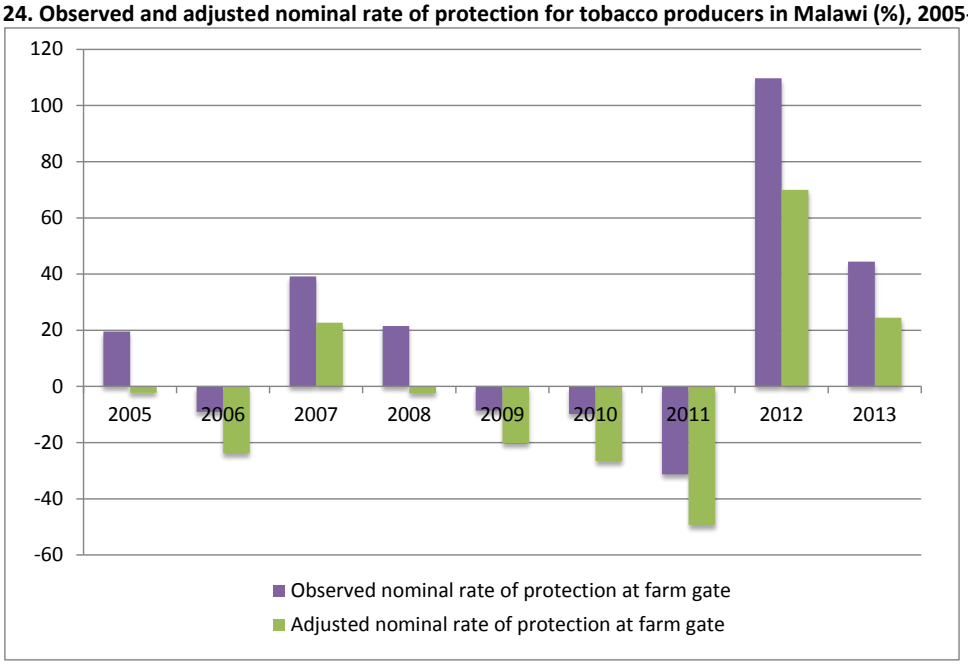
and the auction and does not take into account the potential support or taxation that producers could have received or faced between auction and farm gate.

In addition to measuring the effect of explicit policies and market inefficiencies, the methodology estimates additional price disincentives due to exchange rate misalignment and excessive taxation for tobacco; both are included among the components of the Market Development Gap (MDG). Therefore, if the effect of exchange rate misalignment and excessive taxation are considered in addition to price and exchange rate policy distortions and market distortions, we observe that producers received price disincentives to production of an average -11 percent during the period under review (adjusted NRP) (Figure 24), this refers to the adjusted domain of the MAFAP methodology. Indeed, producers would have received higher prices if policy distortions and market inefficiencies were removed along with excessive taxation and in the absence of exchange rate misalignment.

At auction, the level of incentives was around 5 percent between 2005 and 2013 in both observed and adjusted domain. Indeed, the effect of the exchange rate policy is not relevant at auction level since transactions are carried out in US dollars and the effect of the exchange rate misalignment was not analysed.

While producers received incentives of 8 percent in average between 2005 and 2013, in the observed domain, the situation is different in the adjusted domain where producers received disincentives of –11 percent. The exchange rate misalignment and the inefficiencies reduce the level of incentives estimated in the observed domain by an average 20 percent of the farm gate price between 2005 and 2013.

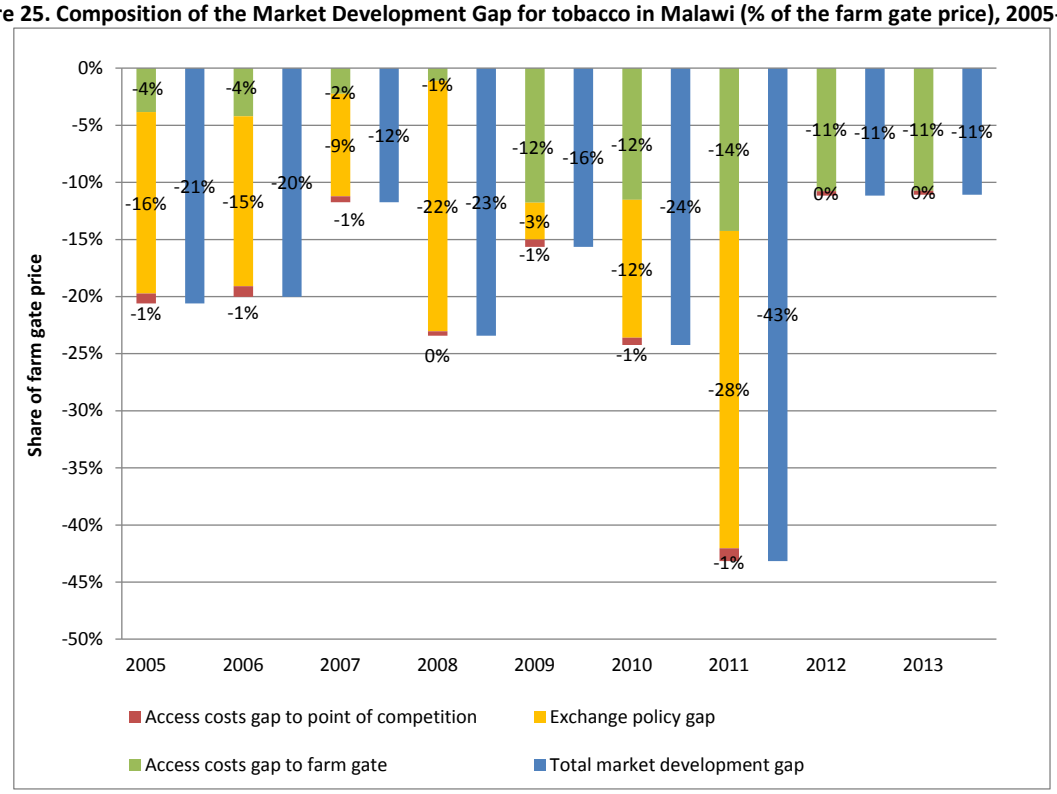
Figure 24. Observed and adjusted nominal rate of protection for tobacco producers in Malawi (%), 2005-2013



Source: MAFAP, 2014

The additional disincentives captured in the analysis reflect the cost of excessive taxation in the value chain between farm gate and auction (green bars), the excessive transport costs between auction and border (red bars) and the additional cost of the exchange rate misalignment (yellow bars) (Figure 25).

Figure 25. Composition of the Market Development Gap for tobacco in Malawi (% of the farm gate price), 2005-2013



Source: MAFAP, 2014

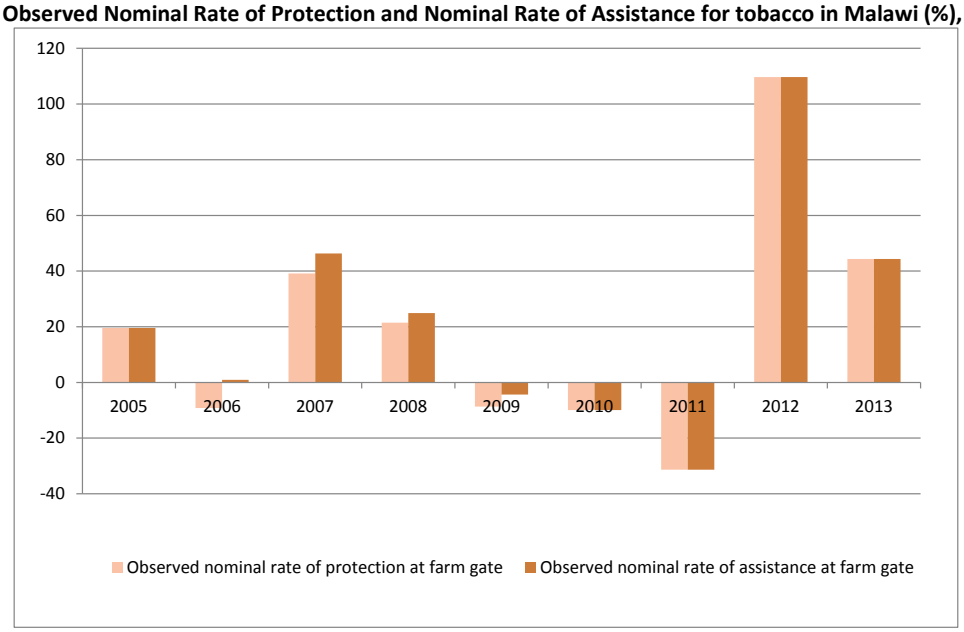
Indeed, if the withholding tax for smallholders were removed as it was the case before 2009, the auction fee, the classification levy and the hessian fee were reduced as suggested in one of the value chain analyses (Jaffee, 2013), and if transport services were more efficient, price incentives (NRP) could have increased by 8 percent of the producer price on average between 2005 and 2013.

If transport services and infrastructure in Malawi were as efficient as in South Africa between auction and border (comparison made with the Logistic Performance Index, 2014), price incentives would have increased by 1 percent of the producer price on average between 2005 and 2013. Between 2006 and 2013, the government spent 14 percent of the public expenditure allocated to agriculture to the development of feeder and rural roads.

During the period under the fixed exchange rate policy, the higher the exchange rate misalignment, the lower the price incentives to production. For instance, in 2012, the observed domain shows an incentive to production reaching 110 percent, while without the exchange rate misalignment of 34 percent; the level of incentives is only 70 percent. On average, the exchange rate policy in place, resulting in the overvaluation of the exchange rate, created extra disincentives of an average -12 percent of the observed farm gate price between 2005 and 2011.

The MAFAP analysis also allows to identify the effect of direct policy support to production by estimating the Nominal Rate of Assistance (NRA). The budget transfer allocated to tobacco production in the framework of the FISP from 2006 to 2009 amounted to 10,054 MWK/Tonne on average per year. Direct support allowed to decrease the level of disincentives in 2006 and 2009 and provided additional support to the value chain in 2007 and 2008 (Figure 26). No budget transfer to the tobacco sector was identified during the following years.

Figure 26. Observed Nominal Rate of Protection and Nominal Rate of Assistance for tobacco in Malawi (%), 2005-2013



Source: MAFAP, 2014

The effects of the direct support are limited when compared with the effects of price and market distortions. In 2009 and 2010, when producers faced disincentives to production, budget allocated to tobacco production did not allow to compensate the price and market distortions indicated by the observed NRP. The price incentive structure remained similar during the years of the inclusion of tobacco in the FISP.

RECOMMENDATIONS

The following recommendations could be explored in order to ensure remunerative prices for producers:

- Guaranteeing a higher price transmission between the export market and the auction. This may involve increased competitiveness at auction to avoid collusive practices. Ensuring effective functioning of the Competition and Fair Trading Commission by securing its independence and enhancing its capacities could contribute to increase competitiveness.
- Developing the market information system in order to reflect domestic and international price trends as well as international supply and demand and disseminate the information to producers. This will reduce price uncertainty for producers and allow them to plan their production accordingly and avoid misleading production forecast.
- Increasing service supplies for producers for transport and grading and improving transport infrastructure.
- Continuing the promotion of the contract farming system as planned in the ASWAp as a way to improve the quality, to facilitate marketing activities, provide remunerative prices to producers and plan the level of production according to demand.
- Sustaining exchange rate policies which avert exchange rate misalignment.

5. CONCLUSION

MAIN MESSAGE

The analysis shows the effects of market and policy distortions prevailing between the export market and the auction. The indicators highlight that the policy and market environment creates a mixed-situation for producers. While producers benefited from exceptional circumstances in some years resulting in price incentives, they also faced disincentives to production in other years.

A non-perfect price transmission between the export market and auction strongly affects the tobacco value chain in Malawi by depriving producers of the opportunities offered by the export market. Domestic price dynamics is more affected by national factors than the price dynamics of the export and international markets.

Distorted price transmission between border and auction can be attributed to the lack of competition across the value chain. Indeed, the monopsony situation of services provided at auction floor and the oligopsony situation of the market allowed for price collusion. Increasing competition and improving the regulatory functions of the national institutions could guarantee better price transmission.

Direct policy support to tobacco production in the framework of the FISP had a limited effect on the structure of price incentive compared to the policy and market distortions.

The exchange rate misalignment due to the fixed exchange rate policy also strongly penalized producers. Maintaining the floating exchange rate is essential to ensure that producer prices reflect the price prevailing in the export market.

LIMITATIONS

Further information on the following elements would ensure a more representative analysis:

- Collecting prices at farm gate;
- Inquiring further on the transaction costs between farm gate and auction floors as well as auction and border;
- Gathering data on the input costs that could be deducted from the producer price and which are not taken into account in this analysis.

FURTHER INVESTIGATION AND RESEARCH

The following analyses would complement the price incentives analysis:

- Analysing the price determination mechanism at auction level and export level;
- Gathering information on the price offered to producers in the framework of contract farming schemes and the corresponding level of price incentives to production;
- Identifying the input costs deducted by the farmer associations from the price that producers received for their production;
- Undertaking a comparative study of the tobacco and tea marketing structure since both products are subject to auction.

BIBLIOGRAPHY

Chirwa E.W. and Dorward A. 2012. Private Sector Participation in the Farm Input Subsidy Programme in Malawi, 2006/07 – 2011/12. Working Paper (Draft).

Chirwa, E. 2011. Analysis of the Tobacco Industry in Malawi, United Nations Conference on Trade and Development. UNCTAD. New York and Geneva.

Harashima A. 2008. The Impact of Tobacco Production Liberalization on Smallholders in Malawi. Ide Discussion Paper No. 170

International Monetary Fund, e Library- Data, http://elibrary-data.imf.org/DataExplorer.aspx (consulted in March 2014)

Jaffee S. 2003. Malawi's Tobacco Sector: Standing on One Strong Leg is better than on None, Africa Region Working Paper Series No. 55. Washington D.C: World Bank.

Koester, U., G. Olney, C. Mataya, and T. Chidzanja, 2004, 'Status and Prospect of Malawi's

Lall.S, Wang.H and Munthali.T (2009). Explaining high transport costs within Malawi, Bad Rods or lack of trucking competition. World Bank, Policy research working paper 5133

Food and Agriculture Organization Statistics, faostat.fao.org (consulted in March 2014)

FAO-WFP (2005). Special report, FAO-WFP crop and food supply assessment mission to Malawi- 20 June 2005.

Malawi Government. 2010. Ministry of Agriculture and Food Security. The Agriculture Sector Wide Approach (ASWAp)- Malawi's prioritised and harmonised Agricultural Development Agenda.

Malawi Government. Ministry of Agriculture and Food Security. Agriculture Market Information System- (data collected in February 2014)

Malawi Government. 2013. Annual Economic Report 2013. Budget Document No.2. Ministry of Economic Planning and Development. Lilongwe. Malawi

Malawi Government, Ministry of Industry and Trade, 2012. National Export Strategy, 2013-2018, Volume 1, main document.

Minot N., Kherallah M., and Berry P. 2000. Fertilizer market reform and the determinants of fertilizer use in Benin and Malawi. MSSD Discussion Papers, No.40, International Food Policy Research Institute.

MKwara B., and Marsh D. 2014. The Impact of Tobacco Policy Reforms on Smallholder Prices in Malawi. Development Policy Review, 2014, 32 (1): 53-70

Moyer-Lee. J, Prowse.M. 2012. How traceability is restructuring Malawi 's Tobacco industry. Institute of development policy and management.

National Statistical Office 2011 Statistical Year Book – 2011, Zomba, Malawi

National Statistic Office (data collected in February 2014)

Nsiku N., and Botha W. 2007. Tobacco Revenue Management: Malawi case study. International Institute for Sustainable Development. Winnipeg, Manitoba. Canada

Otanez, MG, Mamudu H.M**.,** Glantz, S A. 2007. Global Leaf Companies Control the Tobacco Market in Malawi. Tobacco Control 16, 261-9

Pauw K., Dorosh P., and Mazunda J., 2013 Exchange Rate Policy and Devaluation in Malawi. IFPRI Discussion Paper 01253.

Persaud S.C., and Meade B.G.S., Trade and Development When Exports Lack Diversification: A Case Study from Malawi. Economic Research Service. Economic Research Report Number 77.

Prowse M. (2011) A comparative Value Chain Analysis of Burley Tobacco in Malawi- 2003/04 and 2009/10. Institute of Development Policy and Management Working Paper/ 20011.09, University of Antwerp, Belgium.

Prowse M., and Moyer-Lee J. 2013. A Comparative Value Chain Analysis of Smallholder Burley Tobacco Production in Malawi – 2003/4 and 2009/10. Journal of Agrarian Change, John Wiley & Sons Ltd

Raissi. M, Adedeji. O, Saksonovs. S (2012). Article IV: Consultation and request for a new arrangement under the extended credit facility. Appendix II: Malawi: Real exchange rate assessment.

Tchale, H., and Keyser, J. (2010). Quantitative Value Chain Analysis- An application to Malawi. Policy researcg working paper 5242. World Bank

Thindwa M.O., and Seshamani V. (2014). Trade liberalization and the performance of the tobacco sector in Malawi. Journal of Emerging Issues in Economics, Finance and Banking (JEIEFB). Vol: 3 Issue 1.

USAID-FEWSNET (2012). Malawi Food Security Outlook, February through June 2012.

UNCOMTRADE (2014). United Nations Commodity Trade Statistics Databse, http://comtrade.un.org/ (consulted in September 2014)

World Bank, GEM Commodities, http://data.worldbank.org/data-catalog/commodity-price-data (consulted in May 2014)

World Trade Organization. 2010. Trade Policy Review reported by Malawi.

Zant W. 2012. How does Market Access affect Smallholder Behaviour? The Case of Tobacco Marketing in Malawi. University Amsterdam. Amsterdam, Netherlands.

ANNEX I: Data and calculations used in the analysis

Name of product	Tobacco	Country	Malawi	Point of Competition	AU
International currency	USD	Local currency	MWK		

	DATA		Unit	Symbol	Year trade status Food security	2005 x n	2006 x n	2007 x n	2008 x n	2009 x n	2010 x n	2011 x n	2012 x n	2013 x n
	Benchmark price													
1		*Observed*	USD/Tonne	$P_{b(int\$)}$		2,204	2,508	3,012	4,202	3,945	4,076	3,475	3,457	4,196
1b		*Adjusted*	USD/Tonne	P_{ba}										
	Exchange rate													
2		*Observed*	USD/Tonne	ER_o		1	1	1	1	1	1	1	1	1
2b		*Adjusted*	USD/Tonne	ER_a		1	1	1	1	1	1	1	1	1
	Access costs border - point of competition													
3		*Observed*	USD/Tonne	ACo_{wh}		695	777	962	1,141	995	1,052	1,025	1,326	1,574
3b		*Adjusted*	USD/Tonne	ACa_{wh}		687	769	955	1,132	986	1,043	1,016	1,319	1,568
4	**Domestic price at point of competition**		USD/Tonne	P_{dwh}		1,120	1,050	1,730	2,420	1,870	1,890	1,240	2,230	2,145
	Access costs point of competition - farm gate													
5		*Observed*	MWK/Tonne	ACo_{fg}		31,585	35,729	41,532	47,743	66,343	71,399	65,028	113,150	152,704
5b		*Adjusted*	MWK/Tonne	ACa_{fg}		27,709	31,215	37,050	44,526	43,077	46,844	46,626	65,545	85,227
6	**Domestic price at farm gate**		MWK/Tonne	P_{dfg}		101,045	107,086	200,594	292,322	197,639	213,021	129,051	442,357	629,048
7	Externalities associated with production		USD/Tonne	E		-	-	-	-	-	-	-	-	-
8	Budget and other product related transfers		USD/Tonne	BOT		-	11,878	10,412	8,427	9,497	-	-	-	-
	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}		0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76
	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		Unit	Symbol	2005	2006	2007	2008	2009	2010	2011	2012	2013
	Benchmark price in local currency												
9		*Observed*	USD/Tonne	$P_{b(loc\$)}$	2,204	2,508	3,012	4,202	3,945	4,076	3,475	3,457	4,196
10		*Adjusted*	USD/Tonne	$P_{b(loc\$)a}$	2,204	2,508	3,012	4,202	3,945	4,076	3,475	3,457	4,196
	Reference price at point of competition												
11		*Observed*	USD/Tonne	RPo_{wh}	981	1,129	1,327	2,053	2,004	2,046	1,616	1,301	1,615
12		*Adjusted*	USD/Tonne	RPa_{wh}	988	1,137	1,334	2,061	2,013	2,055	1,625	1,308	1,621
		Observed	MWK/Tonne		116,121	153,612	185,703	288,469	282,845	307,884	252,945	324,124	588,563
		Adjusted	MWK/Tonne		131,161	171,846	200,655	344,232	290,978	337,196	301,386	325,886	590,783
	Reference price at farm gate												
13		*Observed*	MWK/Tonne	RPo_{fg}	84,535	117,883	144,171	240,726	216,502	236,485	187,917	210,974	435,859
14		*Adjusted*	MWK/Tonne	RPa_{fg}	103,452	140,631	163,605	299,706	247,901	290,352	254,759	260,341	505,556

	INDICATORS		Unit	Symbol	2005	2006	2007	2008	2009	2010	2011	2012	2013
	Price gap at point of competition												
15		*Observed*	USD/Tonne	PGo_{wh}	139	-79	403	367	-134	-156	-376	929	530
16		*Adjusted*	USD/Tonne	PGa_{wh}	132	-87	396	359	-143	-165	-385	922	524
	Price gap at farm gate												
17		*Observed*	MWK/Tonne	PGo_{fg}	16,509	-10,798	56,423	51,596	-18,863	-23,465	-58,866	231,382	193,189
18		*Adjusted*	MWK/Tonne	PGa_{fg}	-2,407	-33,546	36,989	-7,384	-50,262	-77,332	-125,708	182,016	123,492
	Nominal rate of protection at point of competition												
19		*Observed*	%	$NRPo_{wh}$	14%	-7%	30%	18%	-7%	-8%	-23%	71%	33%
20		*Adjusted*	%	$NRPa_{wh}$	13%	-8%	30%	17%	-7%	-8%	-24%	70%	32%
	Nominal rate of protection at farm gate												
21		*Observed*	%	$NRPo_{fg}$	20%	-9%	39%	21%	-9%	-10%	-31%	110%	44%
22		*Adjusted*	%	$NRPa_{fg}$	-2%	-24%	23%	-2%	-20%	-27%	-49%	70%	24%
	Nominal rate of assistance												
23		*Observed*	%	NRAo	20%	1%	46%	25%	-4%	-10%	-31%	110%	44%
24		*Adjusted*	%	NRAa	-2%	-15%	29%	0%	-16%	-27%	-49%	70%	24%

					0.00%	**0.00%**	**0.00%**	**0.00%**	**0.00%**	**0.00%**	**0.00%**	**0.00%**	**0.00%**
					(16,067.87)	(15,931.43)	(18,000.08)	(64,112.74)	(6,388.62)	(25,717.57)	(35,846.14)	-	-
	DECOMPOSITION OF MDG		Unit	Symbol	*2005*	*2006*	*2007*	*2008*	*2009*	*2010*	*2011*	*2012*	*2013*
25	International markets gap		USD/Tonne	IRG	0	0	0	0	0	0	0	0	0
26	Exchange policy gap		MK/TON	ERPG	-16068	-15931	-18000	-64113	-6389	-25718	-35846	0	0
27	Access costs gap to point of competition		MK/TON	ACG_{wh}	-867	-988	-1,067	-1,159	-1,257	-1,350	-1,453	-1,762	-2,220
28	Access costs gap to farm gate		MK/TON	ACG_{fg}	-3,876	-4,514	-4,482	-3,217	-23,266	-24,555	-18,402	-47,604	-67,477
29	Externality gap		MK/TON	EG	0	0	0	0	0	0	0	0	0
30	Total market development gap		MK/TON	MDG	-20,812	-21,433	-23,548	-68,490	-30,912	-51,623	-55,701	-49,367	-69,697
31	Market development gap as share of farm gate price		%	MDG	-21%	-20%	-12%	-23%	-16%	-24%	-43%	-11%	-11%
32	Market development gap as share of adjusted reference price a		%	MDG	-20%	-15%	-14%	-23%	-12%	-18%	-22%	-19%	-14%

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