Policy support to African Agriculture: New trends or business as usual

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Abstract:

African governments have widely acknowledged the important role that the agricultural sector plays to reduce poverty and improve food security. Nonetheless, governments' stated policy objectives, the policy measures implemented to achieve these objectives and the effects they generate are often not in line. As a result, there are still many ambiguous and inadequately targeted trade and domestic agricultural policies in place aiming to protect certain interest groups, or directed to achieve certain policy goals that come at a cost for specific (non-targeted) groups within the country's or region's population. Based on an updated dataset covering the period 2005-2015 for fifteen African countries assembled in the context of the Monitoring and Analysing Food and Agricultural Policies (MAFAP) Project implemented by the Food and Agricultural Organization (FAO) of the United Nations in collaboration with the Organization for Economic Cooperation and Development (OECD), this paper proposes new estimates of the scale of distortions, and market inefficiencies and development challenges faced by the agriculture sector at different points of the commodities' value chains in each country. Distortions to agricultural incentives are captured through the nominal rate of protection (NRP) and nominal rate of assistance (NRA) estimated across commodities for each year. The paper also proposes a first approach to systematically measure and compare market inefficiencies and development challenge in specific value chains through a newly developed indicator called the "Market Development Gap" which is also estimated for each commodity and for each year. Results are characterized by a huge heterogeneity across countries and commodities depending on the net trade position of the country and the status of the commodity. Overall, policy support increases with level of development which is only a confirmation of previous findings.

1 Introduction

Most countries in the world adopt policies that impact their agricultural sector. In doing so, governments seek to influence behaviour of economic agents in agricultural value chains and especially farmers. Trade and domestic market policies intend to affect the prices farmers receive for their produce or the price of inputs they purchase. Governments typically also use budgetary transfers to support specific agents either directly or indirectly through investments in public goods (research, infrastructure, etc.).

While these policies and their incidence have long been monitored for member countries of the Organization for Economic Cooperation and Development (OECD), there is scarce literature on policies and policy monitoring efforts in developing countries and especially in Sub Saharan African (SSA) countries. This is largely because of the challenges in data availability and quality.

Throughout the past decades with many policy changes affecting the agricultural sector in high-income and developing countries, it has been difficult to assess the effectiveness of the various policy reforms in developing countries, as no monitoring system was in place to continuously measure the effects of policy interventions on the basis of comparable indicators across these countries and over time (Angelucci et al., 2013).

In this respect, the work undertaken by Anderson and Valenzuela (2008) as part of the World Bank's research project on Distortion to Agricultural Incentives (DAI) constituted a major breakthrough. It was then possible to observe whether SSA countries were gradually moving away from a situation of net taxation of agriculture by analysing the indicators over more than five decades. The study also allows to compare the evolution of policy indicators at different stages of countries' development and the impacts that policy reactions by large global players can have on other countries. This is important since in a global market one country's policy action can have a major effect on other countries agricultural sector.

In the same spirit and more recently, FAO's Monitoring and Analysing Food and Agricultural Policies (MAFAP) programme started in 2009 with the objective of establishing country owned and sustainable systems to monitor, analyse, and reform food and agricultural policies to enable more effective, efficient and inclusive policy frameworks in support of agricultural development in a growing number of developing and emerging economies.

This paper provides an overview of recent trends in policy support level and composition for a selection of SSA countries. The data available paint a picture of generalized heterogeneity across countries. Overall, the level of distortions seems to decline on average as the average aggregated NRP across countries and commodities is converging to zero or slightly above. The objective of the paper if is to provide an early snapshot from the emerging data and suggest how we should think about this picture.

The remainder of the paper is structured as follows. Part 2 presents the methods and data used. Part 3 proposes a discussion of the main results distinguishing the analysis of price incentives and the discussion of budgetary transfers in support of the sector. Part 4 concludes.

2 Method and data

This paper builds on two strands of methodologies commonly used to assess the extent of policy support in agriculture. On one side, a well-established methodology based on the price differential between domestic and reference markets, which is used to estimate price incentives. On the other side, an equally well established methodology is used to estimate the budgetary expenditures in support of producers and the agricultural sector as a whole to account for direct and indirect social transfers. Both components are necessary to undertake comprehensive policy analysis, including an assessment of policy coherence with respect to the development objectives stated by governments.

2.1 Price incentives analysis

Estimates of the nominal rates of protection (NRPs) are used in this paper as indicators of the policy effort through their impact on prices. Some of the most seminal applications of NRPs and related concepts include Krueger et al. (1988), Krueger et al. (1991), Monke and Pearson (1989), Tsakok (1990), and Anderson and Valenzuela (2008) and Anderson and Nelgen (2013). A detailed comparison of the applications of NRPs and related concepts can be found in Balié and Maetz (2011). Consistent with the approach proposed by Krueger et al. (1988, 1991), NRPs have mainly been used to examine two situations: (i) direct taxation (or support) of the agricultural sector or a specific value chain through direct sector-specific price policies (or interventions), and (ii) indirect taxation (or support) through trade policies, exchange rate and any other macroeconomic policies or non-agricultural sector specific policies.

In most cases, the expected direct policy effect is equivalent to a tax on exportable goods and to a subsidy for importable goods while the indirect effect also results in taxes on agriculture which generally dominates the direct effect. For example, Quiroz and Valdes (1993) argue that, in the case of Zambia and Zimbabwe during 1980-87, there was a negative trend in nominal protection rate that was the result of increasing transport costs due to deterioration of infrastructure, lack of spare parts, and other factors that could be due to both policy and market failures.

Some variations on NRPs found in the literature include the nominal protection coefficient (NPC), which expresses the result as a ratio rather than as percentage change.[1] The nominal rate of assistance (NRA) at the farm gate is the sum of the NRP plus subsidies paid to the farmer expressed as a percent of the border price. The subsidies also include the value of input subsidies whether provided as payments directly to the farmer or indirectly through policies which affect farm prices (Monke and Pearson, 1989). In a developed country context, NPCs are calculated by the OECD using the Producer Support Estimate data base (OECD, 2010).

The point along the value chain where the NRP or any other such indicators are calculated plays a key role. As described by Tsakok (1990), the border price and domestic price need to be compared at the same point in the value chain. This leads to a number of challenges in real world applications in terms of data requirements but also makes the calculation of these indicators meaningful for policy. The methodology in this paper is closest to Tsakok (1990) with NRPs estimated at the farm gate, wholesale, and retail level, which helps locate market and policy failures along the value chain.

[1] The NPC is the ratio of the domestic price to the border price. The NRP is the difference between the domestic price and the border price divided by the border price.

To compare prices in a wholesale market for an imported commodity, the border price that is used for comparison needs to be modified in such a way that it accounts for the costs incurred to take the commodity from a CIF position to sale in the wholesale market in question:

$$BP_w = P_b + TC_{b.w} + MM_{b.w} \quad \textbf{(1)}$$

where BP_w is the CIF price (or average unit value) of the commodity converted into domestic currency using an exchange rate;[2] $TC_{b.w}$ includes all handling costs at the border, transportation and any processing costs between CIF and placement of the commodity on the wholesale market; and $MM_{b.w}$ are the importers' normal marketing margins between the border and the wholesale market. The signs would be reversed in the case of an export and with the border price being a FOB price (or unit value).

Note that the border price does not include the tariff and tariff equivalent charges. Similarly $TC_{b.w}$ includes only the resource costs of moving the commodity between border and wholesale, and $MM_{b.w}$ is a 'normal' marketing margin. The adjusted border price at the farm gate would be

$$BP_f = BP_w - TC_{f.w} - MM_{f.w} \quad \textbf{(2)}$$

where $TC_{f.w}$ include all handling costs at the border, transportation and any processing costs between the farm gate and placement of the commodity on the wholesale market; and $MM_{f.w}$ are normal marketing margins between the wholesale market and the farm.

The NRP, expressed as a percentage, can then be calculated as the difference between the adjusted border price and the domestic price at wholesale and/or the farm gate:

$$NRP_w = 100\% \times (WP - BP_w)/BP_w \quad \textbf{(3)}$$

$$NRP_f = 100\% \times (FP - BP_f)/BP_f \quad \textbf{(4)}$$

As will be seen below, explicit trade of domestic policies are not always the main drivers of price incentives as captured by the NRP. In developing and emerging economies in particular, market imperfections and other factors (see below) play a substantial role wither exacerbating the effects of explicit policies or offsetting them. To illustrate this point, we refer to the simplest case where tariffs are the only market intervention and imperfection. Anderson and Valenzuela (2008) show that the NRP at the border is equivalent to a tariff if no other market interventions and imperfections are in place. In other words, in the absence of domestic market interventions and imperfections between the border and wholesale market, it can be shown that NRP at wholesale for an imported commodity

[2] The exchange rate used should reflect opportunity costs and should itself be adjusted in cases when the domestic currency is overvalued. African currencies have often been overvalued but most have been determined by market forces since about the 1980s. An exception is the CFA franc region in West Africa that has been tied to the French franc (and now the Euro) and Malawi for about 2008-10. Burkina Faso and Mali are included in the CFA franc region (Etta-Nkwellea et al., 2010).

is equal to the tariff and other tariff equivalent charges multiplied by the ratio of the border price to the border price used for reference at the wholesale level.

As a matter of fact, the calculated NRP, in addition to the effect of the tariff, includes the effects of market imperfections (asymmetric access to information, market power, etc.) as well as the effect of other policy measures (such as market regulations), other fees and levies, and other measures adopted by governments to generate revenue, address market failures or pursue other objectives, all of which distort price transmission between the border and the farmer. To account for that, MAFAP estimates an additional indicator, called the adjusted NRP. This measure aims to identify excessive access costs in comparison to a more efficient or ideally functioning value chain. If excessive costs are identified, they are excluded in the calculation of the adjusted costs that are used in the calculation of the family of adjusted indicators. The main concepts that are subject to revision in order to provide adjusted measurement are the exchange rate, the benchmark price and access costs at different points of the value chain.

To expand the analysis in order to particularly capture inefficient market functioning, 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, illegal bribes and other informal costs which are particularly relevant in developing countries, MAFAP introduces the indicator of the Market Development Gap (MDG). This indicator represents an aggregate estimate of the effect of excessive access costs within a given value chain on prices received by producers.

These market imperfections can impede the transmission of world prices onto domestic markets, reflecting a bigger or lesser degree of immaturity. The more markets are integrated (i.e. the more the observed price gap is the effect of explicit trade and market support policies), the more the MAFAP MDG will resemble the total MDG in the country. In theory, the MDG reflects the opportunity costs that these inefficiencies represent for producers. It is the portion of the price gap that can be attributed to “excessive” or inefficient access costs within a given value chain (see Anyango, 1997) and imperfect functioning of markets.

2.2 Public expenditure analysis

Governments from developing countries often lack organized information that would enable them to systematically analyse the performance of expenditures affecting the food and agriculture sector (UN, 2014). Key actors at national level recognize the need for the availability of such information on a regular basis in order to make rational, evidence-based policy choices, and that the development of appropriate indicators is an important prerequisite for policy analysis and efficient budgetary processes.

The Public Expenditure in Agriculture (PEA) indicators proposed by MAFAP seek to keep track of both the level and composition of public expenditures in support of food and agricultural sector development, and to establish a link between aid allocations and national expenditures. The MAFAP-PEA indicators aim to assess whether resources are being allocated to priority areas, whether they address investment needs, and whether they are consistent with government policy objectives. They also reveal whether aid allocations are coherent with national priorities. Moreover, the detailed nature of the MAFAP indicators permits investigation into the incidence of PEA on agricultural growth, poverty reduction and other development variables, contributing to further research and analysis in that domain (, Hazell et al., 2010, Benin et al. , 2008, Benin et al., 2009).

The methodology proposes to capture all public expenditures in support of food and agricultural sector development, ideally going back a minimum of nine years. That includes expenditures from the national budget undertaken by either a central or regional government, regardless of the ministry or agency that implements the policy, and external aid provided either through local governments or specific projects and programmes conducted by development partners. Public expenditures considered in the MAFAP-PE methodology are those of the food and agricultural sector, including forestry and fisheries. In addition, the MAFAP-PE methodology includes all public expenditures in rural areas, as they may also play an important role in agricultural sector development, even if they are not specific to the sector. The information on public expenditures in rural areas also aims to establish a view of a country's general policy environment and whether there may be a pro or anti-rural bias in expenditures on such significant areas as infrastructure, health and education.

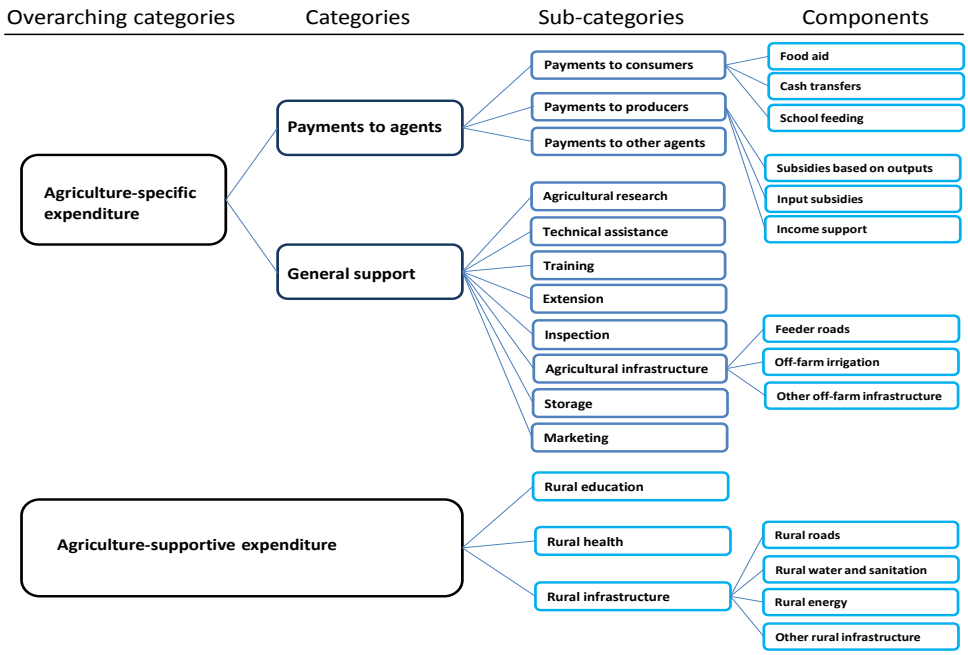
In order to capture all public expenditures in support of the food and agricultural sector, the MAFAP programme has established the following distinctions:

i. A broad distinction between expenditures that are agriculture-specific (direct support for the agricultural sector), agriculture-supportive (indirect support for the agricultural sector) and non-agricultural.
ii. Within the agriculture-specific category, a distinction between support for producers and other agents in the value chain (e.g. input subsidies), and general or collective support for the sector (e.g. research). The agents in the value chain include farmers (producers), input suppliers, processors, consumers, traders and transporters.

Agriculture-specific expenditures generate monetary transfers to agricultural agents or the sector as a whole. Those agents (or the sector as a whole) must be the only, or the principal recipient of the transfers generated by the expenditure measure. 6 Agriculture-supportive measures are not strictly specific to the agricultural sector but have a strong influence on agricultural sector development such as investment in rural education or rural health. All measures that meet these criteria are considered in the analysis, regardless their nature, objectives or perceived economic impacts. The detailed classification of support follows the OECD's principle of classifying policies according to their economic characteristics (i.e. the way they are implemented), which provides the basis for further policy analysis (OECD, 2008)[3].

[3] The fact that MAFAP classifies policies according to their economic characteristics should not be confused with the distinction made by the IMF between economic and functional classifications of expenses. In the IMF Government Finance Statistics (GFS) Manual (IMF, 2014, p.114), the following definitions are provided: "the economic classification of expense identifies the types of expense incurred according to the economic process involved" and "the functional classification of expense provides information on the purpose for which an expense was incurred". In this regard, the COFOG classification is functional in nature. However, the MAFAP classification considers policies and information on the way in which they are implemented (which can be both quantitative and qualitative) as the starting material for the attribution of the PEA categories. This is a consequence of the fact that the MAFAP classification is an analytical tool and not a reporting tool. Therefore, the distinction between functional and economic classifications in the sense given by IMF does not apply to the MAFAP classification, contrary to what could be suggested by the indication that policies are classified by function of their economic classification.

Figure 1: Simplified MAFAP public expenditure categories



Source: MAFAP (2015). MAFAP Methodology working paper: Volume II. Analysis of Public Expenditure on Food and Agriculture. MAFAP Technical Notes Series, FAO, Rome, Italy.

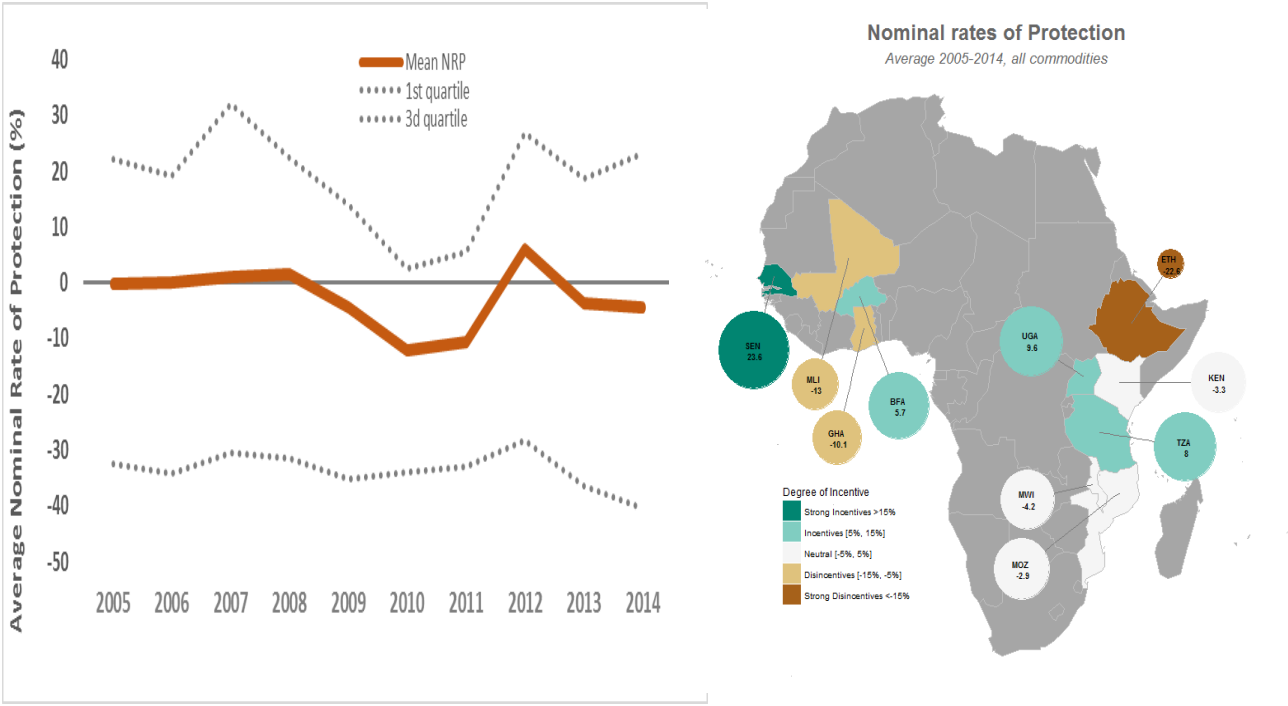
3 Results

3.1 Price incentive analysis

Results presented hereafter are based on Nominal Rates of Protection (NRP) estimates which serves as an indicator of incentives or disincentives to production and the Market Development Gap (MDG). The NRAP indicator is essentially based on the comparison between domestic market prices (observed prices) and reference prices free from domestic policy interventions (see above).

3.1.1 Aggregated results

Figure 2: Nominal rates of protection, 10 African focus countries, unweighted average 2005-14



Source: Author calculations based on MAFAP, 2015.

The line representing the average NRP for all MAFAP countries in Figure 2 may give the impression that distortions are very low and almost negligible in the analysed time period from 2005 to 2014. The price distortion indicator is indeed close to zero on average for the analysed products and years, at least until the food price crises and then goes back to a value just under zero after the fluctuations caused by the crisis. However, the shown 1st and 3rd quantiles indicate that there is more to consider when analysing the price distortions affecting farmers in the observed countries.

The map in Figure 2 shows the important and substantial heterogeneity of the aggregated results across countries. Out of the ten countries analysed, we find that half exhibit average incentives for all commodities throughout the review period.

- The strongest incentives to farmers are to be found in Senegal with an NRA of 23.6%, followed by Uganda with 9.6%, Tanzania with 8%, Burkina Faso with 5.7% and Kenya with 5.5%.
- The strongest disincentives to farmers are observed in Ethiopia with an NRA of -22.6%. Mali has an NRA of -13% and Ghana -10.1%. Lower distortions are observed in, Mozambique with -2.9%, Kenya with -3.3 and Malawi with -4.2%.

It is important to keep in mind that the results are often driven by strong interventions for individual commodities that the governments pay particular attention to. The section on the commodity specific NRPs will provide more insight into these individual distortions by commodity.

Figure 3: Market Development Gap, 11 African focus countries, unweighted average 2005-14

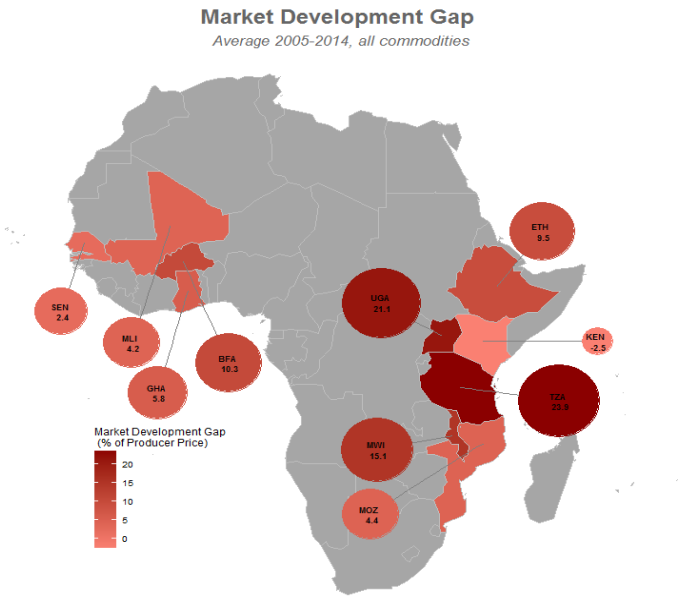


Figure 4: Market Development Gap (total), NRP adjusted and observed (%), 11 African focus countries, unweighted average 2005-14

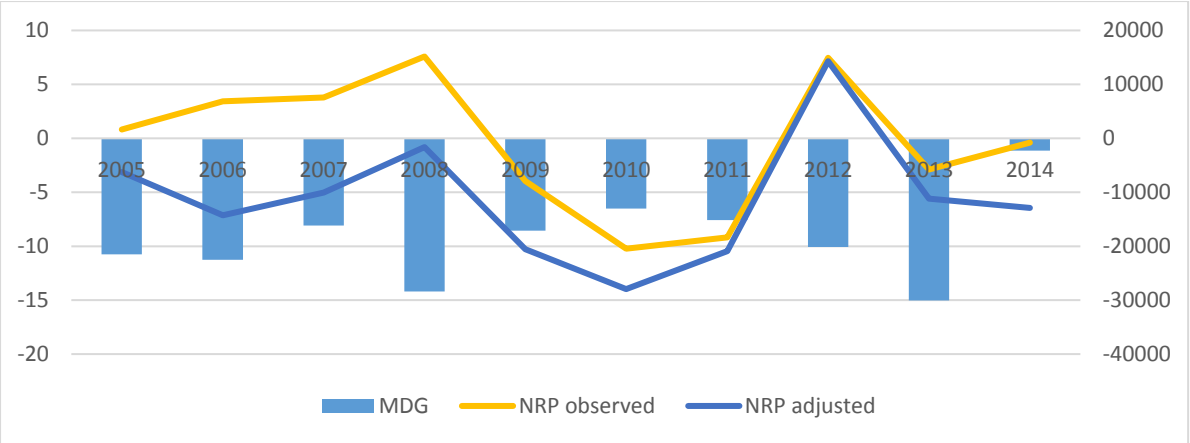


Figure 3 shows the Market Development Gap (MDG) indicator for the analysed countries. In Tanzania, the MDG is observed to be 23.9%, which means that market inefficiencies contribute highly to disincentives for farmers in Tanzania and therefore lead to overall disincentives for farmers, despite the positive observed NRP. In Uganda, the MDG is 21.1%, followed by Malawi with 15.1% Burkina Faso with 10.3%, Ethiopia with 9.5, Ghana 5.8%, Mozambique 4.4%, Mali 4.2%, Senegal 2.4%, and Kenya 2.5%.

The development of the MDG over the studied time period indicates the increasing role that market inefficiencies have in generating price incentives compared to trade, price or other market policies in all analysed countries. Reasons for these inefficiencies are mainly government taxes and fees, bribes, high transport and processing costs and the concentration of profits among intermediaries.

3.1.2 Cotton

This section reports the results analysed for cotton in seven countries: Burkina Faso, Kenya, Mali, Malawi, Mozambique, Tanzania and Uganda. Cotton is currently one of the most valuable cash crops despite the negative effect of subsidies and high levels of protection of many of the OECD countries on world prices (Baffes, 2002, Baffes et al., 2010; de Gorter, 2012). In 2010, cotton was by far the most important export crop in Burkina Faso and Mali, third most important and only slightly behind coffee and tobacco in Tanzania, fourth in Mozambique and Malawi, and seventh in Uganda.

In each country analysed, only a small number of companies, public or private, operate ginneries, each of which deals with a large number of small-holder farmers. All seven countries studied have one or more agencies or parastatal organizations charged with promoting the cotton sector, but the degree of centralized direction exercised varies considerably from country to country. However, in all countries studied ginneries operate well below capacity.

The private sector is now responsible for cotton ginning in all of the countries studied except for Mali and Burkina Faso where responsibility for cotton marketing is still vested in parastatals. Governments of both countries have set up regional companies that provide inputs to, and collect seed cotton from village level producer associations, process it in their ginneries and market the cotton lint, cottonseed and other by-products of the ginneries. They also play an important role in setting producer prices for seed cotton.

The industry is only slightly less concentrated in Mozambique. The Mozambique Cotton Institute (IAM) is the main cotton parastatal with responsibilities for the production of seed cotton, protection of stakeholders and fostering the development of the industry. It licenses eight ginneries which each have exclusive concessions to buy seed cotton in a specific region, fixes minimum pan-seasonal and pan-territorial prices and is the buyer of last resort if the ginneries are not willing to buy seed cotton from some producers.

The cotton value chains in the other three countries are far more market-oriented. The Tanzania Cotton Board (TCB) is primarily a regulatory agency that promotes the development of the cotton sector through setting quality standards, licensing post-farm gate businesses involved in cotton trade and processing, farmer education and ensuring the seed cotton market is competitive. There are about 500,000 cotton farmers in Tanzania who sell their seed cotton to cotton traders or directly to one of the 40 to 60 ginneries. Since 2007, a new contract farming system has been made available in Tanzania in which farmers can get credit and other inputs from a ginnery and agree to sell their seed cotton to the ginnery according to the terms of the contract. The TCB also operates a network of about 8,000 'buying posts' for farmers not selling their seed cotton under contract.

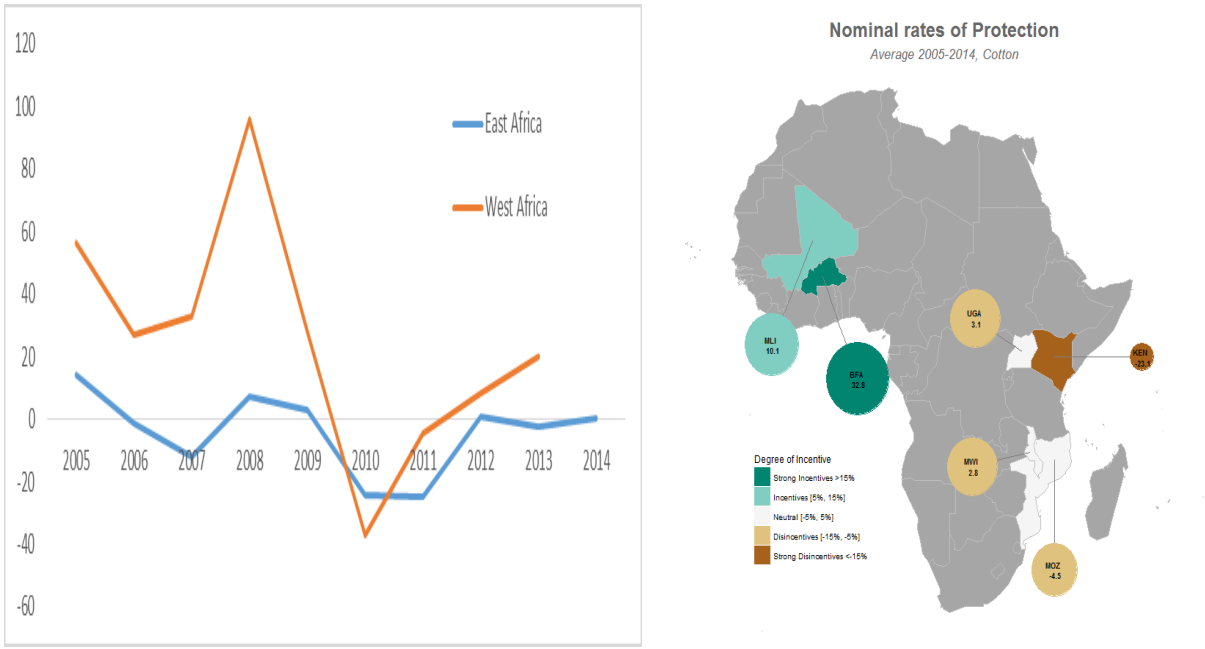
The Ugandan cotton sector is organized much like that in Tanzania. Ginneries in Uganda are privately owned and operated companies that market the cotton lint and cottonseed they produce. The Government of Uganda mandated the Cotton Development Organization (CDO) to promote, monitor and regulate. The ginneries in Uganda are also required to provide a certain amount of cotton seed to the CDO which in turn provides good quality, treated seed to cotton farmers without charge.

Malawi's Cotton Development Trust (CDT) brings together all stakeholders in the value chain: farmers, input suppliers, ginners and the Malawi Ministry of Agriculture and Food Security. It recommends a minimum price for seed cotton each year to the government and advises on other aspects of policy for the cotton value chain.

In Kenya, despite the sector's decline in recent years, cotton is still considered one of the few cash crops with real potential for increasing employment opportunities and food security through income

generation in the Arid and Semi-Arid Lands (ASALs) of Kenya (CODA, 2008). Kenya is endowed with a well-developed textile industry that requires a constant supply of cotton lint. The cotton market in Kenya has been fully liberalized and is now in the hands of the private sector. CODA as a regulatory body is charged with coordinating and regulating cotton marketing. Cotton marketing is facing difficulties due to the weak cotton cooperatives and organized farmer groups resulting in poor farmers bargaining power and lack of economies of scale (CODA, 2010). Despite a growth in exports, very few benefits have been realized by local cotton producers due to the fact that Kenya's textile industry continues to import most of its factory inputs rather than purchase domestic cotton lint. The ginnery industry appears to be operating at a 24 percent of its capacity due to short supply of cotton. As a result, the industry is highly dependent on imported inputs mainly from Uganda and Tanzania.

Figure 5: Nominal rates of protection for cotton, unweighted average by region, 2005-2015



Source: Author calculations based on MAFAP, 2015.

Results presented in Figure 5 clearly show that the level of support to the cotton sub-sector is stronger in West Africa (Burkina Faso and Mali) than in Eastern and Southern Africa (Malawi, Mozambique, Kenya, Tanzania, and Uganda). Two periods can be easily distinguished. Between 2005 and last 2009, producers in West Africa received particularly strong price incentives to produce cotton while producers in Eastern and Southern Africa experienced only moderate incentives or disincentives. The cotton price crises of 2010 is visible in both West and East Africa regions with NRPs becoming substantially negative especially in the case of West Africa. The post crises period, when international prices of cotton started rise again, is characterised by the emergence of a common pattern of support in both regions although Western Africa started to diverge as of 2013 while price incentives remained neutral in East Africa.

Figure 6: Nominal Rate of Protection for cotton seed in the MAFAP countries

Source: Author calculations based on MAFAP, 2015.

We observe that **Burkina Faso** is by far the country providing the highest level of support at roughly 33% while the average NRP is only 13% over the analysed period. Burkina Faso is the first cotton producer of West Africa with 766,000 tonnes of seed cotton produced in 2013-14. For the whole period analysed, producers have received strong price incentives while the main ginning company SOFITEX controlled by the State has been selling cotton at price lower than the international price which implies a substantial cost for the national budget especially when international prices are low.

In **Mali**, a similar price mechanism as the one observed in Burkina Faso operates. Although this stabilization fund creates incentives for production when international prices are low (2005-2009 period), this mechanism limits the transmission of prices and penalizes producers when prices are high (2010-2012). However, the incentives were not sufficient to stimulate the production of cotton, which declined between 2005 and 2008. In 2009, through direct support in the form on inputs subsidies, the government managed to boost production despite the price disincentives received by producers until 2012 when international prices were particularly high.

Contrary to the case of Burkina Faso and Mali, **Kenya** exhibits the highest level of disincentives at roughly -23% on average over the period. However, Kenya is a net importing country while Burkina Faso and Mali are both net exporters. The absence of production incentives may suggest an implicit support to the cotton processing industry in Kenya. The main driving factor for the price disincentives at the primary level of the cotton value chain is the distribution of the market power along the value chain which influences the cotton pricing. The minimum pricing model used by stakeholders appears to be an inadequate tool since it is based on FOB price rather than the CIF price of lint which is inappropriate for a net importing country.

In **Mozambique**, cotton producers have seen the level of support decline to pronounced negative levels in 2010. The situation improved as of 2011 to stabilize to moderate levels of either price incentives or disincentives depending on the years in a situation that seems to be characterized by instability. The minimum price policy allowed farmers to receive prices higher than what they should have received when international prices are low but this system has probably also be used to set low reference prices when international prices spike. The concession system has also made it easier for ginners to pay prices lower than what they should have paid to farmers when international prices are high. Over all the sector is affected by a low productivity, which increases the risk and limits the capability of the actors to respond effectively to changes in exchange rates and international prices.

In **Tanzania,** cotton producers have moved from a situation of net taxation until 2009 to a situation of support thereafter. Incentives to farmers at the farm gate have been increasing as the government has recently enacted further support projects including contract-farming solutions for farmers that guarantee higher prices. This has enabled further growth within the sector as more farmers are incentivized to grow seed cotton as assurance of price structures as well as marketplace to buy their lint is provided

In **Uganda**, producers have received price disincentives or moderate incentives for the most part of the analysed period except in 2012 when international prices were very high. The major driving force for the generally positive indicators is the cotton pricing system adopted which is based on world prices for lint prevailing at time of price announcement. The indicative price often becomes a price ceiling. However, the variability of the indicators is caused mainly by highly volatile world price of cotton and the difference in price between the price announcement and the realized export price for lint. Regardless of the price incentives to producers, the poor performance of the cotton sector In Uganda is related to factors including low productivity caused by the low use of purchased capital

inputs and low profitability which is directly related to crop yields and output prices and inversely related to the cost of production.

Better policies and targeted public investments could help increase cotton productivity and production resulting in higher competitiveness of the cotton value chain across countries. Additional export opportunities could play an important role as a source of income and income diversification contributing to poverty reduction in these areas. It could also support the development of an African textile industry, in Kenya for example, to further integrate the economies of the East Africa Community (EAC).

3.1.3 Rice

This section reports the result for rice in nine countries: Burkina Faso, Burundi, Ghana, Kenya, Mali, Mozambique, Senegal, Tanzania, and Uganda. Most rice is produced using various irrigation systems although some rainfed rice production takes place in all the countries studied. There are a number of different irrigation systems in the Niger basin in Mali and Burkina Faso but irrigated rice production in other countries is mostly on irrigation schemes that were established by the governments concerned.

Although rice is mainly produced by small-scale farmers in the nine countries studied, it is not primarily a subsistence crop consumed on farm. Even in Mali with by the far the greatest consumption per capita, only 37 percent of the rice produced is consumed on-farm (Samake and Bélières, 2007). In general, rice is a cash crop produced in competition with imports and consumed in urban areas mainly by middle- and high-income consumers or on special occasions. The demand for rice is therefore expected to grow rapidly with rising incomes and urbanization.

The price spike in global commodity markets in 2007/08 was greater for rice than any other cereal (FAO, 2010; Headey and Fan, 2010). The price spike together with import dependence and the prospects of rapidly increasing domestic demand triggered concerns on rice policy in most of the countries studied. Policymakers in the countries studied also appeared to be convinced that there were good prospects to increase rice production by their small-scale farmers. It is this combination of factors that made rice a priority commodity for policymakers in the countries studied.

This priority given to rice by policy makers is illustrated in three policy areas: the National Rice Development Strategies (NRDS)[4], additional budgetary resources for infrastructure for rice production and the tariff regimes that appear to protect rice more than other staple commodities. Tanzania's objective, for instance, was to double rice production by 2018 to "develop the agricultural sector in order to attain the desired food security situation and growth for poverty reduction". Other countries included in this study have similar goals and ambitious targets.

Many of the countries studied also have parastatals for marketing major staple commodities. These generally have a dual function: to maintain a buffer stock that can be used to respond to exceptional shortfall in production resulting in a food security crisis for some segment of the population and to

[4] All of the countries studied have prepared NRDSs in partnership with the Coalition for African Rice Development (CARD). CARD was established by the Japan International Cooperation Agency (JICA), the Alliance for a Green Revolution in Africa (AGRA) and the New Partnership for African Development (NEPAD). The CARD strategy focuses on strengthening the production and multiplication of certified seed, research, and agricultural extension, the development of agricultural land and water resources, and improved small-scale, post-harvest rice processing equipment.

intervene when market prices for consumers rise above a ceiling level or fall below floor level for producers.[5]

Regional and local governments in all countries studied may also affect rice markets by charges they levy. In Tanzania, for instance, a district sales tax is charged on grain ”exported” from the district to any destination. The tax rate varies from district to district between one and five percent. There are fees in some countries for grain transported through a district and for marketing it in local markets. Police checks along major transportation corridors are common and provide a venue for collecting district fees and an opportunity for extra-legal charges to avoid costly delays and/or avoid compliance with load limits and other regulations, all of which are a distributional inequity type of non-market failure.

Burkina Faso and Mali have introduced new marketing policies or reverted to some pre-liberalization policies in response to the commodity price crisis of 2007/08. While it has been the case in Mali since 2003, Burkina Faso began including rice in its food security stocks in 2008. Both countries used a direct price control approach to stabilize prices rather than the indirect approach of buffer stocks. Mali established price ceilings at both wholesale and retail in 2008/09.

Burkina Faso prices were based on estimated costs of production plus a producer margin throughout 2008 -2010. They also set margins through the rest of the supply chain implicitly controlling prices at all levels.

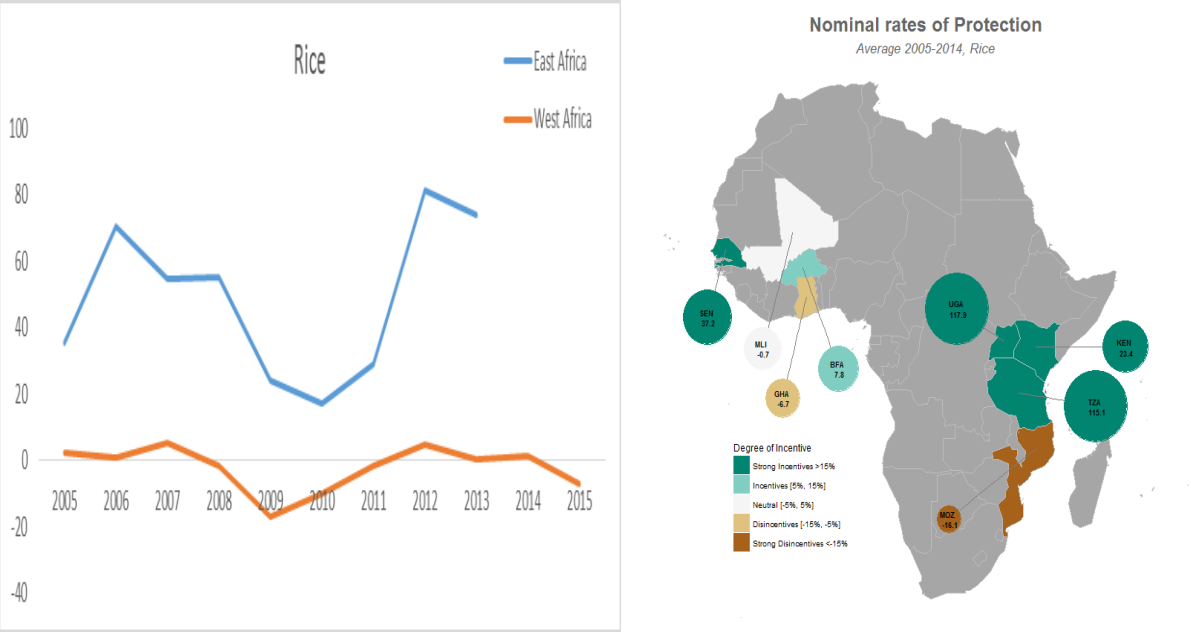
All the countries studied belong to one or more preferential trade agreements (PTAs) which discipline their tariffs with each other and the rest of the world. They also seek to limit the effect of non-tariff barriers. Kenya, Uganda and Tanzania are members of the EAC. Kenya and Uganda are also members of the Common Market for Eastern and Southern Africa (COMESA). Tanzania and Mozambique were members of COMESA but withdrew. They are both members of the Southern African Development Community (SADC). All four West African countries are members of the Economic Community of West African States (ECOWAS). Burkina Faso and Mali are also members of WAEMU.

Results presented in Figure 7 show two different trends for East and West Africa. In both sub-regions we can observe the downward trend in support to production in 2009. This situation of depressed price received by producers appear to have lasted more for producer in eastern Africa than for those of West Africa.

The level of support to the rice sub-sector has been almost neutral on average in West Africa (Burkina Faso, Ghana Mali and Senegal). However, this result masks an important heterogeneity across countries. While producers in Senegal and to a lesser extent Burkina Faso received substantial price incentives on average over the period analysed (+16% and +8%), producers in Mali and even more so in Ghana received rice production disincentives of -1% and -5% respectively.

[5] The use of stocks to stabilize cereal prices has been criticized for at least three reasons: they replace private stocks, they were found to be poorly managed, and they distort market signals (Jane, 2011; Tangermann, 2011; Timmer, 2011; Demeke et al., 2014).

Figure 7: Nominal rates of protection for rice, unweighted average by region, 2005-2015



Source: Author calculations based on MAFAP, 2015.

In **Senegal**, the strong production incentives are largely explained by the tariff set at 12.5% and the existence of an indicative producer price adopted by the Government.

The situation of **Burkina Faso** which is also a net importer is largely explained by the effect of the border protection (tariff of 14%) that dissipates partly between the wholesale and farm level due to market imperfections, the imposition of a floor price for rice, both of which are augmented by the natural protection for this landlocked country resulting in very high transportation costs.

For **Mali**, with the exception of 2009 and 2010, the situation of moderate price incentive or disincentives prevails over years. The government adjusts the its policy in support of either producer or consumers depending on the perceived food security situation of the population but the effects of the interventions are partially offset by huge market inefficiencies constraining price transmission.

In **Ghana**, rice imports are subject to an import duty of 20 percent (temporarily removed in 2008 and reinstated during the course of 2009) as well as other taxes and levies. Rice is one of the commodities, purchased by the National Buffer Stock Company (NAFCO), operating since 2010, to stabilize rice prices and build emergency stocks. The main driver of the huge price disincentives appears to be related to the important market failures, including market power exercised by NAFCO, and resulting in very high transport and other market access costs.

For Eastern and Southern Africa, Figure 7 shows that the level of support is generally much higher and could reach level as high as 80% in 2012 on average. However, in this region heterogeneity prevails too. Burundi, Kenya, Tanzania, and Uganda exhibit high levels of price incentives on average with 36%, 23%, 115% and 117% respectively.

In **Burundi**, the rice value chain is characterised by a strong demand that cannot be matched by domestic production and is consistently supplied by imports that represent 40% of the domestic

consumption. The policy and market environment made of the external tariff set at 75% by the East Africa Community (EAC) and the high demand for rice explain the level of producer incentives. The fact that the average NRPs is below the tariff is explained by important market failures resulting in very high transportation costs and market power exercise by middle men.

In **Kenya**, this result is due to the market failures affecting wholesale prices and producer prices at least as much as the external tariff. In addition, the Kenya government budgets in 2009 and 2010, for example, included new initiatives to rehabilitate and expand irrigation schemes that are mainly used for rice production.

In **Tanzania**, the Government's objective was to double rice production by 2018. As Tanzania also belongs to the EAC, rice producer benefit from the same high tariff. However, market inefficiencies as well as intervention by local government explain the reduced level of price incentives in Tanzania relative to the case of Kenya. For instance, a district sales tax is charged on grain "exported" from the district to any destination.

In **Uganda**, most of the commodity markets are fully liberalized and the average price incentives observed at farm level of 75% is basically the effect of the tariff adopted by the customs union of the EAC. Mozambique shows less favourable situation for rice producer with respectively - -16% NRPs on average for the period analysed.

In **Mozambique** where rice is also imported to match the demand, the level of price disincentives is largely explained by important market inefficiencies as the consumption region is around Maputo in the south while the production region is located in the north at quite long distance. The high transaction costs and market power exercise by traders explained the low prices received by producers.

Figure 8: Nominal Rate of Protection for rice in the MAFAP countries

Source: Author calculations based on MAFAP, 2015.

3.1.4 Maize

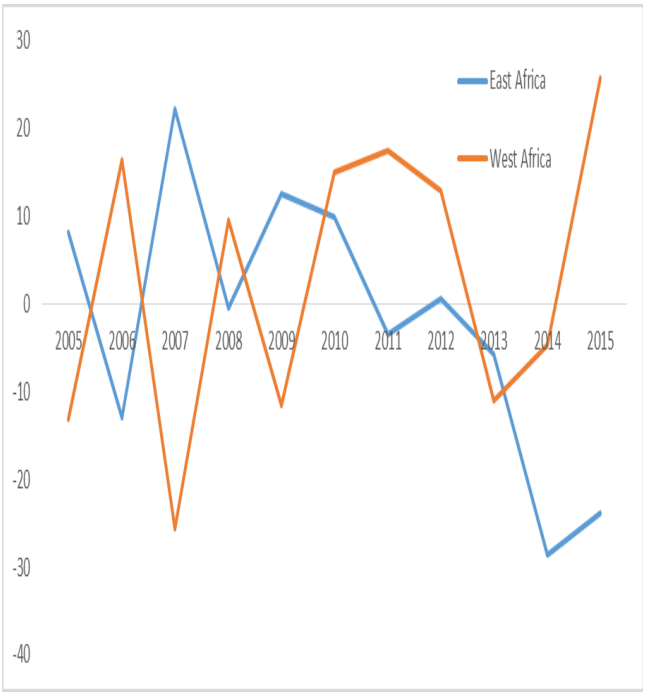
Maize is one of the most important crops in Africa by almost any measure. It is the biggest or nearly the biggest crop in terms of area and volume of production because it can be successfully grown in a wide range of African agro-ecological zones and because it is easy to cook. However maize plays a different role in each of the ten countries studied. In most countries, maize consumers have a strong preference for white maize, while yellow maize is generally regarded as animal feed. Malawi, Tanzania, and Kenya are the top three in terms of the domestic supply of maize in Kg/capita. Malawi for example stands out with 197 kg/capita, more than twice the level of the next largest figure. Uganda and Nigeria at 39 and 47 kg/capita, respectively, rely on a more diverse set of staple foods and have the lowest domestic supply levels with the other countries ranged between these extremes.

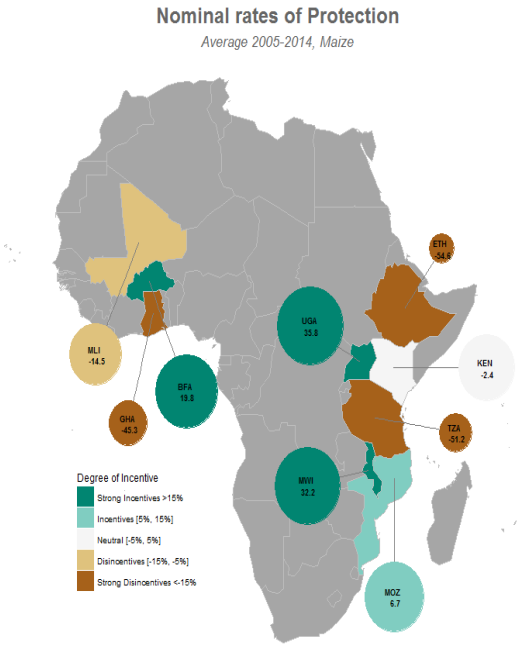
Maize is generally thinly marketed and traded. In all countries, there are networks of small traders who buy directly from farmers or in local markets. Maize is sold up the chain through larger market centres to larger wholesalers and ultimately the larger towns and cities and supply other maize deficit regions. Trade volumes are small relative to production and consumption so most of the countries analysed are near self-sufficiency in most years as shown in Table 1. In Malawi for example, which produces twice as much per capita as any other analysed country, only 5 – 10% of the crop produced by smallholders is marketed. Similarly in Kenya, only 32% of smallholder maize producers are net sellers. This is true too in countries like Mali and Burkina Faso where crops like rice, millet and sorghum are relatively more important than maize. Uganda is somewhat different because maize is also seen as an important export crop and, in some districts of Uganda, 75 – 95 percent of maize production is marketed. But even in Uganda, over 60% of maize is consumed within the country which can include informal trade and much of it on the farm. Some countries, like Tanzania, switch back and forth between net exporter and net importer status.

Prices in these countries are frequently both below import parity and above export parity relative to maize benchmark prices such as US Gulf and South African Futures Exchange (SAFEX). Consequently, trade often occurs with bordering countries.

As a result of the relatively small volume of international trade and the low share of production that is marketed internally, marketing channels are generally not well developed. This is also due to the fact that maize was a highly controlled and has often been a politically sensitive commodity in Eastern and Southern Africa, and the disbandment of parastatals has disorganized the marketing channels. There are few facilities for bulk grain handling and shipment that take advantage of economies of scale. It is frequently first transported to a nearby market in a 90 kg bag by the farmer that grew it. The most common form of transportation to large market centres is by 40 tonnes trucks rather than barges or by train in grain hopper cars. The existing marketing systems can cope with normal volumes and respond to small surpluses or shortfalls in production. Larger more widespread shortfalls create a crisis situation as seen in Kenya in 2008 – 2009, requiring atypical imports from world markets and straining logistics capacity.

Figure 9: Nominal rates of protection for maize, unweighted average by region, 2005-2015

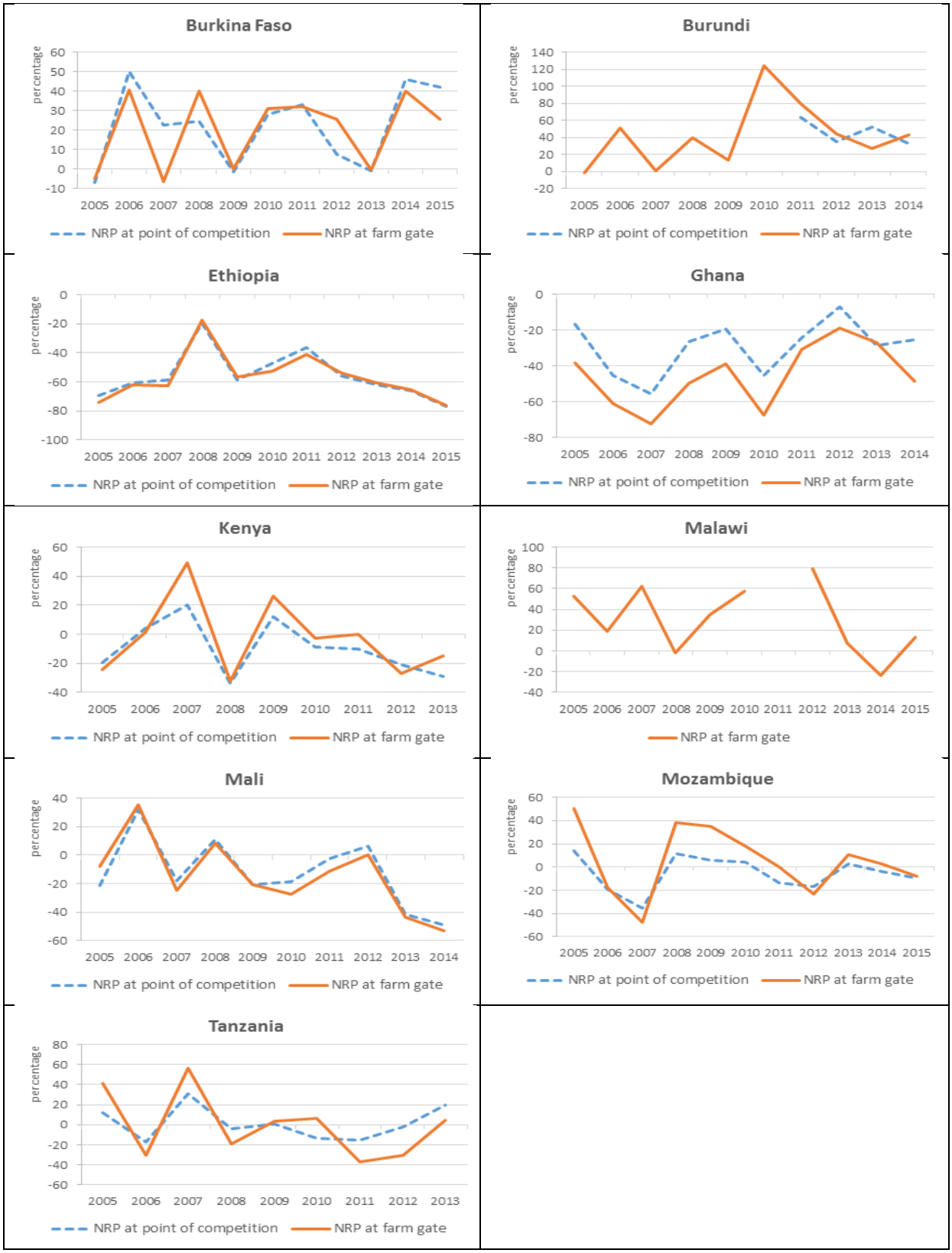




Source: Author calculations based on MAFAP, 2015.

The results for maize are strikingly different for the West Africa and East Africa regions. The aggregated NRPs behaves also symmetrically in opposite direction in the two regions. These very different patterns in the two regions suggest policy interventions moving in opposite directions. Once again, results vary a lot across countries and also within countries over years due to change in policy interventions.

Figure 10: Nominal Rate of Protection for maize in the MAFAP countries



Source: Author calculations based on MAFAP, 2015.

Farmers in **Burkina Faso** have from price incentives with NRPs set at 20% on average over the period analysed. Burkina Faso is an exporter in all years except 2007 with trade happening with its neighbouring countries at zero tariff in all years. The farm level prices are quite lower than expected in all years given the wholesale prices and estimates of market access costs between the farm gate and wholesale. This result is consistent with inefficiencies affecting the value chain between farmers and wholesale markets. Illegal fees, some taxes often considered inefficient, excessive commercial margins by exporters and wholesalers accounted for a significant shortfall for farmers. This loss, reported in Franc CFA per tonne for the period 2008-2013, is ten times higher than the amount for input subsidies to maize distributed these years.

In **Mali**, Figure 9 indicates that the NRPs at farm level was close to -15 % on average over the period analysed. Producers have received by price disincentives largely explained by the poor connection of small farmers to domestic and regional markets where prices are generally higher than in Mali. Trade levels have been too low for producers to take advantage of potential market opportunities at regional and international levels. The apparent low correlation between domestic and international prices indicates a rather limited capacity of the economy to transmit price signals. Producers and wholesalers seem to have essentially reacted to signals emanating from the domestic market.

For **Ghana**, the right hand panel of Figure 9 shows that overall farmers have been substantially penalized by low prices with a NRPs of -45% on average over the period. Although the NRP at wholesale consistently stands at lower level of penalization both the farm and the wholesale levels have received substantial disincentives. Ghana has had a VAT and other levies amounting to a 17% charge on imports throughout the period analysed. In addition, there was a 20% tariff on maize in 2005-06 and 2009-10 that was reduced to zero in 2007-08. These charges cannot explain the very negative trend observed for the NRP throughout the period analysed. Clearly border protection should have played an important role in the opposite direction keeping domestic prices at wholesale and farm level well above the reference price. The main driver of the important price disincentives observed result from substantial market failure and primarily market power exercise by some agents in the value chain. High transport and handling costs contribute to exacerbate farmers' disconnection with wholesale markets

In **Ethiopia**, farmers have received very pronounced price disincentives at roughly -55% on average over the period analysed. Restrictive trade policy (export bans), overvalued exchange rate, high access costs and high international prices largely explain these disincentives to producers. For instance in 2010 and 2011, when the export ban was lifted and the exchange rate had improved after devaluation in 2011, disincentive declined, whereas in 2012 when the export ban was reinstated and the currency overvalued again and that a record level of domestic production coincided with a context of high international prices, the price disincentive was maximum. The low domestic demand during years of good harvest like in 2012 combined with fairly steady levels of imports between 2005 and 2011 (with the exception of 2012) are factors contributing to the decline in domestic price. Moreover, because Ethiopia is a landlocked country, transaction and transport costs are usually quite high which also contributes to high reference prices.

Uganda is an exporter in all years without export fees or other restrictions on trade. Farmers have benefited from fairly high level of NRPs at nearly 36% on average over the period. Farmers have revived higher incentives than wholesalers. This relatively high levels of incentives to maize producers has been driven by the liberalized policy environment in Uganda where farmers through traders have been able to seize market opportunities arising in the East Africa Community.

In **Tanzania** farmers have received no incentive on average over the reported period. Tanzania changed trade status regularly. It was an exporter in 2005, 2007 and 2009 and an importer in the other years. For the 2005-2013 period, farmers have received either small incentives or disincentives for maize production, but in an erratic and volatile way. Uncertain government policy and erratic interventions in form of export bans, public procurement, price setting, and subsidized distribution of maize is not only regarded as ineffective and destabilizing, but even penalized both farmers and consumers in some years. Careful review of the trade and market environment is required to make maize production more remunerative for farmers and the commodity more accessible to consumers. Substantial value chain inefficiencies are linked to high transport costs and the presence of local taxes, informal fees and rent-seeking practices by value chain agents. These inefficiencies represent a huge cost to the maize sector and should be addressed as a matter of priority if Tanzania is to succeed in its goal of developing a more commercial and export-oriented maize sector.

In **Kenya**, farmers have received moderate price disincentives to produce maize over the period analysed at (-3%). Maize is an import in all years. In normal years, 25-35 percent of total marketed maize is sold directly to the National Cereals and Produce Board (NCPB) by medium and large producers. Smallholder producers sell 96 percent of their maize to private traders/brokers or consuming households. NCPB is used by the government to regulate the market by purchasing maize (mainly from medium and large farms) and selling it below the cost of procurement to incentivize production, while keeping prices low for consumers. The main policy instrument used to affect market prices of maize and consequently the price incentives to producers in Kenya is the trading activities of the NCPB. It does this through purchasing grain and selling it to millers often at a subsidized price. Combined with the short-term adjustment of the tariff to increase imports during years of shortage, the purchase pricing of NCPB manifested itself as a maize price ceiling. Since the NCPB purchase price is not based on import parity of maize, the domestic price of maize in Kenya is isolated to some degree from aligning with world market price.

In **Burundi**, farmers have received quite high price incentives to produce maize at 42% on average over the analysed period. While Burundi is a net maize importer, domestic prices are heavily disconnected from prices on international markets. The majority of maize imports come from Uganda, Tanzania, Rwanda and, to a lesser extent, Zambia. During the study period, these countries were still members of a free trade area with the exception of Tanzania which between 2005 and 2008 was not a member of the Common Market for Eastern and Southern Africa (COMESA) while Burundi was. Since 2009, these two countries are members of the East African Community (EAC). The producer price increased steadily over the period, despite the falls in international prices. In 2010, the international price for maize fell more than 50 percent, but producer prices continued to rise explaining the peak in incentives for that year. These strong production incentives are likely attributable to both the existence of a monopsony on imports which limits the volume of maize flowing in the country to keep high prices in the domestic market and the significant disconnect between the regional market and the Burundian market due different barriers (logistic, administrative , etc.).

In **Malawi**, farmers have received relatively high price incentives to produce maize on average at 32%. Indicators reveal that, over the 2005-13 period, the domestic policy and market environment generated highly volatile price incentives to maize farmers. In a sector dominated by smallholders and subsistence farming practices, this instability represents a major issue, as producers are not able to plan appropriate production and marketing strategies. The inefficiencies between farm-gate and wholesale markets, owing to high marketing costs, have also contributed to penalize maize farmers. On the one hand, price incentives for farmers in several years (205-2007, 2009-2013, 2015) were

driven by steady but higher maize prices in Malawi relative to the region. A policy context of limited trade restrictions prevailing before 2007 and in 2010 seems to have allowed for better price transmission and larger protection for maize producers. On the other hand, farm-gate price disincentives in some years (2008 and 2014) were primarily driven by lower producer prices due to bumper harvests and oversupply, coupled with large market inefficiencies between farm gate and wholesale markets generated by poor rural infrastructure and high traders' margins. Furthermore, lack of storage facilities prevent farmers to market their maize later in the season and take advantage of higher prices.

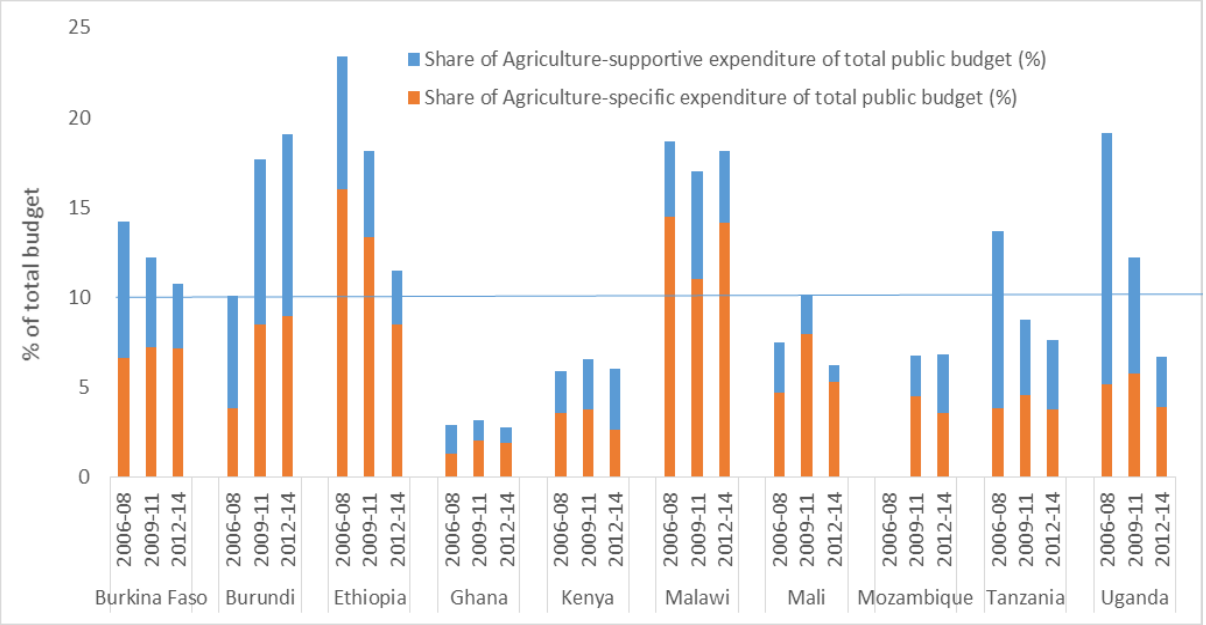
For **Mozambique**, wholesale prices are well above reference prices for all the years analysed, between 20 and 51% except in 2009 where they are only 5% as indicated by the NRPs (see Figure 10). NRPs in the 20 – 30% range at wholesale are consistent with Mozambique's tariff of 2.5% and VAT of 17% applied on imported maize only. The higher rate in 2008 is evidence of exceptional profits that importers could make in that year possibly due to restrictions or other problems of supply including the fact that Mozambique market is not really unified due to enormous transport constraints between the North and South. The 5% NRP in 2009 is consistent with measures to reduce the tariff or VAT in that year. Large scale importers are able to apply for a VAT rebate. Again, border policies appear to provide little incentive for farmers to produce maize. The NRPs at the farm gate should be at least as high as they are at the point of competition (wholesale) if the value chain were transmitting price incentives that exist at the border back to producers. But the NRPs at the farm gate are near zero in all years except 2008. Even in 2008, farmers did not receive the prices they were expected to receive considering the high NRP at wholesale. The wholesale-farm gate price gap suggests that internal market access costs, inclusive of excessive margins and any form of restrictions or exactions on transportation, are well above efficiency levels.

3.2 Public expenditure analysis

To pursue their policy objectives on growth and development, in addition to trade and pricing policy governments often use budgetary allocations in support of agriculture. In such a context, monitoring and analysing public expenditures in support of food and agriculture (PEA) is of the utmost importance for African governments and donors alike.

In July 2003, members of the African Union committed themselves to allocate at least 10% of their national budget to agriculture to achieve 6% growth of the sector. This commitment was renewed in the Malabo declaration of 2014 (AU, 2014). Figure 11 shows the trend in spending for 10 SSA countries. Figure 11 shows that agricultural specific expenditures dominate agricultural budgets. However, the wide variations across countries are also noticeable. While there is a controversy on what should exactly be accounted in the level of spending in reference to the Maputo declaration, most analysts have referred to specific on agriculture excluding spending categories related to rural development at large. According to this interpretation, out of the 10 countries analysed only Malawi exhibits a level of spending above the target. Burundi is quite close with an increasing trend. Ethiopia is also close but shows a declining trend. Even when we account for the agricultural supportive expenditures (i.e. spending on rural health, rural infrastructure, and rural education) only 4 country exhibit level of spending above the 10% threshold for the period 2012-14 (Burkina Faso, Burundi, Ethiopia, and Malawi). Most countries analysed exhibit a declining trend of support to their agricultural and rural sector.

Figure 11: Share of Agriculture-supportive and Agriculture-Specific Expenditure of Total Public Budget, 2006-2014, three year averages, percent



Source: Author calculations based on MAFAP, 2015.

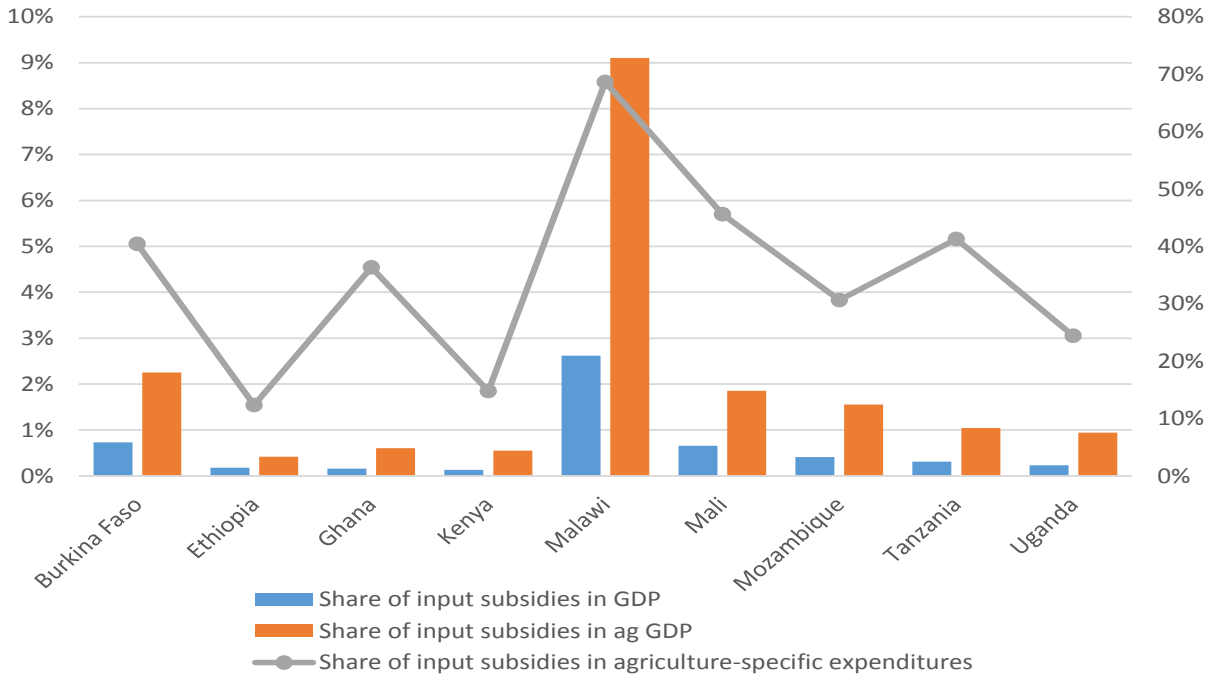
Thanks to a fairly well desegregated MAFAP dataset it is possible to go beyond the level of monitoring public spending to focus on the composition of such expenditures in support of very specific categories such as payment to agents(producers, consumers, traders, …), general support including agricultural research, technical assistance, extension storage, marketing and others. Payments to producers, for example, can include payments based on outputs, cash transfers, or input subsidies. The merits of spending on input subsidies as opposed to other spending categories such as research or infrastructure has been extensively discussed in the literature (Wiggins and Brooks, 2010). In this paper, we analyse input subsidies in more depth as one example of the type of analysis that can be done out of the MAFAP public expenditure database.

The MAFAP dataset reveals that over the period 2006-13, input subsidies have represented an average 35 % of agriculture-specific expenditures in the countries that were analysed. [6] This average masks three main groupings of countries. Low spenders are Ethiopia, Kenya and Uganda, with respective shares of 12, 15 and 24 %. Average spenders are Burkina Faso, Ghana, Mali, Mozambique and the United Republic of Tanzania (URT), with shares oscillating between 31 and 46 %. Malawi forms its own high-spending group, with a staggering share of 69 % (Figure 12).

The same pattern can be observed when considering the average shares of input subsidies in GDP and agricultural GDP (Figure 12Ghana is a specific case. Although input subsidies do constitute a large proportion of agricultural expenditures, at 36 %, they only account for 0,2 % of the country's GDP and 0,6 % of the agricultural GDP. There is indeed an important imbalance between public spending in the agricultural sector and the value added it produces.

[6] The MAFAP methodology considers agriculture-specific and agricultural-supportive expenditures as PEA, which includes rural investments. See "methodology section".

Figure 12: Share of input subsidies over agriculture-specific expenditures (right axis), agricultural GDP and overall GDP (left axis) in nine African countries, average 2006-13.

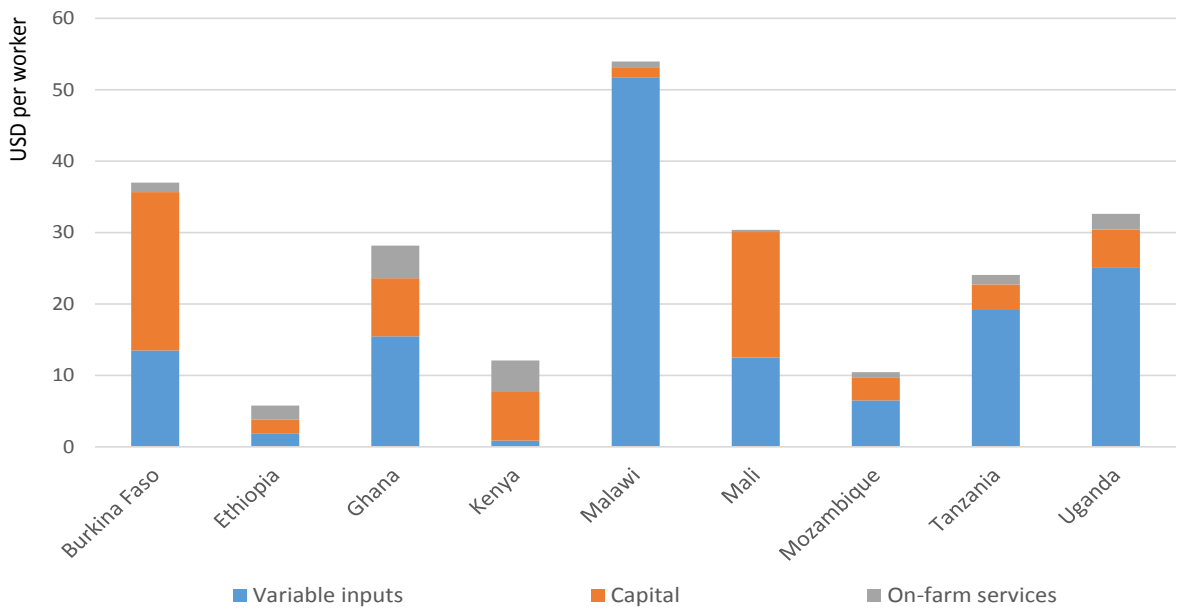


Source: MAFAP, 2016.

These results suggest to see the popular case of Malawi abundantly discussed in the literature (Chisinga, 2012; Jayne et al., 2013; Jayne and Rashid, 2013; Ricker-Gilbert et al., 2013) as an outlier rather than as an example of what is happening on input subsidies in SSA.

The composition of input subsidies is also more diversified than what is usually thought. Input subsidies are often equated to variable input subsidies for fertilizer and seeds. However, subsidized capital (on-farm equipment for instance) and subsidized on-farm services (inspection for instance) also represent a substantial share of the input subsidy category as can been see from. Although variable inputs have accounted for 59 % of input subsidies, capital and on-farm services have benefited, respectively, from 32 and 10 % of them. Burkina Faso and Mali have even subsidized capital, essentially on-farm irrigation, more than seeds and fertilizers (Figure 13). This is due to the geo-climatic characteristics of these countries, where access to water poses an important challenge. Kenya has also invested more in on-farm capital than in variable input subsidies.

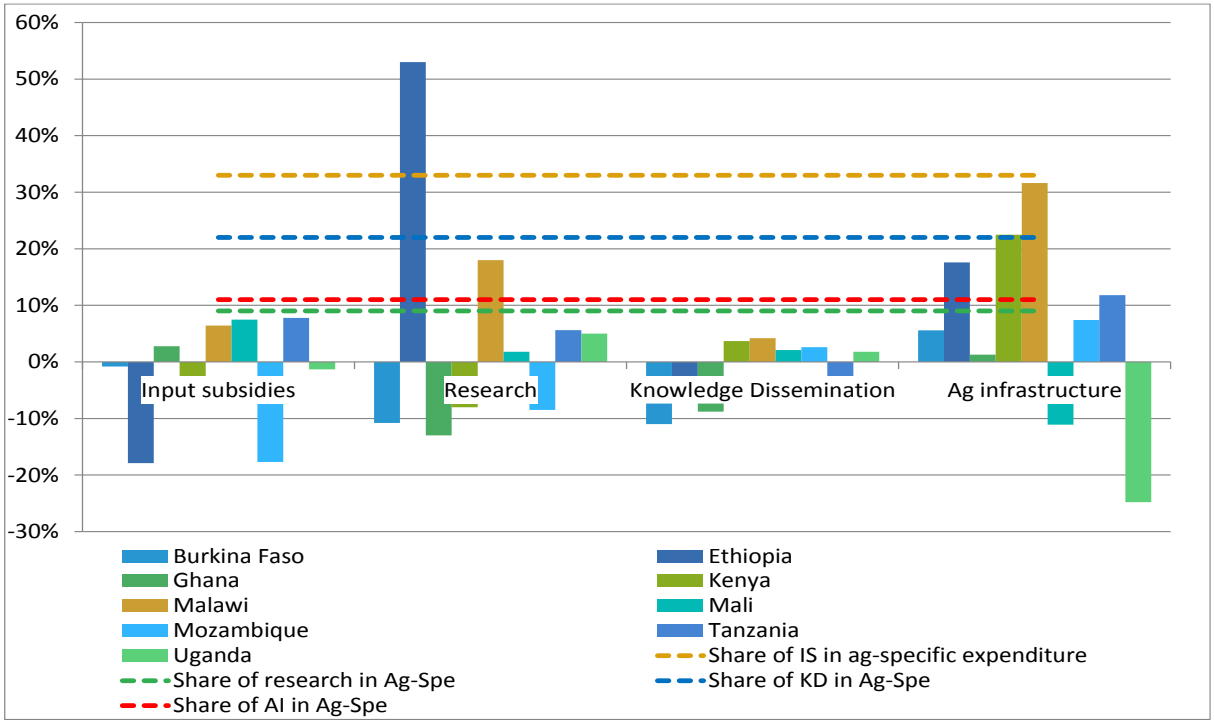
Figure 13. Expenditures in support of on-farm services, capital and variable inputs for nine African countries, average for the 2006-13 period, constant 2011 USD per farm.



Source: MAFAP, 2016.

Variable input subsidies have represented 23 % of agriculture specific expenditures on average for the nine countries over the analysed period, and 17 % if Malawi is not included. These results show that subsidies to seeds and fertilizers represent only a moderate fraction of agricultural budgets in all countries with the noticeable exception of Malawi. However, these variables input subsidy represent a substantial share of agricultural expenditures if taken jointly with subsidized capital and on-farm services, the three categories accounted for in the input subsidy category in MAFAP.

Figure 14: Average exponential growth of the expenditures per farm on input subsidies, research, knowledge dissemination and agricultural infrastructure (in constant 2011 USD) in nine African countries, 2006-13 period, in %.



Source: MAFAP, 2016.

Figure 14 shows that input subsidies account for an average 36 % of agricultural expenditures, in the countries analysed and over the period. Input subsidies per farm, expressed in constant 2011 USD, grew at an average rate of 20.6 % during the period considered and across all countries reviewed. Agricultural research expenditure (ARE) per farm and agricultural infrastructure expenditure (AIE) per farm also grew positively, at about 26 % and 29 % respectively, but they only accounted for ten and 11 % of agricultural budgets respectively (Figure 14). Knowledge dissemination expenditure (KDE) per farm, which is recognized as a crucial area of expenditure to ensure effective uptake of research, increased at an average rate of about 21 %, which is about as much as expenditures on input subsidies per farm. In addition, ARE, AIE or KDE all represented less than 0.5 per cent of overall GDP or 1 per cent of agricultural GDP, on average for the reviewed period, considering all countries. By contrast, expenditures on input subsidies represented 0.6 % of overall GDP and 2.3 % of agricultural GDP, on average in all countries for the period considered here.

Overall, we find that the size and composition of input subsidies in budgets vary widely across countries (average 35%). Variable input subsidies do not always dominate agricultural spending. Other categories appear to be more attractive such as on-farm services, agricultural research/dissemination or agricultural infrastructures.

4 Conclusion

Governments in SSA are supportive of the idea that the agricultural sector in an engine of growth and plays a primary role in poverty reduction and improving food security. They therefore often decide to intervene in this sector through a variety of policy instruments ranging from trade and domestic

policies, budgetary transfers or macroeconomic policies, or regulations. However, it also often the case that the governments' stated policy objectives, the policy measures implemented to achieve these objectives and the effects they generate are not in line.
This paper illustrate some of these policy gaps at regional and aggregated level as well as country and commodity disaggregated level.

First of all, while the overall level of price incentives is found to be generally low, the most striking result is the important heterogeneity of the results across countries and commodities analysed.

Second, when important disincentives are observed, the market failures and inefficiencies as captured by the market development gap indicator proposed by MAFAP appear to be playing a substantial if not primary role.
In addition, the problem of developing policy measures to mediate market failures poses difficulties that challenge the most sophisticated governments in developed countries: governments may not be able to accurately estimate costs to regulate prices in a market where one or more agent has excessive market power or evaluate the true value of an externality or public good.

Third, at commodity level based on the analysis of cotton, rice and maize, results also show a huge heterogeneity across countries and over time indicating that the situation is volatile and very much depends on conjectural factors and short term considerations by government leading to ad hoc policy interventions altering market signals and long term incentive structure.

Fourth, recognizing that government also use the budget as a tool to influence farmers' behaviour, MAFAP results indicate that the level of budgetary support to the agricultural sector as a whole for the fiscal year 2013/14 as reported by MAFAP is still below the Maputo target established in 2003. There are also clear signs of declining trends suggesting that the Maputo /Malabo target is not likely to be met in the near future.

Five, taking input subsidies as an example of desegregated result on public expenditure, MAFAP results show that here too heterogeneity prevails. Variable input subsidies for fertilizers and seeds do not always dominate the budget allocated to agriculture or even input subsidies as in some countries subsidies to capital in the form of irrigation or extension services on the use of variable input subsidies represent a non-negligible share of the total.

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