



# A comparative political economic analysis of maize sector policies in eastern and southern Africa



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## ARTICLE INFO

### Article history:

Received 18 January 2016

Received in revised form 13 January 2017

Accepted 22 April 2017

Available online 3 May 2017

### Keywords:

Agricultural policy

Political economy

Smallholders

Interest groups

Africa

Maize

## ABSTRACT

Maize sector policies in eastern and southern Africa are characterized by a large and often growing presence of the state. Yet the scope, scale, and modalities of state activities vary substantially across countries. Drawing on data from Malawi, Zambia, Kenya, and Mozambique this article compares the relative degree of state intervention in the maize sector. We show that relative preferences for output market subsidies, input market subsidies, trade restrictions, or non-interventionist approaches reflect the interplay of interest group lobbying, patronage networks, and ethnic and regional political affiliations. These relationships have deep historical roots and have often been intensified in the context of the emergence of multiparty politics. We show that interventionist orientations in output markets and trade do not translate into better performance or welfare outcomes. Input subsidy preferences produce more ambiguous welfare results, when the opportunity costs are not fully accounted for.

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## 1. Introduction

As both a staple food and primary smallholder cultivar, maize plays a dominant role in the livelihoods of the majority of people in eastern and southern Africa. Identifying appropriate policies in the maize sector, therefore, offers substantial opportunities to improve the welfare of people in the region. However, policy change in the maize sector rarely comes easily. Maize sector policies are often closely aligned with the interests of entrenched political economic networks, which can stymie efforts at policy reform (Poulton and Kanyinga, 2014; Jayne et al., 2002; Kherallah et al., 2000). Challenges associated with achieving reforms to maize sector policies are highlighted by the often sharp divergence between government commitments to market liberalization, on the one hand, and the maintenance or expansion of substantial state involvement in the maize sector, on the other hand (Kherallah et al., 2000).

There are three ways in which governments in Eastern and Southern Africa typically intervene in the maize sector to achieve political and developmental objectives. The first is through output

market interventions, which include the use of marketing boards to overcome perceived smallholder output market failure, to support high farm gate prices, and to lower consumer prices through subsidized sales of government stocks (Barrett and Mutambatsere, 2008). The second is through input subsidy support, mostly for maize seed and fertilizer (Jayne and Rashid, 2013). Finally, governments in the region regularly use trade policy levers, including tariffs, export bans, licenses, and quotas, to regulate maize supplies and prices (Jayne et al., 2010).

Yet the composition and degree of state involvement in maize markets is not uniform across the region. Governments have adopted a range of policy approaches to the maize sector since the initiation of market liberalization reforms. It is our contention that variations in maize sector policies, including the relative scope and scale of state involvement, are associated with differences in policy incentives created by prevailing political economic structures. These policy variations, in turn, have important implications for maize sector performance and the distribution of welfare gains and losses. Thus, understanding the relationship between the political economy of maize policies and the scope and scale of state intervention in the maize sector can help illuminate the persistence of particular policy approaches, as well as to identify feasible options for policy change.

In this paper we develop a comparative political economy approach for understanding maize sector policy preferences in

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eastern and southern Africa. Using data from Zambia, Malawi, Kenya, and Mozambique we develop indicative statistics that enable us to compare relative policy orientations in these countries, focusing on output market subsidies, input subsidies, and trade restrictions. We use a comparative political economy framework to examine relative policy preference rankings. Using this framework we ask: (1) what political economy structures favor more interventionist approaches to the maize sector?; (2) what factors contribute to observed preferences for trade restrictions, input subsidies, output market subsidies, or non-interventionist policies?; and finally: (3) what are the distributional implications of differing maize sector approaches and political economy configurations, assessed in terms of total production and yields, price stability and margins, and smallholder market participation?

The remainder of the paper is organized as follows. In Section 2 we present comparative descriptive statistics on the scale of government interventions in the maize sector. In Section 3 we present our conceptual framework for understanding the political economy of maize policies. In Section 4 we apply the political economy framework to each country in order to understand the maize sector policy preferences. Section 5 then examines the welfare distribution effects of policy choices. By way of conclusion, we discuss the implications of our findings in the context of rapid demographic, economic, and environmental transformations which are currently taking place in Africa.

## 2. Comparing the scope and scale of state interventions in maize market

In order to compare the extent of government interventions in maize markets across countries, we develop three numerical measures. First, we measure the magnitude of state involvement in maize output markets by taking the average share of national maize production that is purchased directly by the government through its marketing board or food reserve agency. Second, we assess the scale of state involvement in maize input markets by calculating the average share of the total national agricultural budget that is dedicated to maize input subsidy programs over the period 2009 through 2011. Due to a lack of available budgetary data for all countries, we utilize data from a study by [Jayne and Rashid \(2013\)](#), which compiled a combination of computed and reported figures on input subsidy expenditures. Finally, through a review of both academic literature and media documents, we measure the magnitude of government restrictions on maize trade by computing the percentage of years between 2000 and 2015 that governments instituted statutory restrictions on maize trade. A full description of all data is presented in [Appendices A and B](#).

There are several important limitations to this approach. First, many countries in the region are secretive about both the scale of their involvement in input and output markets and the associated costs. This limits our capacity to determine, for example, the actual number of input subsidy beneficiaries or the costs associated with output market interventions. In addition, we were unable to acquire maize purchase data for each of the country's marketing boards for all years. Finally, trade restrictions on maize are often implemented in a *de facto* way, which makes them difficult to identify ([Borchert et al., 2013](#)). As a result, we likely under-report the frequency of trade restrictions. Despite these limitations, we believe the available data allow us to closely approximate the relative scale of interventions in each of the countries and intervention areas.

[Table 1](#) provides a summary of the available data for each country. In terms of output market interventions, we find that Zambia ranks the highest of all the countries. Between 2000 and 2014 the Zambian government, through its Food Reserve Agency (FRA),

bought on average 19.2% of the total maize produced in the country. Kenya ranks second in terms of output market interventions, with the NCPB buying on average 8% of the country's total maize production between 2000 and 2009. By contrast, the Malawian government plays a more moderate role in output market interventions, while Mozambique does not intervene in maize output markets.

Malawi ranks the highest in terms of the share of its agricultural budget that is dedicated to input subsidies, with an average of 59% of its budget going to subsidize maize inputs. While Malawi's overall budget is smaller than both Zambia and Kenya's, the substantial share of the budget dedicated to input subsidies is indicative of the importance of these subsidies to the agricultural policy landscape. Zambia and Kenya occupy a slightly more moderate, though certainly not inconsequential, positions in terms of input subsidies, with an average of 29 and 19% of their respective agricultural budgets going to maize input subsidies. As with output market subsidies, Mozambique exhibits very little policy preference for input subsidies for maize.

Finally, we find that since 2000 Zambia has the highest incidence of maize trade restrictions of the four countries. Over that period, Zambia has had some form of trade restriction on maize in place for 64% of the years. It is followed closely by Malawi, which has had trade restrictions in place for 50% of the time. Kenya, again, occupies a slightly more moderate position, with trade restrictions in effect for approximately 30% of the time. During this period, Mozambique has not restricted cross border maize trade in any meaningful way.

[Fig. 1](#) provides a visual representation of the relative policy preferences of the study countries along the three axis of intervention. The larger triangles associated for Zambia and Malawi are indicative of higher overall level of intervention in the maize sector, while the ranking along each intervention axis illustrates relative policy preferences.

## 3. A political economic framework for maize policy in Africa

Having established empirically policy preference rankings in each intervention area, we now ask: what factors explain the observed variations between countries? To do this we draw on a political economy framework. Our political economy framework follows closely the work by [Birner and Resnick \(2010\)](#). They emphasize five key variables of interest, which illuminate various aspects of smallholder agricultural policy making:

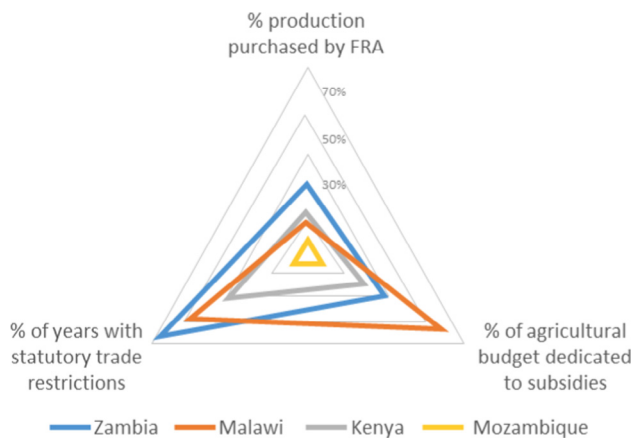
- (1) Interest groups/collective action: This variable draws attention to the relative political power of urban and rural constituencies, explained in terms of the transactions costs of collective action ([Bates, 1981](#)). It helps to explain policy preferences for urban vs rural groups, as well as policy favoritism for elite rural minorities represented by farmer lobbying groups.
- (2) Interaction of voters and interest groups with politicians: This variable focuses attention on the interaction between interest groups and politicians, and generally assumes that politicians choose policies that maximize their chances of retain power. An important element of this is the alignment of the policy choices of governments and their voting block support bases, which may include ethnic groups and urban or rural constituencies.
- (3) Type of political regime: This draws attention to the interplay between political regime type and strategies deployed by the ruling party to retain power within this political structure. In particular, intermediate variables such as the existence of multiparty elections, evidence of opposition

**Table 1**

Measuring maize market interventions in Zambia, Malawi, Kenya, and Mozambique.

| Crop year | Zambia                        |   |                             | Malawi                           |   |                             | Kenya                          |   |                             | Mozambique                           |   |                             |
|-----------|-------------------------------|---|-----------------------------|----------------------------------|---|-----------------------------|--------------------------------|---|-----------------------------|--------------------------------------|---|-----------------------------|
|           | % Production purchased by FRA | % Ag. budget dedicated to input subsidies | Statutory trade restriction | % Production purchased by ADMARC | % Ag. budget dedicated to input subsidies | Statutory trade restriction | % Production purchased by NCPB | % Ag. budget dedicated to input subsidies | Statutory trade restriction | % Production purchased by government | % Ag. budget dedicated to input subsidies | Statutory trade restriction |
| 00/01     | 0.0%                          |   | Yes                         | 8%                               |   | Yes                         | 14%                            |   | No                          | 0%                                   |   | No                          |
| 01/02     | 0.0%                          |   | Yes                         | 0%                               |   | Yes                         | 9%                             |   | No                          | 0%                                   |   | No                          |
| 02/03     | 2.5%                          |   | No                          | 1%                               |   | No                          | 4%                             |   | No                          | 0%                                   |   | No                          |
| 03/04     | 4.0%                          |   | No                          | 0%                               |   | No                          | 6%                             |   | No                          | 0%                                   |   | No                          |
| 04/05     | 8.7%                          |   | No                          | 0%                               |   | Yes                         | 13%                            |   | No                          | 0%                                   |   | No                          |
| 05/06     | 9.8%                          |   | Yes                         | 1%                               |   | No                          | 5%                             |   | No                          | 0%                                   |   | No                          |
| 06/07     | 29.1%                         |   | Yes                         | 1%                               |   | No                          | 13%                            |   | No                          | 0%                                   |   | No                          |
| 07/08     | 20.2%                         |   | Yes                         | 3%                               |   | Yes                         | 1%                             |   | No                          | 0%                                   |   | No                          |
| 08/09     | 5.3%                          |   | Yes                         | 1%                               |   | No                          | 3%                             |   | Yes                         | 0%                                   |   | No                          |
| 09/10     | 12.0%                         | 21%                                       | No                          | 3%                               | 71%                                       | No                          |                                | 22%                                       | Yes                         | 0%                                   | 1.2%                                      | No                          |
| 10/11     | 35.8%                         | 27%                                       | No                          | 1%                               | 47%                                       | No                          |                                | 9%  | Yes                         | 0%                                   | 1%  | No                          |
| 11/12     | 62.9%                         | 40%                                       | Yes                         | 1%                               | 58%                                       | Yes                         |                                | 26%                                       | Yes                         | 0%                                   | 0%  | No                          |
| 12/13     | 38%                           |   | Yes                         | 1%                               |   | Yes                         |                                |   | No                          | 0%                                   |   | No                          |
| 13/14     | 40%                           |   | Yes                         |                                  |   | Yes                         |                                |   | No                          | 0%                                   |   | No                          |
| Average   | 19.2%                         | 29%                                       | 64%                         | 2%                               | 59%                                       | 50%                         | 8%                             | 19%                                       | 29%                         | 0%                                   | 1%  | 0%                          |

Sources: Source material for statutory trade restrictions are summarized in [Appendix A](#). Zambia FRA data come from [Mason and Myers \(2013\)](#). Kenya NCPB data come from [Kirimu et al. \(2011\)](#). Malawi ADMARC data come from Ministry of Agriculture, Irrigation, and Water Development Statistical Bulletin 2010/11. Input subsidy data for Kenya, Zambia, and Malawi from [Jayne and Rashid \(2013\)](#). Input subsidy data for Mozambique from MINAG (2011).

**Fig. 1.** Visual representation of maize sector policy preferences.

party participation in policy making, and changes of ruling parties through competitive elections can help to explain particular policy choices and their timing.

- (4) **Ideas and ideologies:** This variable draws attention to the belief, norms, and values that underlie, either explicitly or implicitly, particular policy choices. Because our research focus is on the role of the state in the maize sector, beliefs about food security, and the relative importance of the private and public sectors in achieve development objectives figure prominently in the ideological underpinnings of policy-making.
- (5) **Social mobilization:** Peasant movements have played an important role in the Asian green revolution and land reform movements in Latin America. Peasant movements have been far less politically important in Africa, perhaps due to the higher transactions costs of mobilization in relatively lower density Africa. Urban food riots in response to domestic price spikes have been a more common feature of African agricultural political economy, and their prevalence likely shapes the range of policy approaches in the region ([Walton and Seddon, 2008](#)).

In the analysis below, we examine the relative prevalence or importance of these variables in influencing observed maize sector policy preferences in each country included in our study. This framework draws particular attention to the historically situated networks and power relationships between interest groups and policy-makers in the context of maturing multiparty politics and the implications these have for maize sector policies.

#### 4. A country-level application of the political economy framework

##### 4.1. Zambia

Zambian maize sector policies are characterized by the highest level of output market subsidies and trade restrictions of our study countries, as well as a non-trivial public investment in maize input subsidies. We will argue that a powerful alignment of interests between large-scale commercial milling and the farmer's union are able to influence agricultural policy preference in favor of maize output subsidies, trade restrictions that raise the price of maize, and into-mill subsidies, despite the power of consumers in Zambia's political economy who are often harmed by such policies.

Understanding the political economy of maize in Zambia requires situating current policies within their historical context. With 40.9% of its population living in urban areas, Zambia is one of the most urbanized countries in Africa. This is largely an artifact of the copper mining industry, which has been the backbone of economic activity in Zambia since colonial rule. In many ways, the maintenance of political power in Zambia largely rests on appeasing and pacifying this powerful urban constituency ([Rakner, 2003](#)).

Because maize meal constitutes the largest share of total urban food expenditure, particularly for the poor, maize prices figure prominently in urban perceptions of the effectiveness of the state. Indeed, food riots in 1986 caused by a hike in maize meal prices, which in turn was linked to the withdrawal of maize subsidies, figures prominently in Zambia's political discourse ([Chapoto et al., 2015](#)). These riots caused the then ruling party to break from IMF austerity measures, which subsequently led to a withdrawal

of IMF funding in 1987. This was followed by a rapid collapse of the Zambian economy, culminating in the end of nearly 30 years of single party rule.

Prior to multiparty elections and market liberalization in the early 1990s, Zambia drew on its particular brand of African socialism, called “humanism,” and pursued agricultural policies explicitly designed to provision the urban population with low cost refined maize meal through an expansive assemblage of parastatal marketing boards and milling firms (Pletcher, 1986; Sitko, 2008). These policies helped to entrench a consumer preference for highly refined maize meal, thus strengthening the political lobbying power of commercial maize mills. In addition, it helped solidify expectations for state intervention in maize meal prices (Jayne et al., 2002). Despite the privatization of the milling sector and the liberalization of maize trading, the relationship between urban consumers and the state continues to be largely mediated through arrangements putatively aimed at maintaining low maize meal prices.

Since its establishment in 1996, output market subsidies in Zambia have been provided through the Food Reserve Agency (FRA), which pays pan-territorial prices for maize to producers. These prices are frequently higher than prevailing private sector prices (Mason and Myers, 2013). In most years, the FRA disposes of these stocks at subsidized prices to large commercial mills. This is justified by policy makers as necessary for maintaining low commercial maize meal prices. The evidence, however, shows that into-mill FRA subsidies increase commercial mill margins, but to have no effect on retail maize meal prices (Kuteya and Jayne, 2012). The Miller's Association of Zambia, a group comprised of most of the large commercial mills in the country, are the most visible lobbying group advocating for into-mill subsidies on maize. These subsidies help to limit competition from small-scale milling and therefore contribute to both usurious profits and a maintenance of political power (Chapoto et al., 2015).

Yet, FRA's pan-territorial pricing for maize is not framed as a consumer subsidy. Instead, it is framed within the political discourse as a subsidy for small-scale farming sector. The most powerful group lobbying for farm gate price subsidies, as well as trade restrictions to protect producer prices from competition, is the Zambian National Farmers Union (ZNFU). ZNFU traces its roots to European settler agriculture established during colonial rule. Unlike other countries in the region, European agriculture in Zambia focused on production for domestic markets, particularly urban consumers in the copper mining regions, rather than on export crops. Since independence, ZNFU membership has expanded to accommodate a growing number of African “emergent farmers,” who are quickly consolidating land in Zambia (Sitko and Jayne, 2014; Jayne et al., 2014). Many of these emergent farmers are former or current civil servant and are therefore considerably better connected to policy making structures than most small-scale farmers (Sitko and Jayne, 2014).

Despite political rhetoric about supporting farmers, market participation data in Zambia show that the benefits of Zambia's considerable output market expenditure accrue primarily to the rural minority with significant surpluses to sell. In Zambia, 3–5 percent of producers regularly account for 50 percent of the marketed maize surplus (Nkonde et al., 2011). These producers capture a disproportionate share of the FRA price support. Indeed, because FRA pricing has been shown to pull up maize prices in production regions, and therefore has regressive welfare effect on a large share of the rural population who are net maize buyers (Mason and Myers, 2013).

Despite the fact that the benefits of FRA expenditure accrue largely to a minority of rural producers, using the FRA as tool to win rural votes has intensified in Zambia as its system of multiparty democracy matures. Using data from Table 1 we see a close asso-

ciation between the scale of FRA's presence in maize markets and Zambia's election cycles. Prior to 2006, the FRA played a moderate role in the maize market. Yet in the run up to a potentially closely contested election in 2006, President Levy Mwanawasa directed the FRA to expand its role in maize markets. This was done in large measure to strengthen the ruling party's appeal in rural Zambia, as it began to lose urban support to the Patriotic Front (PF) party. After a period of moderate FRA involvement, the lead up to the 2011 elections witnessed another intensification of FRA purchases. The 2011 election was won by the opposition PF, yet FRA purchases remained high, largely because the following the general election the PF created dozens of new districts and encouraged opposition members of parliament to defect to the PF, leading to several years of tightly contested by-elections in predominantly rural districts.

In summary, Zambia's relative policy preference for maize output market subsidies and trade restrictions reflect the contradictory efforts of policy-makers to pacify the country's restive urban population with low cost staple foods, while providing significant rents to powerful commercial milling interests and a rural elite minority. These forces have been intensified in the context of Zambia's maturing multiparty democracy. While frequent food price spikes underscore the challenges of this approach, the historical political legacy of state control and its underlying ideology of African socialism, which is remembered nostalgically by many Zambians, provides political cover when policies fail to achieve their putative objectives (Robinson et al., 2009).

#### 4.2. Malawi

It is not hyperbole to say that in Malawi “maize is life” (Smale, 1995). In this small, largely agrarian country maize is grown by 97 percent of farm households and constitutes 60 percent of the calories consumed (Denning et al., 2009). Malawi's per capita maize consumption is the highest in the world (Hassan et al., 1996). Its prominent role in the country's rural economy and diets underscores its political importance.

Despite its importance to the diets and livelihoods of most Malawians, maize policies were not a prominent feature of the colonial or early-post colonial agricultural policy landscape. While Malawi has long maintained a maize marketing board, the real thrust of Malawi's post-independence agricultural development strategy was export oriented commodity production, namely tea and tobacco production (Harrigan, 2003; Dorward and Kydd, 2004). Under the single party rule of Kamuzu Banda, which lasted from 1964 to 1994, strong connections between estate owners and the political elite contributed to policies aimed at supporting prices and production in the export crop sector (van Donge, 2002).

Unlike the settler colonies of Kenya, Zambia, and Zimbabwe, where commercial farming and associated commercial milling interests play an important role in the political economy, maize production in Malawi has always been a smallholder activity, while maize meal is almost exclusively produced by small-scale fee paying mills or by hand pounding (Jayne et al., 2008a,b). The transactions costs of collective action by these poorly capitalized and dispersed players has limited significant advocacy for output market subsidies. Indeed, to the extent that maize historically featured in Malawi's agricultural development strategy, it was primarily seen as an input cost to export crop production and efforts were made to suppress prices through the parastatal Agricultural Development and Marketing Corporation (ADMARC) (Chilowa, 1998; Harrigan, 1988).

Structural adjustment policies of the early 1990s contributed to a scaling back of state involvement in the agricultural sector. At the same time, in response to declining public sector performance, opposition to single party rule mounted. In 1994, Malawi held its



first multiparty elections, which saw the ousting of the Banda government. The emergence of multiparty politics in Malawi coincided with repeated droughts, leading to significant recurrent maize deficits. In 1998, as the Muluzi government neared the end of its first terms, maize shortages were seen as a significant threat to re-election (Potter and Levy, 2005). Malawi's input subsidy scheme, then called the "Starter Pack", emerged in 1998 as a response to the combined pressures of recurrent food shortages and an impending election in 1999.

Following the election of Bingu wa Mutharika, who subsequently defected from former president Muluzi's party and created his own party, Malawi expanded the quantities of inputs distributed through its input subsidy program. Under the new program, called the Farm Inputs Subsidy Programme (FISP), fertilizer distributed per household increased to 100 kg, from 15 kg provided under the starter pack (Holden and Lunduka, 2013). The substantial increase in the size of the input subsidy, coupled with increases in global fertilizer costs, led to a rapid escalation in the overall cost of the program (and thus contributing to elevated opportunity costs of the program). Moreover, changes in the size of the subsidy pack coincided with changes in input tendering processes and beneficiary selection processes, which helped to strengthen the network of actors supporting the subsidy program.

In early iterations of the subsidy, tendering for inputs was carried out by the autonomous Logistics Unit, which was widely thought to limit political advocacy in the tendering process (Potter and Levy, 2005). By 2008/09 the Ministry of Agriculture and Food Security (MoAFS) handled much of the tendering process, with the inputs distributed through ADMARC and the Smallholder Farmers Fertilizer Revolving Fund of Malawi (SFFRFM) (Holden and Lunduka, 2013). Subsidy beneficiaries were identified at the local level by traditional leaders and then verified by agricultural extension agents and District Agricultural Offices.

The incorporation of fertilizer tendering into the ambit of the government's direct influence enabled the input program to more directly serve political patronage functions. According to a review team comprising the staff from the World Bank, the Ministry of Finance, the Office of the Director of Public Procurement, and the MoAFS fertilizer tenders were allocated to a handful of well-connected Malawian companies that offered fertilizer prices that were up to 20 percent higher than those offered by companies that were not given contracts (Holden and Lunduka, 2013). Many contracts were also awarded to new companies without previous experience in the fertilizer industry, while well established companies failed to secure contracts. For example, Agriculture Resources Limited, the local affiliate of Yara fertilizers, which supplied 60 percent of Malawi's fertilizer prior to the expansion of the subsidy program was deemed to have "inadequate financial and logistical capacity" by the tendering committee (ibid). An important beneficiary of the opaque tendering process was Mulli Brothers. One of the Mulli brothers was a member of parliament from Thyolo district, the home district of President wa Muthrika. The president was also said to own shares in the company (ibid).

The devolution of beneficiary selection and input coupon distribution to local chiefs appears to also have produced significant political returns. Under the FISP, chiefs were charged with identifying beneficiaries and distributing input coupons to selected beneficiaries. This contributed to a significant escalation in the number of beneficiaries, exceeding one million more households than were estimated in the population census, and considerable "leakage" of inputs into secondary markets (Holden and Lunduka, 2013). Indeed, Holden and Lunduka (2010) report that a paramount chief was caught selling coupons and put in prison, until the president intervened to have him released. The support of local chiefs for President wa Mutharika was seen as instrumental in his landslide election victory in 2009. The interaction between these

rural elites and the ruling party go some way toward explaining the underlying political incentives that underpin Malawi's preference for input subsidies.<sup>2</sup>

Increased public investments in input subsidies, combined with greater political attention to maize self-sufficiency as a prominent policy objective in Malawi has contributed to the use of trade restrictions on maize as a policy tool. Policy makers in Malawi often link maize produced with publically funded subsidies as government resources, which private firms should not appropriate for profits (Jayne et al., 2008a). Despite often contributing to deficits and food price spikes, *ad hoc* bans on private cross border trade can serve valuable patronage tools, as these restrictions enable well placed trading firms to generate rents through asymmetric knowledge of governments intended actions in terms of trade. Anecdotal evidence suggests that trade restrictions have been used in Malawi to favor firms owned by Malawian of African origin, such as Mulli Brothers, over those with owners of Asian descent (ibid).

In summary, Malawi's policy focus on input subsidies and trade restrictions reflects the powerful interactions between a large rural constituency, powerful traditional authorities, and indigenous elites with investment interests in grain and fertilizer trade. The interactions have strengthened in the context of the maturation of multiparty politics in the country, which creates incentives to strengthen these interactions through the distribution of private goods, such as inputs, and potentially remunerative information on government's intentions in the area of trade policy.

#### 4.3. Kenya

Kenya occupies a moderate position relative to the other study countries in terms of the scale state involvement in output market interventions, input subsidies, and trade restrictions. In none of the cases does Kenya have the highest level of intervention, nor does it have the lowest level. As will be discussed below, Kenyan maize policies are wrapped up in complex and historically situated ethno-regional politics. We argue that the ethno-regional coalition building required to govern Kenya, coupled with the diversity of the agricultural sector and its associated institutions, leads to moderate level of state in all three areas where state often intervene.

In Kenya, maize is grown by both small-scale and commercial producers, with an estimated 98 percent of small-scale farmers growing maize (Kirimi et al., 2011). Moreover, roughly a third of total caloric intake comes from maize (FAO 2009). Despite its obvious importance to Kenyan diets and livelihoods, the contribution of maize to rural household incomes is limited. As of 2006/07, the share of maize to total rural household income was only 11.4 percent (ibid). High value export agriculture plays a much more significant role in the overall performance of the agricultural economy. Kenyan is a significant producer and exporter of fresh horticulture, tea, coffee, and sugar (Winter-Nelson and Argwings-Kodhek, 2007). The export orientation of Kenyan agriculture is in many ways a product of its colonial legacy.

Colonial rule in Kenya gave rise to a range of agricultural institutions and interests that continue to influence policies today. Of our four study countries, Kenya had the largest European settler population, many of whom were involved in farming. Settler farmers formed the powerful Kenyan Farmers Association (KFA), which advocated for the creation of marketing boards and other policies designed to protect European producers from competition from indigenous farmers (Mosley, 1986). Export agriculture interests were particularly powerful within the KFA. When, in the 1930s, the KFA became the sole legal maize buyer, lobbying pressure from

<sup>2</sup> Malawi is currently seeking to address concerns over beneficiary selection through a lottery system.

European coffee growers led to a pricing policy that held down maize prices in order to keep the cost of labor on export estates low (Winter-Nelson and Argwings-Kodhek, 2007).

In 1955, the colonial government began to implement the Swynerton Plan, which sought to develop a class of indigenous commercial farmers through land reforms and the partial opening of export markets to these producers. At the time of independence, Kenya had an indigenous rural elite, the so-called “Kikuyu gentry” with close ties to the newly formed independent government (Bates, 1981). This helped to foster a policy environment that was largely supportive of export agriculture and commercial production (Winter-Nelson and Argwings-Kodhek, 2007).

The post-independence government of Kenya inherited a colonial legacy of powerful institutions in the agricultural sector and a highly politicized ethno-regional tensions (Bates, 1981). Political power in post-independence Kenya was largely achieved and maintained through ethnic coalition building, which often entailed granting control over particular state institutions to ethno-regional leaders (Poulton and Kanyinga, 2014; Barkan et al., 2003). Given the country's agro-ecological diversity, there is a strong ethno-regional relationship with many agricultural value chains in the country (Poulton and Kanyinga, 2014). As a consequence, agricultural parastatals serve as powerful tools of patronage and figure prominently in how agricultural policy is designed and implemented.

The primary production region for maize in Kenya is the Rift Valley, home to the Kalenjin ethnic group. Nyoro et al. (1999) estimate that 70 percent of all marketed maize in Kenya comes from the Rift Valley. The Rift valley is also home to the country's second president, Daniel arap Moi. In 1978, early in Moi's rule, the National Cereals and Produce Board (NCPB) was created through the merger of the Maize and Produce Board with the Wheat Board of Kenya. This merger initiated the rise in prominence of NCPB and maize politics in Kenya. Bates (1981) argues that the NCPB served as a valuable tool to deliver patronage to Rift Valley rural elites. Jayne et al. (2008b) show that NCPB buying activities helped to drive up producer prices in major Rift Valley production areas, with benefits largely accruing to large producers with significant surpluses to sell. In most years 3% of maize farmers in Kenya account for 50% of the surplus maize produced (ibid). These are the primary direct beneficiaries of Kenya's maize output subsidies.

Despite initiating agricultural market liberalization policies in the 1990s, and simultaneously creating space for multiparty elections to take place, the role of maize in ethno-regional patronage politics remained largely unaffected. Despite winning the 2002 election with a coalition that included all major ethnic groups, apart from the Kalenjin, Mwai Kibaki and the National Rainbow Coalition (NARC) continued to appoint Kalenjin leaders to the position of Minister of Agriculture. Poulton and Kanyinga (2014) speculate that the decision to retain Kalenjin control of this critical ministry reflects an effort by the NARC to curry favor with a coalition of Kalenjin elites, who benefit from a continued active role of the NCPB in maize markets and the rents this generates for surplus producers.

The reintroduction of input subsidies in 2007/08, which occurred in the wake of the post-election violence that ravished many parts of the Rift Valley, likely reflects similar political considerations and the power of ethno-regional patronage politics. This fact is highlighted by a national scandals involving the Minister of Agriculture and sales of government fertilizer from the newly created input subsidy program and sales of NCPB maize (Africog, 2009). Despite the high profile nature of these scandals, the Minister of Agriculture involved was transferred to another ministry and was replaced by another Kalenjin Minister. Poulton and Kanyinga (2014) suggest that this is unsurprising given the tense inter-ethnic relationships at the time in Kenya and the association of

control of the Ministry of Agriculture with the economic interests of the Kalenjin elite. In some way, therefore, the post-election violence in Kenya represents a powerful form of social mobilization, which has helped to further entrench the control of maize policies that favor patronage to elite groups over broad investments in public goods.

The power of this ethno-regional block, which seeks to garner state support for large maize surplus producers, is moderated by three important factors. First, since the late 1980s and early 1990s, Kenya has shifted from being a consistent maize exporter to a chronic maize importer (Winter-Nelson and Argwings-Kodhek, 2007). This weakens the influence of producers, as some share of total consumer demand must be met with exports from abroad. Second, unlike in Zambia, where the alignment of interests between powerful producers and large scale milling firms led to significant state involvement in maize output markets, in Kenya the political influence of large commercial mills is relatively weaker due to significant competition from small and medium-scale “posho” mills (Kirimi et al., 2011). Thus, commercial mills are less able to advocate for into mills subsidies than in countries like Zambia, where small-scale miller are significantly less powerful. Finally, the Kenyan economy generates significant foreign exchange through export agriculture, which creates incentives for a wider range of public investment in agriculture than less diverse countries (Winter-Nelson and Argwings-Kodhek, 2007).

However, the fact that the Kenya government routinely utilizes changes in tariff rates and other cross border trade control mechanisms for maize despite being in a structural deficit position is illustrative of the power of surplus producers and other well-positioned player exercise in the market. The maintenance of a high tariff rate on maize imports to the port of Mombasa in 2009 is illustrative of this. Despite warnings of an impending maize deficit, and high global prices, the Kenyan government maintained a 50% tariff on maize imports well after consumer prices in Nairobi spiked beyond import parity (Kirimi et al., 2011). While maize prices in Kenya typically decline in November and December after the main Rift Valley harvest, prices continued to exceed \$300/mt in Nairobi, well above global prices. In January 2009, corruption charges emerged over the issuing of maize import licenses, the diversion of 100,000 mt of imported maize to Sudan, and a lack of transparency over the sale of subsidized NCPB maize (AFRICOG, 2009; Kirimi et al., 2011). On January 16, 2009 President Kibaki declared a state of emergency and launched an appeal for international food relief. Only on January 28th, 2009 was the import tariff finally waived, as global prices rapidly declined. Despite the role of the government in exacerbating the food price spike, food and cost of living riots were largely minor, and confined mostly to civil servant unions (Musembi and Scott-Villiers, 2015). The government's response has been largely to maintain the status quo, including a high import tariff on maize imports from outside of the East African Community.

In summary, ethno-regional patronage politics are instrumental in maize sector policies in Kenya. The distribution of rents through state expenditure on output and input subsidies help to garner favor with powerful elites in Kenya's maize producing regions. While Kenya's structural maize deficit, competitive small-scale milling sector, and diverse agricultural economy helps to moderate the scope and scale of state involvement in the maize sector relative to some other countries, the forces supporting an active role of the state in the maize sector are strong in Kenya and have remained so despite a transition to multiparty politics.

#### 4.4. Mozambique

Of our four study countries, Mozambique is the only one that exhibits virtually no inclination to utilize state resource and power

to intervene in the maize sector, despite the importance of maize to consumer diets and smallholder livelihoods in much of the country. We argue below that this is the consequence of the complex interplay of Mozambique's unique geography, and political economic history, which has limited the development of strong coalitions capable of advocating for state support to the maize sector in Mozambique.

Unlike the other countries in this study, Mozambique was for centuries a Portuguese colony. Colonial agricultural policies were geared toward meeting the demand of the Portuguese colonial population through production on large-scale plantations. As primarily an indigenous staple food, maize never figured prominently in agricultural policies. Instead, state support was provided for the production of products such as wheat, dairy, meat, and vegetables by European settler farmers through various marketing board arrangements and credit systems (Cravinho, 1998).

After a protracted independence struggle, Mozambique won independence in 1975. This was quickly followed by a mass exodus of Europeans from the country. Somewhat paradoxically, the Marxists leaning FRELIMO party, which gained power after independence, did not institute land reforms following the emigration of European settlers. Instead, vacated plantations were nationalized by the government and turned into state-run concessions, focused on high value, export crop production. As a consequence, powerful, private commercial farming interests in food crop production never developed in Mozambique.

The creation of large, state-run commercial farms reflected FRELIMO's ideological inclination toward state-planned modernization and industrialization (Dinerman, 2001). Agriculture was viewed as a source of foreign exchange, through exports of cashews, tobacco, and cotton, as well as a providing raw material to feed domestic industries (Bowen, 2000). The political tendency to favor large-scale, export oriented production and processing over small-scale primary production is an important lasting legacy of the early post-independence period.

Soon after independence, Mozambique descended into civil war. The ruling FRELIMO party, whose primary support base is in the south of the country, clashed with the opposition RENAMO party, whose geographic stronghold is in the central and northern parts of the country. This political geography has important implications for the political economy of maize in the country. The centers of opposition power are concentrated in the country's most productive agricultural regions, where smallholder farmers produce the majority of the country's surplus maize. Due to vast distances and poorly developed infrastructure, these maize production zones are poorly integrated with the consumer markets in the south. Maize from these production areas, therefore, often moves to neighboring Zimbabwe and Malawi to meet demand, while the southern urban center of Maputo relies mostly on maize imports from South Africa (Tschirley and Abdula, 2007; Tostão and Brorsen, 2005; Donovan, 1996).

Two important issues arise from the political and economic geography of Mozambique. First, ensuring low priced and stable access to maize in the ruling party's southern stronghold is achieved through cross border trade, not through domestic production. Indeed, in many ways producers in the north and center of the country, and consumers and commercial millers in the south have aligned interests in maintaining open borders for maize trade. Second, because the ruling FRELIMO party does not derive its political power from production regions in the north, and can meet many of the food needs of its southern stronghold through trade, there are few political incentives to invest in output market or input subsidies, which would predominately benefit northern and central surplus producers.

While Mozambique has held multiparty elections since 1994, the country has not seen a transition in power. While accusations of election fraud have been documented since 2004, these have not resulted in any significant international sanctions (Manning, 2008). Thus, despite a renewal of armed conflict between RENAMO and FRELIMO in 2012, there are few clear political incentives in Mozambique for an expanded role of the state in the country's maize sector.

Of our four study countries Mozambique was the only country to experience significant urban food price riots following the global food price spike of 2007/08 (Berazneva and Lee, 2013). Its response to these riots is indicative of its agricultural political economy. Rather than restrict trade and increase input subsidies, as other countries in the region did, Mozambique sought to lower food prices through fuel subsidies to decrease the cost of maize imports.

In summary, the lack of state support for maize in Mozambique reflects its limited political importance, despite providing the largest share of calories to consumers in the country. This is the result of historical policies that limited the development of commercial farming interests in maize production, as well as the political geography of the country which limits incentives to promote domestic production through input subsidies and price supports and favors unencumbered trade with South Africa.

## 5. A comparative assessment of the implications of maize sector policy approaches

In this section we examine cross country variation in maize market performance, in terms of: (1) changes in aggregate maize production and productivity; (2) changes in maize market participation by landholding size, and; (3) coefficients of variation and marketing margins at different stages of maize supply chains. We assess the observed outcomes and distribution of welfare gains and losses against particular policy configurations and the prevailing political economy of maize policies.

### 5.1. Changes in production and yields

Aggregate data on total maize production and productivity are frequently used in the region to assess the effectiveness of maize sector policies (Jayne and Jones, 1997). Table 2 shows that countries that favor a more interventionist policy approach to the maize sector have seen substantial increases in production, yield, and area dedicated to maize production. The close association between interventionist approaches and attainment of national objectives of maize self-sufficiency suggest that by this measure these policies have been largely successful.

Substantial increases in maize production provide policy momentum for more interventionist approaches, and help to explain the emergence of similar strategies in other African countries (Jayne and Rashid, 2013). Yet coarse aggregate figures can mask the distributional effects of these policy choices, and tell us very little about the winners and losers.

### 5.2. Changes in maize market participation by land size

All else equal, the production of land intensive low value cereal entails significant economies of scale in production, and therefore will have a tendency toward consolidation. However, policy choices can influence who participates in markets and to what extent. As our political economy analysis has highlighted, there is considerable variation in the relative importance of rural elites in influencing policy choices in the region. Using land size as a proxy

**Table 2**

Changes in average national maize production, yields and area harvested for Kenya, Zambia, Malawi, and Mozambique, 1995–2013.

| Period                            | Kenya                 |                    |                              | Malawi                |                    |                              | Mozambique            |                    |                              | Zambia                |                    |                              |
|-----------------------------------|-----------------------|--------------------|------------------------------|-----------------------|--------------------|------------------------------|-----------------------|--------------------|------------------------------|-----------------------|--------------------|------------------------------|
|                                   | Production<br>'000 MT | Yield<br>MT/<br>Ha | Area<br>harvested<br>'000 Ha | Production<br>'000 MT | Yield<br>MT/<br>Ha | Area<br>harvested<br>'000 Ha | Production<br>'000 MT | Yield<br>MT/<br>Ha | Area<br>harvested<br>'000 Ha | Production<br>'000 MT | Yield<br>MT/<br>Ha | Area<br>harvested<br>'000 Ha |
| 1995–2000                         | 2337                  | 1.56               | 1496                         | 1927                  | 1.47               | 1300                         | 1061                  | 0.92               | 1150                         | 935                   | 1.56               | 589                          |
| 2001–2005                         | 2684                  | 1.68               | 1605                         | 1617                  | 1.06               | 1521                         | 1088                  | 0.77               | 1458                         | 929                   | 1.66               | 942                          |
| 2006–2010                         | 2889                  | 1.59               | 1819                         | 3095                  | 2.01               | 1576                         | 1676                  | 0.97               | 1728                         | 1737                  | 2.23               | 794                          |
| 2010–2013                         | 3456                  | 1.64               | 2106                         | 3653                  | 2.19               | 1667                         | 1662                  | 0.97               | 1695                         | 2802                  | 2.64               | 796                          |
| % change<br>1995–2000<br>to >2010 | 48%                   | 5%                 | 41%                          | 90%                   | 49%                | 28%                          | 57%                   | 5%                 | 47%                          | 200%                  | 69%                | 79%                          |

for socio-economic power, we examine how maize market participation has changed overtime in our study countries. We posit that the pace and direction of change in market participation by land-holding size can illuminate how policy choices in the maize sector are distributed across rural socio-economic groups.

Table 3 shows that Zambia exhibits the greatest decline in market participation by farms of less than two hectares since the 1990s. This is despite the fact that farms of less than 2 ha make up over 70 percent of the rural population. Indeed, since the 1990s, Zambia has witnessed a marked shift in the distribution of surplus maize production toward larger, generally better off farms. The power of rural elites to influence Zambia's policy preference for output market interventions helps to explain the rapid concentration of maize markets by a minority of larger, better off-farm. Output market subsidies disproportionately go to households with the greatest capacity to produce large surpluses.

These data demonstrate that public investments in maize output subsidies can radically, and quickly alter the structure of maize markets. While the broader effects of this investment approach on small-scale producers are not immediately clear from this table, the opportunity costs of investments in private goods that favor better-off producers are clearly high.

Malawi exhibits a substantially different pattern in terms of changes in maize market participation. Table 3 shows that since 1998 the share of total surplus production produced by farms of less than 2 ha has increased, although this majority of farmers still produce less than 50 percent of the available surplus. The difference in market participation outcome is likely the result of differences in the Malawi's relative preference for input subsidy investments. While input subsidies serve clear patronage benefits and can easily be appropriated by elites, they do not, by their nature, exclude poorer households in the same way that output market subsidies do.

Interestingly, Kenya has witnessed an expansion of surplus production by the rural majority with less than 2 ha of land. However, this large segment of the rural population still accounts for only about 40 percent of the country's surplus. Growth in market participation by smaller farm in Kenya is likely the result of several factors. We hypothesize that two primary factors underpin surplus production growth by small farms. First, unlike Malawi and Zambia, Kenya has been less prone to impose trade restrictions since 2000. As a chronic net importer of maize freer trade helps create price competition for maize. With maize prices consistently trading at import parity levels, small-scale farmers have an incentive to increase maize production to meet their subsistence requirements and potentially for sales. Second, while Kenya has recently introduced an input subsidy program for maize, it has also deregulated its fertilizer sector, which has helped to make fertilizer more widely available to smallholders (Ariga and Jayne, 2011).

The distribution of marketed surplus across land holding sizes in Mozambique has shown some tendency toward market concentration, but at a substantially slower pace than Zambia. In Mozambique, 31.5 percent of the marketed maize surplus was produced by farmers cultivating more than 5 ha of land; by 2008, this figure had risen only marginally to 34.1 percent. A marginal tendency toward market concentration among larger land holders is not unexpected in a policy context with very limited government spending on input subsidies and no spending on output market subsidies. More so than other countries in the region, productivity growth for maize in Mozambique is stymied by a combination of low levels of improved input access and lack of information on input utilization (Benfica and Mather, 2013). As a result, production growth for maize depends fundamentally on land access and area expansion. It is therefore not surprising to see a tendency toward market concentration among larger landholders in Mozambique.

### 5.3. Price margins and variability

In this section we examine both the variability of maize prices at different points on the supply chain over time and price margins. Examining the size of price margins and levels of price variability at different nodes of the maize surplus chain serves two purposes. On the one hand, they provide insights into the relative efficiency and competitiveness of the market. Yet, on the other, variations in margins and levels of price variability may reflect the distribution of rents resulting from particular policy configurations, where access to price subsidies or information on government's intended actions in markets serve as vehicles for distributing patronage.

Table 4 utilizes available time series price data from the four study country to calculate the coefficient of variation of prices at different points of the supply chain. What is immediately clear from this side by side comparison is that the countries with the highest levels of trade restrictions, Zambia and Malawi, also have the highest level of price variation. In the case of retail maize grain, price variability in Malawi is roughly three times higher than Kenya and nearly twice as high as Mozambique. While this is partly explained by differences in rainfall pattern, particularly in the case of Kenya which experiences multiple rain seasons in year, policy approaches play an important role. In particular, *ad hoc* restrictions on both cross border and internal maize trade tend to destabilize the capacity of markets to adequately respond to changes in supply and demand conditions, leading to large swings in prices (Chapoto and Jayne, 2009).

While trade restriction can help to insulate consumer prices from global price spikes, as was the case in many developing countries following the 2007/08 global price spike (de Gorter and Drabik, 2016), they can also produce significant market uncertain



**Table 3**

Changes in share of national surplus maize production by land size in Zambia, Mozambique, Kenya, and Malawi, 1990s–2000s.

| Country               | Farm size (Ha) |       |        |       |        |
|-----------------------|----------------|-------|--------|-------|--------|
|                       | 0–1            | 1–2   | 2–5    | 5–10  | 10–20  |
| <b>Zambia</b>         |                |       |        |       |        |
| % of marketed surplus |                |       |        |       |        |
| 1991                  | 42.1           | 27.2  | 23.6   | 6     | 1.1    |
| 2012                  | 13.6           | 23.6  | 34     | 18.5  | 10.4   |
| % change              | –28.5          | –3.6  | 10.4   | 12.5  | 9.3    |
| <b>Mozambique</b>     |                |       |        |       |        |
| % of marketed surplus |                |       |        |       |        |
| 1996                  | 9.62           | 20.42 | 38.43  | 18.29 | 12.28  |
| 2008                  | 5.88           | 17.92 | 42.12  | 23.93 | 8.9    |
| % change              | –3.74          | –2.5  | 3.69   | 5.64  | –3.38  |
| <b>Kenya</b>          |                |       |        |       |        |
| % of marketed surplus |                |       |        |       |        |
| 1997                  | 6.8            | 14    | 30.1   | 16.6  | 19.3   |
| 2006                  | 18.37          | 22.59 | 34.49  | 10.11 | 8.87   |
| % change              | 11.57          | 8.59  | 4.39   | –6.49 | –10.43 |
| <b>Malawi</b>         |                |       |        |       |        |
| % of marketed surplus |                |       |        |       |        |
| 1998                  | 8.78           | 19.02 | 50.18  | 14.17 | 7.75   |
| 2011                  | 17.16          | 30.01 | 38.12  | 11.87 | 2.78   |
| % change              | 8.38           | 10.99 | –12.06 | –2.30 | –4.97  |

Sources: Zambia 1990/91 PHS and 2012/13 CFS; Mozambique TIA 1996 and 2008; Kenya TAPRA 1997 and KHIBS 2006; Malawi IHS 1998 and 2011. (See [Appendix B](#) for details.)

**Table 4**

Coefficients of variation for retail and wholesale maize grain and maize meal prices: Zambia, Kenya, Mozambique and Malawi.

|  | Zambia 2000–2012 | Mozambique 1995–2011 | Kenya 2005–2012 | Malawi 1996–2011 |
|--|------------------|----------------------|-----------------|------------------|
| Coefficient of variation in retail grain prices      |                  | 18.71                | 10.94           | 32.0             |
| Coefficient of variation in retail maize meal prices | 25.78            | 21.09                |                 |                  |
| Coefficient of variation in wholesale grain prices   | 35.81            | 21.18                | 19.48           |                  |

Sources: Mozambique price data come from weekly prices gathered by the MINAG Agricultural Market Information System (SIMA). Malawi price data comes from the Ministry of Agriculture, Irrigation, and Water Development Statistical Bulletin 2010/11. Kenya data come from the ministry of Agriculture Information Bureau. Zambia retail maize meal data are national averages derived from CSO price bulletins; wholesale price data is captured by the Agricultural Market Information Center in the Ministry of Agriculture.

that is harmful from producers and consumers ([Chapoto and Jayne, 2009](#)). Despite this, price swings do have a political logic. Anecdotal evidence from Malawi and Zambia suggests that well-positioned actors with prior knowledge of government's intended actions can earn significant rents through policy induced price variability ([Jayne et al., 2008a,b](#); [Nijhoff et al., 2002](#)).

Maize meal prices in Zambia have a marginally higher level of price variability than in Mozambique. While the difference is not particularly large, the expenditure by the government of Zambia on into-mill price subsidies is substantially larger than in Mozambique. Thus, despite a large presence in the maize market, and the routine use of trade restrictions to manage prices, Zambian maize meal prices routinely exceed the import and export parity bounds set by unencumbered trade ([Jayne, 2012](#)). The significant variation in maize meal prices in Zambia have important welfare consequences for Zambian consumers, who frequently face month to month price changes of 30 percent, even when national maize supplies are large ([Sitko and Kuteya, 2014](#)). Despite the political importance of consumers in Zambia, high price variability is detrimental to consumers, but can lead to rents for well-positioned commercial mills as prices exceed import parity ([Kuteya and Jayne, 2012](#)).

Producers and traders in Zambia face similarly high levels of price uncertainty. Price variability for wholesale maize in Zambia is significantly higher than the other countries for which price data are available. Wholesale maize prices in Zambia frequently exhibit large month to month movements as a result of changes in FRA

purchases, disposal of FRA maize to mills at below market prices, restrictions of cross border trade, and uncertainty over future government intentions ([Sitko and Kuteya, 2014](#); [Nijhoff et al., 2002](#)). While high levels of price uncertainty can stymie private investments in maize trading, they also serve as potential avenues for generating rents through asymmetric knowledge of government actions in these markets and can help to elevate political pressure for government action to bring down prices through into-mill subsidies.

[Table 5](#) presents data on the relative variability and magnitude of price margins at various points of the supply chain. Though data are limited, an indicative story appears to be that margins within the system are fairly stable regardless of the level of state intervention. This is surprising, given that in highly interventionist countries like Zambia significant spending is dedicated to into-mill subsidies. Given that all mills do not receive these subsidies one would anticipate that into-mill subsidies would contribute to increased levels of variations in margins between wholesale prices and retail maize meal prices. Yet this does not appear to be the case. Relative to Mozambique, which spends no money on maize price subsidies, the variability and size of margins between wholesale grain and retail maize meal are similar. In addition, Mozambique has greater margin price stability and smaller margins between wholesale and retail grain prices than Kenya, which utilizes its NCPB to manage these margins. While there are geographic reasons for differences between Kenya and Mozambique, the variations in policy approach are worth noting. If a large state presence

**Table 5**

Coefficient of variation and magnitude of maize price margins.

|   | Zambia 2000–<br>2012 | Mozambique 1995–<br>2011 | Kenya 2005–<br>2012 | Malawi 1996–<br>2011 |
|---|----------------------|--------------------------|---------------------|----------------------|
| Coefficient of variation in wholesale/retail grain price margins            |                      | 7.2                      | 12.41               |                      |
| Coefficient of variation in wholesale grain/retail maize meal price margins | 10.86                | 12.59                    |                     |                      |
| Average wholesale grain/retail grain margins                                |                      | 0.9257                   | 0.8249              |                      |
| Average wholesale grain/retail maize meal margins                           | 0.5036               | 0.4874                   |                     |                      |

Sources: Mozambique price data come from weekly prices gathered by the MINAG Agricultural Market Information System (SIMA). Malawi price data comes from the Ministry of Agriculture, Irrigation, and Water Development Statistical Bulletin 2010/11. Kenya data come from the ministry of Agriculture Information Bureau. Zambia retail maize meal data are national averages derived from CSO price bulletins; wholesale price data is captured by the Agricultural Market Information Center in the Ministry of Agriculture.

in grain markets was effective at managing the competing price interests of producers and consumers, we would anticipate that margins between wholesale and retail grain prices would be smaller and more stable in more interventionist countries.

## 6. Conclusions

In this paper, we have conducted a comparative political economic analysis of maize sector policy in eastern and southern Africa. We have shown that relative preferences for output market subsidies, input market subsidies, and trade restrictions reflect the interplay of interest group lobbying, patronage networks, and ethnic and regional political affiliations. These relationships have deep historical roots and have often been intensified in the context of the emergence of multiparty politics. Based on this analysis several stylized conclusions can be drawn.

First, the colonial legacy still matters. In particular, countries that had large European settler populations engaged in commercial food crop production exhibit two unique and important features. First, they tend to have powerful farm lobbies capable of influencing policy choice. Second, they have large commercial milling sectors that play important roles in consumer markets. If not mediated by other political considerations, the existence of these two actors create political economy networks that favor output market subsidies and trade restrictions. These sorts of coalitions can produce quite regressive outcomes, both in terms of maize market participation and price volatility.

Second, the relationships between ruling parties and ethnic and geographic constituencies plays a powerful role in the maintenance of particular policy approaches. This is evident in the perseverance of NCPB in Kenya, as well as the lack of policy attention to maize in Mozambique.

Third, policy change in the maize sector has been surprisingly resistant to change despite the maturation of multiparty politics. Even with changes of government in Kenya and Zambia, there is little evidence of policy reform in the maize sector. This reflects the power and stability of the political economic relationships that promote and maintain current policy priorities. Rather than weakening the power of these interest groups, the maturation of multiparty politics is associated with further entrenchment of their influence (cf Bates, 1989).

Fourth, interventionist orientations in output markets and trade do not translate to obviously better performance or welfare outcomes. High levels of intervention in output markets, as seen in Zambia, are associated with significant levels of market concentration, as price supports go disproportionately to larger farms capable of producing significant surpluses. In addition, consistent with a growing body of research (Jayne, 2012; Chapoto and Jayne, 2009), our data show high levels of trade intervention are associated with high level of price variability and high margins.

While trade interventions may help to keep prices down when global prices spike (de Gorter and Drabik, 2016), policy induced variability stymies investments and undermine future growth prospects (Seck et al., 2010).

Finally, input subsidy approaches produce ambiguous results, at least when the opportunity costs are not fully accounted for. High policy preference rankings for input subsidies are associated with increases in maize production and more equitable outcomes in terms of smallholder market participation. Yet, as the Kenya example suggests, it is feasible to achieve similar outcomes through alternative approaches which are less interventionist and less costly.

Based on these findings, how do we anticipate that maize policies in the region evolve overtime? Three important trends are likely to shape future policy approaches in the region. The first of these is the observed concentration of land ownership in countries in southern and eastern Africa. Jayne et al., (2014) show that in multiple countries in the region agricultural land is rapidly concentrating in the hands of medium-scale farmers, many of whom are entering agriculture using urban incomes. Currently 20% of land in Kenya and 50% of land in Zambia is controlled by a small minority of holdings in the 5–100 ha range – a substantial increase from just a decade ago. Second, Africa is urbanizing rapidly. According to World Bank data, the share of the population in Africa that is rural has declined from well over 80 percent in the early 1960s to slightly over 60 percent in 2014. Finally, climate change is projected to increase the incidence of extreme weather events in the region, including droughts and flooding (Shongwe et al., 2009).

We anticipate two divergent outcomes based on prevailing political economic structures. In places with powerful farm lobbies and vocal urban constituencies, such as Zambia, these transformations will serve to deepen existing political economic relationships in support of interventionist approaches and make a significant change in policy approach more difficult. Conversely, in countries that do not currently have strong urban constituencies, rapid urbanization coupled with increased frequency of weather induced maize deficits may lead to greater willingness to support policies that improve maize trade conditions.

Input subsidies are likely to be an enduring feature of the agricultural landscape in much of the region. Escalating climate risk and increasing urban food demand generate substantial incentives to increase technology access to farmers and to enhance maize production volumes and stability through increased domestic production. The emergence of larger scale producers and input supply firms capable of lobbying for these types of policies will likely add further support to continue and expand input subsidies (Chinsinga, 2011). Yet, our analysis suggests the need for some caution. While input subsidies can help address persistent smallholder market failures, they also generate rents within government ministries and input supply companies that make them very difficult to withdraw in the future. More importantly, perhaps, input subsidy pro-

grams tend to produce a “policy creep” effect. As input subsidy programs generate a supply response, pressure often mounts on policy makers to ensure that producer prices do not collapse and that the benefits of the production bump are conferred to consumers. As a result, the expansion of input subsidy programs often goes hand in hand with potentially more regressive output market interventions and/or trade restrictions.

How governments respond to these broad transformations is, of course, contingent on a range of other factors that we will not consider here. These include changes in global food and petroleum prices and availability, domestic fiscal conditions, and donor influences. What is clear is that the choices governments make in terms of maize policies have significant implications of current and future welfare outcomes in the regions. These choices, in turn, are made in the context of complex and historically situated networks of political economic relationships that make technocratic decisions making difficult. We hope that by providing insights into country level policy preferences, their political economic rationale, and their implications, policy stakeholders advocating for change will be better equipped to advocate for policy reforms that maximize current and future welfare gains given the constraints of prevailing maize politics.

## Acknowledgements

This research was made possible by funding from USAID, through the Food Security Research Project (FSRP) cooperative agreement with Michigan State University.

## Appendix A. Statutory trade restriction description and source material

## Appendix B. Data sources for farm sector outcomes

In Zambia, smallholder production and marketing data come from two sources. Data from the 1990s is derived from the Post-Harvest Survey (PHS) conducted by the Ministry of Agriculture and Central Statistical Office. This survey was collected from 15,097 farming households and is nationally representative of the smallholder sector. Smallholder data from the 2012/13 farming year comes from the Crop Forecast Survey. Like the PHS, it is nationally representative of smallholder households and is comprised of 12,755 households. The wholesale maize price data is Zambia comes from the Agricultural Market Information Center, in the Ministry of Agriculture, while the retail price data comes from the Central Statistical Office's monthly price bulletin.

In Mozambique, we used nationally representative agricultural national surveys covering two agricultural seasons (1995/1996 and 2007/08). The surveys are commonly known by their Portuguese acronym TIA (Trabalho de Inquérito Agrícola) and were administered by the Mozambique Ministry of Agriculture (MINAG) in collaboration with Mozambique National Institute of Statistics (INE). The sample sizes are about 4000 households for TIA '96 and 6000 households for TIA '08. Price data come from weekly prices gathered by the MINAG Agricultural Market Information System (SIMA). We averaged weekly prices within each year to obtain yearly prices. Three markets were considered: Maputo (Southern region), Beira (Central region) and Nampula (Northern region). Each one of these markets is the largest one in their respective regions.

In Kenya, the study draws from various data sources. First, is the nationwide Egerton University/Tegemeo Institute Rural Household Survey, a panel dataset tracking roughly 1300 small-scale farm households in 5 survey waves over the 13-year period from 1997 to 2010. In the initial 1997 survey, a total of 1500 households were

| Year  | Zambia  | Malawi  | Kenya   |
|-------|---|---|---|
| 00/01 | Uncertainty over government imports and tariff rates. Found at <a href="http://dx.doi.org/10.1016/j.foodpol.2017.04.010">http://dx.doi.org/10.1016/j.foodpol.2017.04.010</a>  | None  | None  |
| 01/02 | Uncertainty over government imports and tariff rates. Found at <a href="http://dx.doi.org/10.1016/j.foodpol.2017.04.010">http://dx.doi.org/10.1016/j.foodpol.2017.04.010</a>  | Export ban: <a href="http://dx.doi.org/10.1016/j.foodpol.2017.04.010">http://dx.doi.org/10.1016/j.foodpol.2017.04.010</a> and Jayne et al., 2008a,b   | None  |
| 02/03 | None  | None  | None  |
| 03/04 | None  | None  | None  |
| 04/05 | None  | Export ban 9/9/2015 <a href="http://dx.doi.org/10.1016/j.foodpol.2017.04.010">http://dx.doi.org/10.1016/j.foodpol.2017.04.010</a>   | None  |
| 05/06 | Banned imports: In 2005, a year of below-normal maize harvest, the government initially banned maize imports under the Control of Goods Act. Found at <a href="http://dx.doi.org/10.1016/j.foodpol.2017.04.010">http://dx.doi.org/10.1016/j.foodpol.2017.04.010</a> | None  | None  |
| 06/07 | Imposing, lifting and then reposing export ban <a href="http://dx.doi.org/10.1016/j.foodpol.2017.04.010">http://dx.doi.org/10.1016/j.foodpol.2017.04.010</a>  | None  | No  |
| 07/08 | Export ban found at: <a href="http://dx.doi.org/10.1016/j.foodpol.2017.04.010">http://dx.doi.org/10.1016/j.foodpol.2017.04.010</a>  | Export ban: <a href="http://dx.doi.org/10.1016/j.foodpol.2017.04.010">http://dx.doi.org/10.1016/j.foodpol.2017.04.010</a> and Jayne et al., 2008a,b   | Export ban: <a href="http://www.foodsecurityportal.org/kenya?print">http://www.foodsecurityportal.org/kenya?print</a>   |
| 08/09 | Maize export ban: cited in <a href="http://www.odi.org/sites/odi.org.uk/files/odi-assets/publications-opinion-files/8803.pdf">http://www.odi.org/sites/odi.org.uk/files/odi-assets/publications-opinion-files/8803.pdf</a>  | None  | Export ban: <a href="http://fsg.afre.msu.edu/zambia/tour/allAfrica_Kenya_Maize_Export_Ban_Oct2008.pdf">http://fsg.afre.msu.edu/zambia/tour/allAfrica_Kenya_Maize_Export_Ban_Oct2008.pdf</a> |
| 09/10 | None  | None  | Export ban <a href="http://reliefweb.int/report/kenya/kenya-government-lift-ban-maize-exports">http://reliefweb.int/report/kenya/kenya-government-lift-ban-maize-exports</a>                |
| 10/11 | None  | None  | Export ban: <a href="http://ecnr.berkeley.edu/vfs/PPs/Porteous-ObiC/web/exportban.pdf">http://ecnr.berkeley.edu/vfs/PPs/Porteous-ObiC/web/exportban.pdf</a>                                 |
| 11/12 | Maize bran export ban <a href="http://zambiareports.com/2012/05/11/zambia-bans-maize-and-wheat-exports/">http://zambiareports.com/2012/05/11/zambia-bans-maize-and-wheat-exports/</a>   | Export ban: <a href="http://agritrade.cta.int/Agriculture/Commodities/Cereals/Malawi-maize-export-ban-complicates-Kenyan-tariff-policy-debate">http://agritrade.cta.int/Agriculture/Commodities/Cereals/Malawi-maize-export-ban-complicates-Kenyan-tariff-policy-debate</a> | None  |
| 12/13 | Maize export ban <a href="https://www.lusakatimes.com/2013/04/08/grain-traders-asks-government-to-reverse-the-ban-on-exporting-maize/">https://www.lusakatimes.com/2013/04/08/grain-traders-asks-government-to-reverse-the-ban-on-exporting-maize/</a>              | Export ban: <a href="http://www.manoonline.gov.mw/index.php/analysis/item/1089-ban-on-export-of-maize-and-maize-products">http://www.manoonline.gov.mw/index.php/analysis/item/1089-ban-on-export-of-maize-and-maize-products</a>   | None  |
| 13/14 | Maize and maize meal export ban: <a href="http://www.znfu.org.zm/article/government-lifts-ban-maize-exports#sthash.y5FU16bH.dpuf">http://www.znfu.org.zm/article/government-lifts-ban-maize-exports#sthash.y5FU16bH.dpuf</a>  | Export ban: <a href="http://www.capitalradiomalawi.com/index.php/component/k2/item/2090-malawi-maintains-maize-export-ban">http://www.capitalradiomalawi.com/index.php/component/k2/item/2090-malawi-maintains-maize-export-ban</a>   | None  |

surveyed in 109 villages spread across all major agro-ecological zones in the country. Because this is a panel, we could not use the subsequent wave from 2010 to make inference about national trends. Instead, we used the Kenya Integrated Household Budget Survey (KIHBS 2005/06). The data was collected by the Kenya National Bureau of Statistics. The survey drew a sample of clusters from the set of 540 urban clusters and the 1260 rural clusters under NASSEP IV Sampling frame. The KIHBS 2005/2006 covered a total of 1343 clusters with a total sample of 13,430 households, stratified by district and by Urban/Rural. Though not nationally representative, these surveys are nationwide in scope. Wholesale and retail maize prices came from the Marketing Information Branch (MIB), Ministry of Agriculture, Livestock and Fisheries.

In Malawi, we use household data from the nationally representative Integrated Household Surveys for 1997/1998 and 2011. These nationally-representative surveys were conducted by Malawi's National Statistical Office. The sample size is 9506 households in 1998 and 3247 in 2011. Price data and information on ADMARC purchases comes from the Ministry of Agriculture, Irrigation, and Water Development Statistical Bulletin 2010/11.

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