Technical Inputs to Proposed Minimum Support Price (MSP) for wheat in Ethiopia

A Policy Note

By

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1. INTRODUCTION

Some have proposed that the Ethiopia Grain Trading Enterprise (EGTE) offer a minimum support price (MSP) on wheat. The goals of the MSP are to stimulate wheat production, decrease the need for wheat imports, and reduce seasonal variability in wheat prices. The MSP would also help the EGTE meet its target of 250,000 tons of purchases this year. The purchase of wheat by the EGTE, however, must be accompanied by a policy on how the stock will be managed and sold. The EGTE wheat stocks could be distributed through the Productive Safety Net Program (PSNP), channeled into the urban food-rationing program, and/or sold to the large-scale millers.

Governments in sub-Saharan Africa and elsewhere have a long history of trying to stabilize prices by buying when prices are low and selling when they are high. We discuss those experiences below, but find such efforts have been expensive, ineffective, and plagued with corruption. It is important, therefore, to carefully evaluate the justification for MSP, to keep the scale modest and to avoid some of the mistakes of earlier experiences.

2. JUSTIFICATIONS FOR MSP

2.1. Commonly agreed policy justifications

The central justification for setting up MSP is to address market failures. However, there are also political and food security considerations that can justify MSP. Most countries in Asia implemented MSP during the early years of the Green Revolution. Production and price variability were high, domestic markets were thin and disintegrated, international markets were volatile, and the countries did not have enough foreign exchange to buy from the international market at the time of scarcity. National food security often depended, apart from “mother nature”, on the goodwill of the donor countries. This is the context in which most Asian countries embarked on enforcing MSP in the late 1960s and 1970s.

Reviewing six in-depth case studies, Rashid et al (2007) identified the following four justifications for implementing MSP / public intervention in food grain markets: (i) weak infrastructure and limited flow of price information, (ii) risk mitigation for technology diffusion, (iii) thinness and volatility of international market, and (iv) inability to participate in the international market.\(^1\)

2.2. New arguments for introducing MSP in Ethiopia

In recent years, there have been three main arguments for setting up MSP. First, the EGTE is said to pay a higher price for imported wheat than for domestic wheat. So, if the MSP were set above the domestic market price and below the import parity price, it would reduce costs for the EGTE and allow domestic wheat to replace some of the imported wheat. This argument is based on the assumption that domestic wheat is an acceptable alternative to imported wheat for EGTE buyers. It would be useful to verify this assumption. Does the EGTE agree that they could cut costs by purchasing locally and reducing imports by a similar volume? Do large-scale

\(^1\) The country case studies are presented in Rashid, Gulati, and Cummings (2008).
millers agree that domestic wheat would be an acceptable alternative to imported wheat? Often hard winter varieties, especially Red Hard Winter (RHW), are needed to bake bread.

Second, the MSP is presented as a way to reduce foreign exchange costs. This argument needs to be evaluated carefully. There is some evidence that the exchange rate is overvalued, meaning the official exchange rate does not reflect the true scarcity value of foreign currency. Allowing the birr to depreciate to its market value would increase the birr cost of imported wheat, which would reduce imports and raise the market price of domestic wheat. In the absence of depreciation, reducing wheat imports may be justified even if the program does not fully pay for itself. However, available statistics suggest that the value of the wheat import, as percentage of total import bills in Ethiopia, has been fairly small (see Section 5.4).

Finally, the MSP can be defended as necessary to achieve the EGTE target of purchasing 250,000 tons of wheat in 2014. However, this argument is not convincing because, if adequate resources are allocated, the EGTE can buy the same amount at the prevailing market prices.

3. DETERMINATION OF MSP

3.1. General principles

What should the EGTE offer as the average MSP? If the MSP is too high, the EGTE will be offered more than 250,000 tons, leaving it with the choice of purchasing more than their target volume or discontinuing the MSP program. In the first scenario, the costs of the program would be higher than necessary, because of both the high price and the large volume. In addition, the EGTE may face storage capacity problems in selected locations. But if the MSP was discontinued, farmers would suffer and the credibility of the MSP program would be damaged. On the other hand, if the MSP is too low, then the EGTE will not reach its target of 250,000 metric tons.

The appropriate level of the MSP depends on at least three factors:

- The larger the harvest, the lower the MSP must be to avoid over-purchasing.
- The higher the rate of inflation, the higher the MSP should be to attract enough sellers.
- The larger the number of buying stations, the lower the MSP will have to be to reach the 250,000 tons target.

3.2. MSP determination based on costs of production

Determination of MSP depends on the policy objectives. Historically, cost of production has served as the central basis for setting up the MSP. However, exact magnitudes of the MSP have been dictated by the policy objectives and political economy consideration. Consider the following three cases.

a. Objective: ensure that farmers do not lose money. Markets can fail and prices can go down so low that farmers are unable to recuperate the costs of production, causing some farmers to slip into poverty (e.g., maize market crash in Ethiopia back 2002-03). The government has the responsibility to protect farmers against such market failures.
In order to achieve this objective, MSP should at least be equal to the costs of production.

b. **Objective: incentivize farmers to generate surplus.** This is a bit tricky, but the political economy considerations are strong. When the government is willing to pay a premium for self-sufficiency or surplus generation, and the market incentives are limited, MSP must be higher than the costs of production. This happened in a few Asian countries in the early years of Green Revolution.

c. **Objective: ensure price stability over time.** This requires setting up a band—that is, if the objective is food price stabilization, the government needs to determine both floor price (MSP) and ceiling prices (upper bound). In the absence of market failures, export and import parity prices can serve as the MSP (lower bound) and ceiling prices (upper bound), respectively.

Determining the MSP based on the cost of production is time consuming, expensive, and often problematic. This is because cost of production varies by region, agro-climatic conditions, or even among farmers in the same agro-climatic conditions due to efficiency differences. For instance, several Asian countries set up specialized agencies (e.g., Commission for Agricultural Costs and Prices (CACP) in India and Agricultural Prices Commissions (APC) in Pakistan) that were tasked with generating estimate costs of production on a variety of crops (about 25 in India) to make recommendations about the MSP. However, it has not been easy for Asian governments to follow consistent policies on MSP. For example, in India, the policy directive was to set MSP at the costs of production (called C2 costs), which includes cash and kind costs, land rental, as well other implicit costs (e.g., family labor). However, it was often violated and MSPs were set above C3 costs, C2 costs plus 10% mark up. The point is that determining MSP is a complicated process. Given that Ethiopia has dealt well with the markets since liberalization, setting up a specialized agency to compute costs and recommend MSP is not advisable.

### 3.3. MSP based on real (inflation adjusted) prices

The Ethiopia Grain Trading Enterprise (EGTE) and the Central Statistical Agency (CSA) collect weekly and monthly price data from several market locations in the country. The agency may also have farm-gate price data from several woredas. These data can be used to come up with a reasonable recommendation of MSP.

Suppose that price of wheat in a normal year is \((Y_t)\) in the past was \(P_t^w\), and that the government wants to ensure that prices remain the same as \(P_t\) in real terms (inflation adjusted). Now, if the inflation rate between the normal year \((Y_t)\) and the current year is \(\pi\), then MSP for wheat in the current year in a location \(L\) is given by

\[
MSP_L = P_L^w \cdot (1 + \pi_L)
\]

For illustration, suppose that average price of wheat at the farm gate in Arsi in 2012 (a normal year) was 600 Birr and that there’s been an inflation of about 5% since 2012. So, the MSP for Arsi for 2013/14 will be 600*1.05 = 630 Birr. To make these estimates precise, one needs to have location-specific inflation rates, which are unlikely to be readily available. So, one can use an aggregate CPI to calculate the inflation.
If the objective is to support wheat only, the MSP can be administered in the wheat belt, which is well defined in the Ethiopian Atlas, jointly produced by the CSA and the International Food Policy Research Institute (IFPRI). The same goes for the other major cereals.

3.4. MSP determination based on export and import parity prices

In practice, a simple rule is to set the MSP at one-third of the way between the (lower) market price last year after adjusting for inflation and the (higher) import parity price in the same town. Because of the difficulty predicting the “appropriate” MSP, one option is to announce that the EGTE will pay the MSP until the national volume of purchases reaches the target of 250,000 tons, after which it would stop buying. Although the motivational effect on farmers would be less, because they would not be guaranteed to sell at the MSP, this may be a better strategy in the long run. If the EGTE does not announce an upper limit to purchases and is later forced to discontinue the MSP, the credibility and motivational effect of the MSP the next year will be much lower.

However, note that since export parity price in Ethiopia are generally lower than the costs of production; and the import parity prices are too high from food security / political consideration, the price parity band is not suitable for Ethiopia.

4. KEY CONSIDERATIONS IN IMPLEMENTING THE MSP

4.1. MSP in different regions

Should the MSP be the same across regions? It may seem fair to offer the same price everywhere and farmers may push for one minimum support price that is valid in all parts of the country, but such a policy would be expensive. Private traders might be able to offer better prices to farmers living near Addis and other major markets, leaving the EGTE to handle the unprofitable routes, transporting wheat from more remote locations. In addition, although such a policy initially seems “fair”, the benefits would accrue disproportionately to wheat farmers in the remote areas provided EGTE has a procurement center in those locations.

For this reason, it is preferable for the MSP to vary across locations in the country. One approach would be to set an MSP for Addis and lower MSP in other towns, adjusted by the costs of transportation to Addis. However, this only approximates what market prices would be in each town. A better approach would be to set the MSP based on recent market prices, perhaps a constant percentage increase from market prices in the same town the previous year as discussed in the previous section.

4.2. MSP over the year

Should the MSP vary over the harvest season? One option is to set the MSP at a fixed level throughout the harvest season. This would be administratively simpler and easier to communicate with farmers. In addition, it would serve the purpose of minimizing the drop in prices during the peak harvest period. On the other hand, it would concentrate EGTE purchases during the month of harvest, possibly resulting in congestion and long waits at the buying stations.
An alternative would be to adjust it on a weekly or monthly basis during the harvest. Although this would follow market prices more closely, it is probably not worth the administrative complexity. Based on these considerations, it is preferable to maintain a constant MSP over the harvest season in each location.

4.3. Buying locations

How many locations should the EGTE operate to buy wheat at the MSP? The Ethiopia Grain Trading Enterprise has 10 branch offices and about 91 trade centers throughout the country. The more places where the EGTE offers to buy wheat at the MSP, the more widely they can impose a minimum price on the market. But the program will also be more expensive. Fortunately, wheat production is quite concentrated. Of the 453 woredas for which the 2006 Agricultural Census collected data, just 20 account for one-third of wheat production and 40 account for one-half of wheat production. It would make sense to offer the MSP at 5-10 EGTE buying stations in the “wheat belt”. These stations would cover the bulk of surplus wheat production.

4.4. Discrimination by type of seller

Another issue is whether the EGTE should offer different prices to different types of sellers, such as farmers and traders. It would be difficult to identify an economic rationale for charging different prices to farmers and traders. In addition, there are serious practical difficulties in distinguishing between them at the time of purchase. There could be an argument for offering a slightly higher price to a seller with large quantities. This could be implemented as a fixed fee for each sale, combined with a per kilogram payment to the seller. This would motivate farmers to aggregate their deliveries, which would in turn reduce the time and cost of procurement for the EGTE.

4.5. Communications strategy

Should the EGTE publicize the MSP? By not publicizing the price, the EGTE would have more flexibility in implementation, but it would also negate most or all of the effect of the MSP on production and deliveries. Overall, it is preferable to announce the MSP as early as possible, so that policies are predictable and help eliminate uncertainties for the farmers. If the EGTE is worried about committing to an MSP before knowing the size of the harvest, it can announce a range for the MSP, and then announce the MSP when crop forecasts are available.

5. IMPACTS OF THE MSP

5.1. Rural households

The 2008 Ethiopian Agricultural Marketing Household Survey sheds light on the impact of wheat price changes on rural households in Ethiopia. The survey covered 1707 households from a stratified random sample covering the four main agricultural regions of the country. About 37% of rural households grow wheat, and 19% (less than half the growers) have wheat sales (see Table 1). A solid majority (60%) of rural households consume wheat products, but only 26% (less than half of wheat consumers) buy any wheat products. These patterns vary across income categories. Higher-income rural households are more likely to grow wheat and
to sell wheat than richer rural households. In addition, wheat consumption is more common among higher-income households than among poorer ones.

Table 1. Percentage of rural household that participate in wheat production and consumption

<table>
<thead>
<tr>
<th>Quintal of per capita expenditure</th>
<th>Percentage of rural households</th>
<th>Wheat growers</th>
<th>Wheat sellers</th>
<th>Wheat product consumers</th>
<th>Wheat product buyers</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>23</td>
<td>10</td>
<td>47</td>
<td>28</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>31</td>
<td>14</td>
<td>56</td>
<td>28</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>39</td>
<td>18</td>
<td>60</td>
<td>24</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>40</td>
<td>24</td>
<td>69</td>
<td>26</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>49</td>
<td>26</td>
<td>70</td>
<td>22</td>
<td></td>
</tr>
<tr>
<td>Average</td>
<td>37</td>
<td>19</td>
<td>60</td>
<td>26</td>
<td></td>
</tr>
</tbody>
</table>

N= 1,707 1,707 1,707 1,707

Source: 2008 Ethiopian Agricultural Marketing Household Survey.

The welfare impact of wheat price changes in the short run depends on whether the household is a net buyer or a net seller. As shown below, 23% of rural Ethiopian households are net buyers, while 18% are net sellers (see Table 2). The figures also suggest that the number of household hurt by higher prices is slightly greater than the number that would benefit, but more than half of rural household are neither net buyers nor net sellers, so they would not be directly affected by changes in wheat prices. Looking at the patterns across income categories, it appears that net buyers are slightly more common among poor households, while net sellers are more common among higher-income households.

Table 2. Percentage of rural households that are net buyers and net sellers of wheat

<table>
<thead>
<tr>
<th>Quintal of per capita expenditure</th>
<th>Percentage of rural households that are net buyers of wheat</th>
<th>Net sellers of wheat</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>28</td>
<td>10</td>
</tr>
<tr>
<td>2</td>
<td>26</td>
<td>13</td>
</tr>
<tr>
<td>3</td>
<td>20</td>
<td>18</td>
</tr>
<tr>
<td>4</td>
<td>23</td>
<td>23</td>
</tr>
<tr>
<td>5</td>
<td>21</td>
<td>25</td>
</tr>
<tr>
<td>Average</td>
<td>23</td>
<td>18</td>
</tr>
</tbody>
</table>

N= 1,707 1,707

Source: 2008 Ethiopia Agricultural Marketing Household Survey

Tables 1 and 2 indicate the number of households losing and gaining from wheat price changes, but not the size of the welfare impact. Table 3 shows the average value of wheat sales, wheat
purchases, and net sales per household, including zeroes. The average value of net sales is 366 birr/year or about US$ 20/year. Average purchases are about one-third this value, implying that rural households produce a wheat surplus. Net sales are positive but small for each income category except the second quintal.

Table 3. Average value of wheat sales and purchases and net benefit ratio

<table>
<thead>
<tr>
<th>Quintal of per capita expenditure</th>
<th>Average value of wheat sales</th>
<th>Average value of wheat product purchases</th>
<th>Average net sales of wheat</th>
<th>Net benefit ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>172</td>
<td>34</td>
<td>138</td>
<td>0.06</td>
</tr>
<tr>
<td>2</td>
<td>105</td>
<td>122</td>
<td>-16</td>
<td>0.00</td>
</tr>
<tr>
<td>3</td>
<td>739</td>
<td>87</td>
<td>652</td>
<td>0.06</td>
</tr>
<tr>
<td>4</td>
<td>235</td>
<td>133</td>
<td>101</td>
<td>0.01</td>
</tr>
<tr>
<td>5</td>
<td>557</td>
<td>155</td>
<td>401</td>
<td>0.02</td>
</tr>
<tr>
<td>Average</td>
<td>366</td>
<td>107</td>
<td>258</td>
<td>0.03</td>
</tr>
<tr>
<td>N=</td>
<td>1,707</td>
<td>1,707</td>
<td>1,707</td>
<td>1,704</td>
</tr>
</tbody>
</table>

Source: 2008 Ethiopia Agricultural Marketing Household Survey

The net benefit ratio (NBR) is the value of net sales as a proportion of total household income or expenditure. It can be considered the short-term elasticity of real income with respect to wheat prices. For example, an average NBR of 0.03 means that a 10% increase in wheat prices will increase the real income of rural households by an average of 0.3 percent. This is a small, almost negligible effect, due to the fact that a) more than half the rural households would be unaffected by changes in wheat prices and b) the benefits to net sellers are largely offset by the losses to net buyers. *The overall effect of higher wheat prices on income distribution among rural households is approximately neutral.*

5.2. Urban households

How will enforcing MSP affect the urban consumers, most of whom are net buyers? Estimates from the Household Income Consumption and Expenditure (HICE) survey of the CSA can offer some answers. Consider Table 4 below, which presents estimates of annual per capita total expenditure, food expenditures, and the share of wheat in total food expenditure. With these numbers, we can examine how an increase in wheat prices might affect urban consumers. Consider the case of Tigray, where per capita total expenditure in the urban area is ETB 3123, per capita food expenditure is ETB 892.6, and share of wheat in total food is 13.1%. This means, per capita wheat expenditure in urban Tigray is ETB 409 (3123*13.1%=ETB 409). Now, if the MSP increases wheat price in urban Tigray by 10%, *Ceteris Paribus*, food expenditure of a typical urban dweller in Tigray will go up by ETB 41, equivalent to 1.3% of the per capita total expenditure and 4.6% of the food expenditure. This is clearly a small impact of MSP. Furthermore, notice that wheat constitutes the highest shares of food expenditure in Tigray. So, in other regions, the effects will be even smaller.

Table 4: Per capita expenditure by regions, locations, and expenditure types
### in Ethiopia (2004/05)

<table>
<thead>
<tr>
<th>Regions</th>
<th>Rural</th>
<th>Urban</th>
<th>Total</th>
<th>Annual per capita total (food and non-food) expenditure (ETB)</th>
<th>Annual per capita food expenditure (ETB)</th>
<th>Shares of wheat in total food expenditure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tigray</td>
<td>1481</td>
<td>3123</td>
<td>1771</td>
<td>892.6</td>
<td>13.1</td>
<td></td>
</tr>
<tr>
<td>Afar</td>
<td>1586</td>
<td>2396</td>
<td>1923</td>
<td>688.4</td>
<td>10.0</td>
<td></td>
</tr>
<tr>
<td>Amhara</td>
<td>1469</td>
<td>2307</td>
<td>1548</td>
<td>763.2</td>
<td>10.4</td>
<td></td>
</tr>
<tr>
<td>Oromiya</td>
<td>1641</td>
<td>2583</td>
<td>1737</td>
<td>781.7</td>
<td>9.6</td>
<td></td>
</tr>
<tr>
<td>Somali</td>
<td>1462</td>
<td>2041</td>
<td>1651</td>
<td>617.5</td>
<td>9.7</td>
<td></td>
</tr>
<tr>
<td>B. Gumuz</td>
<td>1682</td>
<td>2891</td>
<td>1822</td>
<td>803.5</td>
<td>0.9</td>
<td></td>
</tr>
<tr>
<td>SNNPR</td>
<td>1525</td>
<td>2340</td>
<td>1594</td>
<td>527.6</td>
<td>5.5</td>
<td></td>
</tr>
<tr>
<td>Harari</td>
<td>2252</td>
<td>2774</td>
<td>2532</td>
<td>952.0</td>
<td>7.0</td>
<td></td>
</tr>
<tr>
<td>Addis Ababa</td>
<td>2042</td>
<td>2584</td>
<td>2577</td>
<td>1061.7</td>
<td>3.4</td>
<td></td>
</tr>
<tr>
<td>Dire Dawa</td>
<td>1421</td>
<td>2473</td>
<td>2128</td>
<td>964.0</td>
<td>7.4</td>
<td></td>
</tr>
</tbody>
</table>

Source: Berhane, et al. (2013) based on 2004/05 HICE survey

### 5.3. Impact on inflation

Historically, low levels of inflation have been the hallmark of the Ethiopian economy. However, this seems to have changed since 2006/7. High inflation rates—as high as 100% food price inflation in 2008—has now become a major macroeconomic policy concern. However, enforcing the MSP, especially to buy 250,000 tons of wheat is unlikely to have any significant effects on inflation. The value of 250,000 tons of wheat at US$ 300 a ton is about US$75 million, which is 1/5th of a percent of the Ethiopian economy—about US$40 billion.

For a deeper understanding, consider the Quantity Theory of Money, which is expressed as:

\[ MV = P Q \]

Where \( M \) = money supply, \( P \) = the overall price level (CPI), \( Q \) = real output (GDP), and \( v \) is the velocity of money (in effect, the average number of times each Birr changes hands each year). In this relationship, inflation is the change in \( P \). Assuming that \( P \) is represented by the CPI and \( Q \) is represented by the GDP, we can re-state the Quantity Theory of Money as follows:

\[ \%\Delta CPI = (\%\Delta Ms - \%\Delta GDP) + \%\Delta v \]

Now, if the money supply remains the same, inflation can be influenced only through GDP growth and other government programs that increase prices (e.g., food transfers, welfare programs). Since wheat is a tiny component of the CPI and 250,000 ton is only tiny fraction of the grain markets (about 20 million tons), there is no empirically substantiated reasons for worrying about MSP exerting inflationary pressure.

However, there are some misconceptions. There is a perception that only the marketed surplus should be considered in calculating the effects procurement through MSP, not the total availability. This defies a fundamental economic principle—that is, economic agents respond to incentives. If the price of a close substitute goes up, producers will sell that commodity and buy lower price substitutes.
5.4. Impact on imports and exchange rate

Will MSP have an impact on imports and save foreign exchange? Clearly, domestic production can save foreign exchange. However, this doesn’t mean that wheat markets should be distorted by public intervention in order to save foreign exchange. The policy objective should be producing wheat cost effectively to eliminate imports or promote exports. The policy objective should address market failures when the country promotes new technology and there is likelihood of market collapse, which can have longer-term negative consequences on economic growth and poverty reduction.

Available historical data suggest that import prices have not always been higher than the domestic prices. Figure 1 below presents the time series data on import parity, Addis Ababa wholesale prices, and the import volume of wheat (excluding flour). Note that since 2007, domestic prices (gray bars) are either close or greater than the import parity (black bars). In 2008 and 2009, imports were clearly cheaper than the domestic price.

Figure 1: Import parity, Addis Ababa wholesale, and import of wheat to Ethiopia, 1997-2011

For further details on the causes of this situation, see European Commission (2012).

In principal, reducing the demand for imported wheat should reduce the demand for foreign currency and lead to an appreciation of the Ethiopian birr. In practice, the effect of the MSP on the exchange rate is likely to be negligible because wheat imports are generally less than 4% of total imports (see Table 5). Wheat import bills tend to be high (2-4%) during drought years (1999/00 and 2003/04) and during years of high international prices (2008-2010).

Table 5. Exports, Imports, and Trade Balance (in million US$)
<table>
<thead>
<tr>
<th>Years</th>
<th>Exports of Goods and Services</th>
<th>Imports of Goods and Services</th>
<th>Trade Balance</th>
<th>Wheat Import Value</th>
<th>Wheat import as % to total import bills</th>
</tr>
</thead>
<tbody>
<tr>
<td>1997/98</td>
<td>1036.8</td>
<td>1652.7</td>
<td>-616.0</td>
<td>1.8</td>
<td>0.11</td>
</tr>
<tr>
<td>1998/99</td>
<td>909.4</td>
<td>1879.9</td>
<td>-970.7</td>
<td>39.0</td>
<td>2.08</td>
</tr>
<tr>
<td>1999/00</td>
<td>983.0</td>
<td>1957.9</td>
<td>-974.8</td>
<td>64.0</td>
<td>3.27</td>
</tr>
<tr>
<td>2000/01</td>
<td>978.2</td>
<td>1934.2</td>
<td>-956.1</td>
<td>9.6</td>
<td>0.50</td>
</tr>
<tr>
<td>2001/02</td>
<td>982.0</td>
<td>2072.8</td>
<td>-1090.8</td>
<td>47.6</td>
<td>2.30</td>
</tr>
<tr>
<td>2002/03</td>
<td>1139.7</td>
<td>2346.1</td>
<td>-1206.5</td>
<td>52.8</td>
<td>2.25</td>
</tr>
<tr>
<td>2003/04</td>
<td>1498.2</td>
<td>3175.0</td>
<td>-1676.8</td>
<td>176.3</td>
<td>5.55</td>
</tr>
<tr>
<td>2004/05</td>
<td>1858.3</td>
<td>4366.3</td>
<td>-2508.1</td>
<td>124.4</td>
<td>2.85</td>
</tr>
<tr>
<td>2005/06</td>
<td>2097.1</td>
<td>5539.9</td>
<td>-3442.8</td>
<td>201.6</td>
<td>3.64</td>
</tr>
<tr>
<td>2006/07</td>
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<td>6264.1</td>
<td>-3779.0</td>
<td>43.9</td>
<td>0.70</td>
</tr>
<tr>
<td>2007/08</td>
<td>3063.2</td>
<td>8282.4</td>
<td>-5219.2</td>
<td>57.7</td>
<td>0.70</td>
</tr>
<tr>
<td>2008/09</td>
<td>3381.5</td>
<td>9240.9</td>
<td>-5859.4</td>
<td>340.3</td>
<td>3.68</td>
</tr>
<tr>
<td>2009/10</td>
<td>4046.9</td>
<td>9799.1</td>
<td>-5752.2</td>
<td>218.2</td>
<td>2.23</td>
</tr>
<tr>
<td>2010/11</td>
<td>5332.1</td>
<td>10079.8</td>
<td>-4747.7</td>
<td>247.4</td>
<td>2.45</td>
</tr>
</tbody>
</table>

Source: Export and import from the MoFED (as reported in NBE) and wheat import value from the Custom Authority
6. COUNTRY EXPERIENCES

In this section, we review the experience of other countries in sub-Saharan Africa with programs where the government buys and sells staple grains in order to stabilize prices and/or support farm income.

6.1. Ethiopia

From 1974 to 1991, the Derg, a one-party state dedicated to central-management of the economy, ruled Ethiopia. The Agricultural Marketing Corporation was formed in 1976 to manage all aspects of agricultural marketing, including distribution of agricultural inputs, marketing, processing, distribution, imports, and exports. However, the 1980s were characterized by drought, economic mismanagement, and political repression, during which one million people are estimated to have perished.

With the fall of the Derg in 1991, a series of economic reforms were implemented, including agricultural market liberalization. The AMC was closed and replaced by the Ethiopian Grain Trading Enterprise (EGTE), with the mandate to stabilize grain prices, to generate revenue from grain exports, and to respond to emergency food needs. Unlike the AMC, the EGTE would operate primarily on a commercial basis and would compete with private traders, processors, and brokers. In order to reduce costs, the EGTE closed a number of its buying and selling stations throughout the country. As part of its mandate to stabilize prices, the EGTE announced floor prices before each harvest season. However, it was often not able to “defend” these floor prices because of insufficient working capital and the reduced number of buying stations.

In 1999-2000, its mandate was revised to de-emphasize price stabilization and focus its efforts on exports and emergency preparedness. Nonetheless, the government continues to rely on the EGTE to intervene on an ad hoc basis. In 2003, grain prices collapsed as a result of good rains, subsidized inputs, and easy credit. The EGTE was instructed to purchase maize and wheat to support prices.

During the period 2003-2007, the volume purchased and stored by the EGTE declined and its impact on grain markets became fairly modest. However, it returned to play a prominent role when grain prices rose to unprecedented levels in 2007-2009. The rise was originally attributed to cross-border exports, higher grain retention by farmers, or hoarding by farmers, a recent study pointed to a series of other explanations:

- Excessive monetary expansion and rising non-food prices suggest that inflation played a role.
- Household survey data and other evidence suggest that the 2007-08 harvest was less than official estimates suggested.

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2 Rashid and Negassa, 2013 provides a detail discussion on the policy evolution, as well as structure, conduct, and performance of Ethiopian Cereal markets
• The government responded to the cost surge of imported fuel by rationing foreign exchange, which prevented traders from importing grain and allowed wheat and maize prices to exceed import parity prices.

The EGTE and the World Food Program imported 1.0 million tons of wheat and maize to address the high prices, some of which was distributed through a new urban food-rationing program, as monetized food aid and as emergency relief. High grain prices continued well into 2009, in spite of the fact that international grain prices had fallen substantially by this time.

6.2. Uganda

In the 1980s, the state-owned Produce Marketing Board was given a legal monopoly on staple crop marketing with authority to enforce food price controls. In the early 1990s, Uganda implemented a set of economic reforms that, among other things, liberalized agricultural marketing and removed price controls. Unlike many countries in the region, the state marketing enterprise was abolished rather than allowed to continue operating in competition with private traders. In fact, the main document describing the agricultural development strategy, the Plan for the Modernization of Agriculture, specifically rules out publicly held food stocks:

The Government recognizes that publicly held food reserves are very expensive under the best of conditions and require careful management to minimize losses due to spoilage. Such schemes have had limited success in other countries, but have exerted substantial demands on public funds. Therefore, the government will not adopt any policy to accumulate such stocks unless careful studies in Uganda have determined their efficacy. Similarly, developing country experiences with compulsory stocks held by farmers would imply cautious consideration of such measures for increasing food security as the levels of public intervention needed would mark a major retreat from the successful liberalization program of the past decade (GoU, 2000).

Another difference with countries in the region is that international trade in staple foods is not restricted. The government does not impose bans, quotas, or duties on exports and food imports are subject to a low tariff (10-13%). As part of the East African Community (EAC), Uganda is committed to gradual elimination of import duties from other EAC members.

Following the liberalization of agricultural markets, the degree of market integration has increased significantly (Rashid, 2007). Furthermore, Uganda has emerged as a regular surplus producer of maize and beans, exporting mainly to Kenya with smaller quantities going to other neighboring countries. The World Food Program (WFP) has a local procurement program where maize is purchased in Uganda for food-aid distribution in Sudan and other countries in the region.

Between January 2007 and July 2008, maize prices in Kampala rose 75%. This price hike was attributed to increased demand driven by the political turmoil in Kenya, rather than the global food crisis. Given that maize accounts for 9% of caloric intake and that consumers could shift to cooking bananas, cassava, and sweet potatoes, the impact on food security was modest. The government did not implement any special policies or programs in response to the price
increase, although there is some debate regarding the value of a strategic grain reserve to soften the impact of food price increases (Benson et al, 2008).

6.3. Kenya

Kenya produces the bulk of the maize consumed in the country, though it is becoming a chronic maize importer. Maize is imported both formally and informally from Uganda and Tanzania in normal years. When there is a shortfall the grain is imported from South Africa. Statistics from the FAO (2010a) indicate that maize imports represent just 3% of production, but the figure may be higher given the difficulty of measuring cross-border imports.

Although Kenya is one of the larger wheat producers in sub-Saharan Africa, it still relies on imports for about 63% of its wheat requirements. It is also a net importer of beans; Uganda and other neighboring countries supply at least 8% of the national consumption. In addition, almost all the rice in Kenya (87%) is imported.

During the 1980s, the National Cereals and Produce Board (NCPB) set pan-territorial and pan-seasonal prices for maize at the producer and miller level, as well as maize meal prices at the retail level. The NCPB maintained a monopoly on domestic and international trade in maize. Intra-district maize trade was allowed, but permits were required to transport maize across district borders. During this time, the costs of running the NCPB were estimated at 5% of the gross domestic product of the country (Jayne and Jones, 1997).

As part of a structural adjustment program, initial steps toward liberalization of domestic maize marketing were taken in the late 1980s. In the early 1990s, the reforms were extended by the elimination of internal movement restrictions and maize price controls. As a result of increased competition with the private sector, the closure of many buying stations, and budget cuts, the NCPB’s share of the maize marketing fell to 10-20% in the second half of the 1990s (Ariga and Jayne, 2010).

Under pressure from large-scale commercial farmers and possibly in response to the election cycle, the government began to increase funding to NCPB, allowing it to purchase 25-35% of the marketed volume in a good-harvest year or 10-15% of production. Most of the procurement takes place in the districts with large-scale commercial maize production. The domestic maize price is also supported by tariffs and occasional bans on imported maize. The tariff rate varies between 0 and 50%, with abrupt changes sometimes occurring within a year (Ariga and Jayne, 2010).

According to Jayne et al (2008), the net impact of NCPB operations over 1995-2005 was to raise the wholesale maize price by 17-20% and reduce the variability in maize prices. Much of the benefits, however, accrue to the relatively small number of medium- and large-scale commercial maize farmers.

In 2008, the maize harvest was significantly below normal as a result of poor rains and the post-election violence earlier in the year. Maize imports from Uganda were insufficient, maize from Tanzania was blocked by an export ban, and a 50% maize import tariff made private-sector imports through Mombasa unprofitable. The government ordered maize imports from South
Africa, but they were delayed and insufficient. There were allegations of corruption over the issuing of import licenses and over the sale of subsidized maize by NCPB, leading to the firing of most of the senior management at NCPB. When the import tariff was lifted, there was a surge in private sector orders, but limited transport capacity between Mombasa and Nairobi meant that it took more than six months for maize prices in Nairobi to fall to the import parity level (Ariga et al, 2010).

6.4. Tanzania

Tanzania formed a strategic grain reserve in the 1970s following the food crises of 1971-74. The National Milling Corporation (NMC), a state enterprise that was given a monopoly on the procurement, processing, and distribution of staple food crops, originally managed it. With the liberalization of grain trade in the late 1980s, the NMC was forced to compete with private millers and trader, eventually losing 95% of its market share. In 1991, the Strategic Grain Reserve (SGR) was established as a separate entity. The objectives of the SGR are to advise the government on food security policy, supply food for emergency assistance, and stabilize staple grain prices. The SGR engages in procurement and distribution operations through seven depots, three in surplus zones in the southern highlands and four in deficit zones (Dar es Salaam, Arusha, Dodoma, and Shinyanga). The capacity of the SGR is 150 thousand tons, but in practice the quantities in storage have generally been in the range of 50-80 thousand tons (Mndogo, nd).

The SGR has not had much effect on grain prices in Tanzania. The volume of purchases and sales in a given year is generally less than 50 thousand tons, which is negligible compared to the volume of Tanzanian grain production (5 million tons) or even marketed surplus (roughly 1.25 million tons). In addition, the SGR suffers from bureaucratic procedures, political interference, under-utilization of capacity, and chronic operating deficits due to pricing policies that do not allow cost recovery. On the other hand, the global food crisis has increased the political support for tools to manage staple food price volatility.

In spite of the absence of an effective grain stabilization policy, the variability in maize prices is relatively low. The coefficient of variation in monthly maize prices in Dar es Salaam is 26%, the lowest among the seven countries tested. This price stability may be related to the importance of cassava as a potential substitute staple, the location of Dar es Salaam on the coast, and the geographically dispersed production zones.

6.5. Malawi

Maize is the most important staple food in Malawi, accounting for over half (54%) of the caloric intake. In 1971, several state-owned agricultural enterprises were merged to form the Agricultural Development and Marketing Corporation (ADMARC), with responsibility for purchasing, processing, and marketing agricultural products; stabilizing food prices; and maintaining food security reserves. Through ADMARC, the government maintained pan-territorial and pan-seasonal prices for maize and other food crops grown by smallholders. Although there was criticism that the system taxed smallholders and favored the export-

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3 This section draws heavily from Minot (2010b).
oriented estate sector, Malawi was generally food self-sufficient and enjoyed healthy rates of economic growth in the 1960s and 1970s.

However, the oil crisis of 1979 and the interruption of trade by the war in Mozambique caused a severe economic crisis in Malawi. The government was forced to turn to the World Bank and the International Monetary Fund (IMF) for financial support, which entailed agreeing to policy conditions (Chirwa, 2006). Under a series of structural adjustment programs in the 1980s, Malawi carried out reforms to liberalize the economy:

- Over 1982-86, the price bands at which ADMARC would buy and sell were revised annually and moved closer to parity with international prices.
- In 1987, the monopsony power of ADMARC over smallholder food crops was eliminated and private trade was legalized, subject to licensing. The prices of most crops were liberalized, leaving ADMARC in the role of buyer of last resort (Smith, 1995).
- In 1997, the licensing requirement for agricultural traders was eliminated, with the exception of those trading in maize.
- In 1999, the National Food Reserve Agency (NFRA) was created to manage emergency food stocks, in theory allowing ADMARC to focus on commercial activities.
- In 2000, ADMARC abandoned the maize price band, but continues to intervene in maize market trade and marketing on an *ad hoc* basis.

Malawi maize policy is characterized by a large fertilizer subsidy program whose size and design varies from year to year, purchases and sales by ADMARC on behalf of the NRFA, occasional maize export bans, government-sponsored maize imports, and continued suspicion of private traders. Malawi has experienced three spikes in maize prices in recent years, contributing to one of the highest levels of maize price instability in the region. Here we provide a brief description of each of these spikes.

The price spike in 2001-02 originated in the depletion of the NRFA food stock just before it became clear that a second harvest in a row would be poor. The government ordered 150 thousand tons of imports, but logistical and administrative problems delayed its arrival. In the meantime, the price of maize reached US$ 500 per ton. The spike was widely blamed on earlier advice from the World Bank and the IMF to reduce the reserve from 167 thousand tons to 30-60 thousand tons. But the IMF attributes the crisis to 1) the sale of the stock before the 2001 harvest assessments had been completed, 2) the sale of the entire stock rather than reducing it to the recommended level, and 3) the lack of good information on size of the shortfall. They also note that the sale of the stock was not authorized by the government, leading to a corruption investigation (IMF, 2002). However, private imports could have prevented the price spike except that 1) traders lacked information about the size of the NRFA food stock until it was exhausted and 2) the government’s stated intention to import a large quantity scared off private importers, until the extent of the delay became clear (Rubey, 2003).

The second maize price spike was in 2005-2006. In large part, poor rains caused this in the 2004-2005 growing season. In addition, it was expected that the new government would implement an expanded fertilizer subsidy program, so many farmers waited to purchase...
fertilizer. Private fertilizer dealers were reluctant to import given the expectation of a large subsidy program. The implementation of the subsidy program was delayed by debate with the government and reduced in size due to funding constraints. By the end of October, barely one third of the fertilizer needed for planting was available (FAO-WFP, 2005; Rubey, 2005). This contributed to the 24% decline in the 2005 maize harvest, below an already low 2004 harvest. Although the 2005 harvest (1.2 million tons) was much smaller than in 2001 harvest (1.7 million tons), the price spike in early 2006 was much less severe than in early 2002. In the absence of a government plan to import maize, the private sector was able to arrange imports and prevent a larger rise in prices.

The third period of high maize prices occurred in 2007-08. The combination of good rains in the 2006-07 agricultural year and the newly expanded fertilizer subsidy program led to a bumper crop in 2007, estimated at 3.4 million tons of maize. The government issued tenders to traders to assemble 450 thousand tons for export to Zimbabwe. By late 2007, the government had exported 283 thousand tons. However, in the process, the price of maize was bid up 65% over the second half of the year, causing the government to suspend the procurement program. In fact, prices in Malawi rose above those in neighboring countries, resulting in an inflow of maize from Mozambique and Tanzania through cross-border trade (Jayne et al, 2008).

In 2008, the government reported another bumper harvest, with an estimated surplus even larger than in 2007. As ADMARC began its procurement program, it was forced to raise the buying price numerous times in order to compete with traders. By August, ADMARC and NFRA were only able to purchase 60 thousand tons, and the maize price in Lilongwe had risen to close to US$ 400 per ton. Reflecting the widespread view that the high prices were the result of hoarding by traders, the government banned private trade in maize in August 2008, effectively restoring the legal monopoly of ADMARC on maize trading. Later, the ban was partly relaxed to allow small-scale trade, provided the price ceiling of 52 MK/kg is respected (Jayne et al., 2008; FAO, 2009d; ANN, 2008).

Jayne et al. (2008) argue that official crop production estimates for 2007 may have been overestimated. They note that high prices, maize imports, and rationing by ADMARC “are difficult to reconcile with the official estimates of a record maize harvest of 3.4 million tons in 2007.” If so, the combination of inaccurate estimates of the harvest and government procurement for export contributed to the spike in maize prices.

6.6. Zambia

As in Malawi, the diet of Zambian consumers is dominated by maize. Over half of the caloric intake (57%) is from maize consumption, while cassava contributes 13%, and wheat 7% (FAO, 2010b). Maize is the main staple in southern and eastern Zambia, while cassava is more important in parts of the north. Wheat consumption, which is considerably more expensive than maize on a per calorie basis, is concentrated among higher-income households in urban areas.

Maize production is highly variable; in fact, maize production instability is the highest among the seven countries tested. As a result, Zambia tends to import maize following a poor harvest and occasionally exports a surplus after a particularly good year. Cassava is not traded on any
significant scale, but there is some cross-border export of dried cassava to the Democratic Republic of the Congo. Wheat production is relatively stable because much of it is produced by large-scale farmers using irrigation. Although Zambia has traditionally imported a significant portion of its wheat requirements, wheat production has been expanding to the point that the country is approaching self-sufficiency (Chapoto et al, 2010).

Given the importance of maize in the Zambian diet, it is not surprising that food policy in the country focuses heavily on maize. Throughout the 1970s and 1980s, the National Agricultural Marketing Board (NAMBOARD) managed the agricultural sector. It distributed subsidized fertilizer and other inputs, guaranteed a pan-territorial purchase price for maize, produced maize meal at state-owned mills, and marketed the maize meal at subsidized prices to urban consumers. This costly system was undermined by the collapse of world copper prices in 1986. Without this revenue and under pressure from the international financial organization, Zambia abolished NAMBOARD and attempted to phase out consumer subsidies. The economic reforms were accelerated with the new government in 1991.

In 1995, the government created the Food Reserve Agency (FRA) to manage food security stocks. Purchases represented a small share of annual production (0-9%) for the first ten years of its existence. In 2005, the FRA was given a larger mandate and budget, opening 600 buying stations and expanding maize procurement to about 25% of total production. The pan-territorial procurement price is often above the local wholesale price, providing a significant advantage to those able to sell to the FRA (Dorosh et al, 2009).

Imports and exports of maize and wheat require permits that specify the quantity to be traded. In recent years, most of the permits have been issued to the FRA. Thus, the FRA has come to play a dominant role in both domestic maize marketing and international grain trade.

Between mid-2007 and mid-2008, maize prices rose 40% in US dollar terms. In response, the government banned the export of maize and increased the size of the fertilizer subsidy to stimulate production the following year. The government also offered FRA maize to the large-scale millers at a significant subsidy. The intention was to allow the millers to keep the price of maize meal low, but it surprised and undercut private importer-suppliers. The subsidy was later withdrawn in the face of accusations that the millers were not passing the savings on to consumers (Chapoto et al, 2010).

Because of this dominant role and the unpredictability of maize policy, the private sector is reluctant to participate in or invest in cross-border trade. This, in turn, leads policymakers to see private traders as unreliable and unable to take responsibility for trade in this strategic commodity. This mutual mistrust means that trade is not fulfilling its potential as a mechanism to stabilize maize prices. Dorosh et al (2009) use an agricultural sector model of Zambia to simulate the effect of a drought that reduces maize production by 30% on 10 households’ types under different food policy regimes. They show that private cross-border trade and substitution into cassava could offset two-thirds of the consumption effect of a drought year on poor households.
6.7. Mozambique

During the 1980s and early 1990s, the government purchased and sold maize and other foods at controlled prices through two state-owned enterprises, AGRICOM and later the Cereals Institute of Mozambique (ICM). As part of a broader agricultural reform program, the ICM withdrew from direct intervention in food markets and price controls were abolished in 1997 (Donovan and Tostão, 2010).

Currently, agricultural and food markets in Mozambique are largely liberalized. International trade is unrestricted, though there are modest tariffs on imported goods, including maize. The government does not maintain a strategic grain reserve or attempt to stabilize food prices. Tshirley et al (2006) found that maize prices in Mozambique were more stable than in any other country in the region. More recent estimates for Maputo show that maize price variability is no longer the lowest in the region, but it is still below average.

Between mid-2007 and mid-2008, retail maize prices rose 62% in Maputo and 123% in Nampula (Minot, 2010c). In response, the government developed an Action Plan for Food Production (PAPA), which focused on measures to increase crop productivity. The Plan also calls for the creation of public-private food reserves in three areas. The government will build storage facilities, contract private traders to purchase grain for the stores, and provide subsidies or loan guarantees to motivate private-sector participation (Chapoto et al, 2010).

Even after world grain prices began to fall in late 2008, the price of maize remained high in Maputo and elsewhere in Mozambique. The persistence of a large margin between the SAFEX price of maize in Durban and the price in Maputo requires further analysis.

7. SUMMARY

Common justifications for minimum support prices (MSPs) in developing countries include (i) weak infrastructure and limited flow of price information (ii) risk mitigation for technology diffusion, (iii) thinness and volatility of international market, and (iv) inability to participate in the international market. In the case of Ethiopia, EGTE may be able to reduce costs by purchasing more domestically produced wheat and less imported wheat. However, it is important to verify that savings can be realized even after taking into account the costs of mobilizing local production and that domestic wheat is acceptable to the large-scale milling industry. In any case, if the EGTE is to meet its target of purchasing 250,000 tonnes in 2014, it will need to offer a more attractive price.

We recommend that the wheat MSP follow these guidelines:

- The MSP should not be set according to an estimate of the costs of wheat production, due to a range of conceptual and practical difficulties in calculating the “cost of production.” The average MSP should be above the EGTE price (after adjusting for inflation) for the last harvest and below the import parity price.
- The MSP may need to be adjusted upward if the harvest is below average or downward if the harvest is above average to reach the target of 250,000 tonnes.
• The MSP should not be pan-territorial. Instead, it should vary across buying stations according to the spatial price patterns of 2013. In other words, the percentage markup over last year’s price should be constant across buying stations.

• The MSP can be constant across the harvest season to reduce administrative complexity and simplify the message to farmers.

• The MSP should be announced to farmers as early as possible. One option is to announce a price range as soon as possible and select the final (reference) price when the crop forecasts become available.

Regarding the impact of the higher wheat prices, household survey data and other information suggest the following conclusions:

• The impact of a higher wheat price on rural households is neutral on average, in that the gains of net wheat sellers are largely offset by the losses to net buyers in rural areas. About half the rural households are unaffected by wheat prices, since they neither buy nor sell wheat products.

• The impact of higher wheat prices on urban households is negative but relatively small because only a small share of urban budgets is used to purchase wheat or wheat products.

• The effect of higher wheat prices on overall inflation is expected to be negligible, because it is a small component of the cost of living in general and the consumer price index in particular.

• In theory, reducing wheat imports should cause the birr to appreciate somewhat, but in practice the effect will be negligible because wheat imports account for less than 4% of total imports.

The experience of African countries has varied, both across countries and over time within each country. A number of countries, including Uganda, Mozambique, and Tanzania have little or no public stocks of grain and no programs to stabilize prices. Grain imports and exports are carried out by private traders. Other countries, such as Kenya, Zambia, and Malawi, have large state enterprises that buy, sell, and store staple grains, mainly maize. These programs are costly, often representing a large share of the agricultural budget of the country. In some cases, the costs can reach 3-5% of the national gross domestic product. The effectiveness of these programs is not clear. One study found that countries with more active intervention in maize markets (Kenya, Zambia, and Malawi) had more volatile maize prices than those countries with minimal intervention (Minot, 2012). Another study showed that Kenya has managed to stabilize maize prices to some degree, but most of the benefits accrue to large-scale commercial farmers (Jayne et al., 2008). Overall, public grain stocks can be useful to meet emergency needs, but the use of grain stocks to stabilize prices has had a mixed record in sub-Saharan Africa.
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