Policy Brief No. 8
October, 2012

EGERTON UNIVERSITY

TEGEMEO INSTITUTE OF AGRICULTURAL POLICY AND DEVELOPMENT

Policy Brief

Potential effects of the imposition of value added tax on agricultural inputs and sifted maize meal

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SUMMARY

The proposed amendment of the Value Added Tax (VAT) Act to allow a charge of 16% VAT on agricultural inputs and processed foods has generated much debate recently. Not only does the Bill threaten to increase farm input prices and reduce affordability, but it also has the potential to increase food prices, a situation which would hurt an already burdened population. In this brief, we analysed the potential effects of imposing 16% VAT on farm production costs and consumer prices of maize and maize meal to inform this debate. This will ensure that any dire consequences are avoided, and more significantly, that Kenya continues to ensure food security for all its citizens.

BACKGROUND

Increased agricultural productivity is key to food security and poverty reduction. A major impediment, though, has been the low use of productivity enhancing inputs in the form of fertilizers and improved seed, due to limited capital to finance such expenditures, and in some cases, low returns to inputs used. Tegemeo data show that most farmers who do not use fertilizer are constrained by the high cost of the inputs relative to price of the output. To ensure increased food supply and low food prices for consumers, governments must be frugal in their interventions by making agricultural inputs and food affordable, particularly for smallholder farmers and consumers in the low income categories respectively. One of the ways that the Kenya Government has been supporting farmers and consumers is through the zero-rating of value added tax (VAT) on inputs, and processed food, eliminating the additional cost that would result from such charges. This situation, however, is likely to change if the proposed review of the VAT Act is approved.

The proposal to review the VAT Act is a bid to harmonize the way different items are treated with respect to VAT. The proposal aims to make the administration of VAT easier and more effective. The VAT Bill, which is still under discussion, proposes reducing the number of zero-rated items to address the problem of huge tax refunds. This implies that some basic items that were initially zero-rated will now attract the 16% charge in VAT. The items to be affected include agricultural inputs such as fertilizers and seed and processed food items such as sifted maize meal, processed milk, among others. These proposed amendments have been made despite the high and rising food prices that continue to be a challenge in Kenya, as evidenced by the rising food insecurity within households and the quest for increased wages by workers.

Imposing VAT on fertilizer and seeds would effectively lead to higher input prices. Higher input prices will have two possible effects. First, farmers at the margin will not be able to meet the additional cost, and will either reduce the acreage under cultivation or use less inputs per given crop area. Either possibility will result in lower farm output and hence reduced national supply. Secondly, households that can afford to meet the increased cost

of input, will ultimately face a higher cost per unit of output, a cost they will likely pass on to consumers in form of high output prices. Thus the real implications of imposing VAT on inputs will go beyond the increase in input prices and reduced affordability to affect consumers through its effects on prices food. This multiplicity of effects is likely to have significant implications on food insecurity and poverty, particularly among poor and vulnerable consumers.

This brief highlights the potential effects of the proposed VAT Bill on food prices, particularly the key staple food commodity, maize. We quantify the potential effects of 16% VAT on agricultural inputs, specifically fertilizers and maize seed, on the cost of maize production and on prices of maize grain and sifted maize meal. The purpose of this analysis is to inform the debate on the proposed VAT Bill and to ensure that the Bill does not have a negative impact on food security, and the overall performance of the agriculture sector.

POTENTIAL EFFECTS OF IMPOSING 16% VAT

Farm level effects

Increased costs of fertilizer and seed

Using data collected by Tegemeo Institute on maize production costs in 2011, the cost of maize production per acre ranged from about KES 30,000 to KES 33,000 depending on the scale of production. This translates to a unit cost per bag of KES 1,749 to KES 1,993. When 16% VAT is imposed on fertilizer and seed, the production cost per acre ranges from about KES 32,000 to KES 35,000, which translates to a unit cost per bag of KES 1,837 to KES 2,109. The results show that the cost of producing a bag of maize increased by between 5% and 7% depending on the scale of production when comparing production costs with VAT and without VAT[1].

Reduction in input use and maize yields

As discussed above, the immediate effect of the VAT charge on inputs will be an increase in both fertilizer and hybrid seed prices. The increase in the price of fertilizer and seed will lead to the following scenarios, *ceteris paribus*: i) farmers will reduce the input application rate and maintain the area under maize compared to previous season, resulting in lower yields and increased cost of production; ii) farmers will reduce the area under maize and maintain the same input application rate, leading to a decline in production and supply of maize in the market and the consequent higher maize grain prices; and iii) farmers will maintain the same area under production and input application rate but transfer the costs to the consumer, implying that the price of maize grain will increase.

The use of hybrid maize is usually accompanied by the use of fertilizer. Table 1 summarizes yield gaps (kg/acre) with respect to the various combinations of fertilizer and hybrid seed as used by the households. Yields declined by 53% among households that did not use fertilizer and hybrid seed compared to households that used both inputs.

With the increase in the prices of fertilizer and maize seed, farmers may adopt different combinations and application rates to adjust to the price increase. These will affect yield and production levels which in turn affect supply and price of maize, with implications on food security. Based on the data collected by Tegemeo Institute in 2011, the average maize yield was 17 bags per acre. Using this average yield and the yield gaps from Table 1, we simulated the percentage change in yield with different combinations of fertilizer and seed. Results show, that combination of not applying fertilizer and using local seeds gives the highest decline in yields (9 bags/acre). Using fertilizer and local seed combination the yields declined by about 2 bags per acre while for the combination of using hybrid seed with no fertilizer, yields declined by 4 bags per acre.

Using Tegemeo Institute panel data collected in 2000, 2004, 2007 and 2010 across different agro-regional zones in Kenya, maize-producing households were classified into three categories. The first category comprised households which consistently used fertilizer and maize hybrid seed in all four survey years (consistent users). The second category comprised households which used these inputs during some of the survey years (inconsistent users); and the third category consists of households which did not use these inputs at all during the survey years (consistent non-users) (Table 2). Overall, about 33% of the households were inconsistent users of both fertilizer

Table 1: Yield gap of maize for different combinations of fertilizer and seed used by households

Scenarios	Yields (kg/acre)	% decline in yields
With fertilizer + hybrid seed	980	
No fertilizer + hybrid seed	727	-26
Fertilizer + local seed	892	-9
No fertilizer + local seed	458	-53

Source: Tegemeo household survey, 2010

[1]The analysis assumed that the demand for these inputs remains the same even with VAT. Ideally, we expect the demand for fertilizer and seed to go down due to the increase in price. However, the reduced use of fertilizer and improved seed would in turn lead to a decline in maize yields, and hence higher per unit cost of production. While the reduced yields could result in low supply and hence higher output prices, *ceteris paribus*, the increased costs are also either transferred to the consumer or borne by the farmer.

and hybrid seed. A proportion of these inconsistent users would probably no longer afford to purchase these inputs as a result of the increased costs. This may imply the need to expand the current government subsidy programmes such as the National Accelerated Agricultural Input Access Program (NAAIAP), which is aimed at making fertilizer more accessible to vulnerable households (e.g. inconsistent users). Such an action may have significant financial implications.

Decline in national demand of fertilizer

Growth in agricultural productivity is largely a function of the use of improved agricultural technologies such as fertilizer and improved seed. With the increase in the price of fertilizer, the demand for fertilizer will decline. Mose et al. (2007) computed the price elasticity of fertilizer demand as -1.05 in the short run and -1.26 in the long run. Chianu et al. (2008), in their study comparing the effects of structural market change on demand and farm income in 11 countries in Africa, reported fertilizer elasticity of demand as -1.48. We used these price elasticities to simulate the change in the national demand for fertilizer with the imposition of 16% VAT (Table 3). Results show that 16% VAT will lead to a decline in fertilizer demand of 17–23%.

At the national level, the current consumption of fertilizer stands at 532,205 metric tons (mt) (Ministry of Agriculture, Farm Inputs Division). Out of the total fertilizer consumed, 75% consists of both basal (49%) and top dressing (26%) fertilizer. Therefore, basal and top dressing fertilizers account for 399,154 mt. The analysis therefore, shows that imposing 16% VAT will lead to a decline in national fertilizer demand of between 67,000 and 91,000 mt.

Table 2: Percentage use of fertilizer and hybrid maize seed by households across survey years (2000, 2004, 2007 and 2010)

Agro-regional zones	Consistent users	Inconsistent users	Consistent non-users
Coastal Lowlands	0	37.7	62.3
Eastern Lowlands	3.5	52.8	43.7
Western Lowlands	0	13.5	86.5
Western Transitional	38.9	49.3	11.8
High Potential Maize Zone	69.2	26	4.8
Western Highlands	58.7	33.3	8
Central Highlands	50	35.1	5.9
Marginal Rain Shadow	0	20	80
Overall	**41**	**33.3**	**25.8**

Source: Tegemeo panel data

Table 3: Proportion decline in the demand of fertilizer if 16% VAT is imposed

With respect to	Decline in the fertilizer demand		
Fertilizer price increase by 1%	-1.05	-1.26	-1.43
Fertilizer price increase by 16%	-16.8	-20.16	-22.88

Source: Authors' computation

Consumer Level Effects

Increase in price of maize grain

As discussed earlier, cost of maize production will increase by 5% after 16% VAT is imposed on fertilizer and seed. We simulated the effect this would have on the wholesale and retail prices of maize grain in the Nairobi market. According to the Ministry of Agriculture, Marketing Information Bureau, the average wholesale maize grain price in Nairobi between November 2011 and January 2012 was KES 3187 per 90 kg bag, while the average retail price during the same period was KES 3727 (Kenya National Bureau of Statistics).

Assuming that the mark-ups (margins) of producers, wholesalers and retailers remain the same after the increase in production cost (due to VAT on fertilizers and seeds), the new wholesale and retail maize prices in Nairobi would increase by 5%. The new wholesale and retail prices would be KES 3346 and KES 3913 respectively.

Increase in the price of sifted maize meal

The increase in the cost of maize grain implies that millers' costs of purchasing grain will rise. Assuming miller and trader/retailer margins are maintained,

the average price of sifted maize meal would increase by 5% from KES 58 to KES 60 per kilogramme. When 16% VAT is imposed on the sifted maize meal, price would increase to KES 70 per kg. This implies that the consumer will pay 22% more for a kilogramme of sifted maize meal because of the effects of VAT.

Musyoka et al. (2010) estimated the price elasticity of sifted maize meal in the urban areas of Nairobi as -1.85. Based on this elasticity, imposing 16% VAT will lead to a decline in demand for sifted maize meal of 30%. For poor households that mainly rely on maize meal for food, a decline in demand basically implies that these households will have to adopt various coping mechanisms as a result of the increase in the price of sifted maize meal. These could include skipping meals, taking smaller portions of food, and diversifying to less preferred foods, among others.

POLICY IMPLICATIONS

Subjecting farm inputs to VAT is expected to increase the cost of agricultural production, and therefore increase the cost of producing food commodities. This in turn is expected to raise prices of food commodities; consumers will ultimately bear this tax burden. In addition to VAT on inputs raising food prices by 5%, VAT on processed food commodities is expected to result in a further increase in prices of 16%. By having a negative impact on the cost of food production and prices of food commodities, the proposed VAT on inputs and food commodities is expected to affect domestic food supply and its affordability, hence food security.

Given the government objective of ensuring food availability for all it citizens, parliament must seriously consider the implications of any policy move that would further increase prices of food commodities. An increase in food prices will exacerbate the food security situation of poor households whose expenditure on food constitutes about 60% of their income.

Further, imposing VAT on fertilizers and improved seeds would counter the efforts being made to enhance farmers' access and use of these inputs through various government interventions, particularly NAAIAP.

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Tegemeo Institute acknowledges the support for the Tegemeo Agricultural Policy Research and Analysis (TAPRA II) Programme from, the United States Agency for International Development (USAID) and Egerton University, Njoro Kenya.

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