

A Sam-Multiplier Analysis of the Linkages between Trade Policy and Poverty Reduction in Botswana

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Abstract

Concerns are quite widely expressed about the adverse impact on globalisation on poverty within developing countries, but often such discussion is characterised by a lack of clarity in identifying the problem and supporting evidence. This study addresses one aspect of this problem, that is assessing the impact of trade liberalization on poverty in Botswana through the application of partial equilibrium and economy-wide approaches.

Reaping the gains from trade requires countries to change their production structures, so, trade liberalisation involves adjustment. This, in turn, means changes in the distribution of income among households or socio-economic groups. At a personal level, there will be gainers and losers, and the losses could be quite significant (e.g. if someone falls into unemployment). At the economy-wide level, income inequality will change, although there is no reason why it should necessarily worsen. In both cases, what actually happens depends on many factors, not least initial conditions and the types of trade reforms undertaken. In a cross-country study of eight liberalising Asian countries, results showed varying degrees of success in reducing poverty. However, much of the variation across countries tended to reinforce the effect of supporting/complimentary policies.

Trade liberalization can affect the welfare of the poor through a number of channels: (i) by changing the prices of tradable goods (i.e., lowering prices of imports for poor consumers and producers, increasing prices of exports for poor producers), and improving access to new products; (ii) by changing the relative prices of factors (skilled and unskilled labor and capital) used in the production of tradable goods and affecting the income and employment of the poor; (iii) by affecting government revenue from trade taxes and thus the government's ability to finance programs for the poor; (iv) by changing incentives for investment and innovation and affecting economic growth; and (v) by affecting the vulnerability of an economy (or subgroups within the economy) to negative external shocks that could affect the poor

The empirical evidence confirms the theoretical prediction that poverty effects of reform vary from case to case and, within a country, from group to group One possible generalisation seems to be that the net effect on poverty is more likely to be positive where agriculture is more egalitarian and dynamic, but even there those that lose may include many of the

poorest. A highly productive agricultural sector assuming other complimentary policies like credit, land reform, infrastructure, etc, are there can contribute to poverty alleviation through direct and indirect income and demand linkages(Ehui and Delgado, 1999).

Given the above, a major policy question facing Botswana's policy makers, therefore, is whether and to what extent they should pursue trade liberalisation to conform to the WTO rules while at the same time addressing sustainable economic diversification and reducing abject poverty. While a carefully formulated program on trade liberalisation, at aggregate level, can have positive impact on the economy (trade creation, growth in GDP, improvement in welfare, industrialization, increase in foreign investment, etc.), it is also likely to have very different effects on different sectors of the economy and population.

Given that Botswana's agriculture and textile industries currently enjoy substantial protection and special dispensation through EU/ACP agreement and African Growth and Opportunity Act (AGOA), additional broad-based trade liberalisation may have a detrimental impact on small-scale activities, informal sector as well as other enterprises facing low productivity. These activities employ several households especially in the rural areas where poverty is concentrated, as this exposes these sectors and people to more international competition. Limited skills, economies of scale, technological base and imperfect factor and product markets, etc generally disadvantage small developing countries like Botswana.

Introduction

Two sets of policy issues/challenges loom large on the economic horizon for Botswana's sustained transformation: the diversification of the economy away from the mineral sector and, the income and equity effects arising from global and regional trade liberalization. The global environment has changed dramatically since the 1980s. Proliferation of regional trading agreements, the increased role of the World Trade Organisation (WTO) and the IMF/World Bank imposed structural adjustment programs have accelerated the process of opening developing countries' domestic markets to imports and reducing tariffs.

Botswana's membership to the WTO means that Botswana is affected by globalisation through a number of mechanisms, including international trade, international flows of finance, and the impact of globalisation in neighbouring economies to which the Botswana economy is strongly linked. Its economic policies have also been affected by changes in economic development thinking.

The regional trade agreements are likely to reduce the prices of imported raw materials and other imported goods, and may have other long-term benefits. They could also have a negative impact on government revenues, employment, and may lead to rise poverty levels. For example, South Africa and the European Union (EU) negotiated a free trade agreement

(FTA) in 1999 and the implementation of this agreement will have an impact on trade flows in Botswana given South Africa's predominance in Southern Africa. This is likely to affect the welfare of many people in the country especially those in the rural areas. This is because the decline in government revenues would most likely affect government transfers to households. Most of the poor households in Botswana are found in rural areas (1985/86 HIES; 1993/94 HIES).

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With these dramatic changes in the global trading environment, regional integration initiatives by SADC and free trade areas (FTAS) between the sub-region and the EU and USA coupled with the national diversification strategy, this study will look at the likely welfare effects of these economic changes on different households. To do this, both partial and economy-wide analytical tools/models will be used to examine the likely effects of changes in trade policy on poverty reduction, etc.

Theoretical Review on Trade and Poverty

Trade policy may be understood as the overall structure of incentives to produce and consume and hence import or export tradable goods and services (Helleiner, 1998:588). It can be in the form of outward-looking or inward-looking policies. According to Paul P. Streeten (M.P.Todaro; 1997), outward-looking policies encourage not only free trade but also the free movement of capital workers, multinational enterprises and an open system of communications.

By contrast inward-looking policies stress the need for LDC's to evolve their own styles of development and to control their own destiny. This means policies to encourage indigenous "learning by doing" in manufacturing sectors (including primary sectors such as agriculture) and the development of indigenous technologies appropriate to a country's resource endowments. According to proponents of inward-looking trade policies greater self-reliance can be accomplished only if you restrict trade, the movement of people and communications and keep out the multinational enterprises.

The Relationship between Overall Trade Policy and Poverty Reduction

The link between trade and poverty is a new area of study. Although the recent emphasis on poverty has spurred some initial research (e.g. Winters, 2000; and Ben-David, 2000), this is still mostly theoretical and few empirical investigations have been undertaken. There is consensus, however, that the essential precondition for sustained poverty alleviation is rapid economic growth. By providing incentives for an efficient allocation of resources, an open and transparent trade regime is an important precondition for broad-based and sustained growth. Thus, in the medium term, trade reform has an important role in poverty alleviation through its effects on the rate and sectoral pattern of growth.

In the short run, trade reform could have redistributive effects on income that can hurt the rich and the poor alike. Trade theory has generally assumed that lump sum transfers are possible from winners to compensate the losers (e.g. Dixit and Norman, 1980; and Corden, 1974). However, lump sum redistribution of the gains from trade is hardly ever practical, let alone politically feasible. Thus, although trade reforms may raise average incomes in the medium term, in the short term some segments of society may suffer losses. Because the poor or near-poor have fewer assets to protect them during economic hard times, they are less able to absorb adjustment costs than other segments of society. This justifies looking more carefully at the effects of trade liberalization on the poor.

Who are the poor? The simplest definition is that of income/consumption poverty, which defines people as poor if their access to economic resources is insufficient to acquire enough commodities to meet basic needs (World Bank, 2000; and Khan, 2000). This definition implicitly relies on the establishment of a level of income/expenditure that is necessary to acquire a basket of goods that satisfies basic needs (i.e., the poverty line). This traditional definition ignores many of the social and participatory aspects of poverty. However, it is a useful starting point for looking at the effects of changes in the economic environment from trade reform. Under this definition trade reform will increase poverty if it results in a greater number of individuals or households with income falling below the poverty line.

There are other attributes of poverty that are important to consider in relation to the effects of trade reform. First, the poor lack physical, financial, or human capital and are therefore much

more vulnerable to economic fluctuations or sudden changes in the economic environment (such as might come from trade reform). Second, there is evidence of considerable rotation of households into and out of poverty. To the extent that trade policy affects the determinants of these movements, it will have an effect on the number of poor (Winters, 2000). More important, severe shocks can turn transitory poverty into a permanent phenomenon. Even a transitory loss of income can cause the poor to lose opportunities to acquire human capital through education,

Third, the poor are not tightly linked to the formal economy (Lustig, 1998). They generally subsist on the urban informal sector or rural subsistence agriculture. Thus for a trade policy reform that seeks to improve the welfare of the poor, it is necessary that the effects on these sectors are not ignored.

The Links between Trade Liberalisation and Poverty

Trade liberalization can affect the welfare of the poor through a number of channels: (i) by changing the prices of tradable goods (i.e., lowering prices of imports for poor consumers and producers, increasing prices of exports for poor producers), and improving access to new products; (ii) by changing the relative prices of factors (skilled and unskilled labor and capital) used in the production of tradable goods and affecting the income and employment of the poor; (iii) by affecting government revenue from trade taxes and thus the government's ability to finance programs for the poor; (iv) by changing incentives for investment and innovation and affecting economic growth; and (v) by affecting the vulnerability of an economy (or subgroups within the economy) to negative external shocks that could affect the poor. Because of their general equilibrium nature, these channels of transmission are interdependent and subject to influence from many other types of policies and economic events. In addition, some of these effects take place immediately and others work only over longer periods. This makes the link between trade liberalization and poverty extremely complex, and thus drawing generalizations about these links very difficult.

Social Accounting Matrix

In this paper the 1996/97 Social Accounting Matrix (SAM)-based model for Botswana which provides a complete, consistent and comprehensive record of the interactions between actors in an economy, will be used to capture linkages between different sectors of the economy that allows the computation of indirect as well as direct effects of an exogenous shock in the economy such as the anticipated changes in international prices for agricultural goods. Further, the SAM-based model will be used to identify the sources of income of the various households in both rural and urban areas and examine their links to traded sectors and the rest of the world/international trade. Opportunities for and threats to improved income/poverty-reduction and sustainable environment will be explored following regional and global trade liberalization.

In a SAM framework it is important to address the question of which accounts should be considered exogenous and which endogenous. For this research, it is logical to consider the government, the rest of the world, and the capital account as exogenous and the factors, households and activities's accounts as endogenous. This partitioning is given by table 2.

If a certain number of conditions are met-in particular, the existence of excess capacity and unemployed labour resources- the SAM can be used to estimate the effects of exogenous changes and injections, such as an increase in the demand for a given production activity, government expenditures or exports on the whole system. As long as excess capacity prevail, any exogenous change in demand can be satisfied through a corresponding increase in output without having any effect on prices.

Table 1: The partition of the SAM to get a model structure

	Expenditures		
Receipts	Endogenous Accounts	Exogenous Accounts	Totals
Endogenous Accounts	$N = A_n \hat{y}_n$ (1)	X	$y_n = n + x$ $= A_n y_n + x$ (3)
Exogenous Accounts	$L = A_l \hat{y}_n$ (2)	R	$y_x = l + Ri$ $= A_l y_n + Ri$ (4)
Totals	$y'_n = (i' A_n + i' A_l) \hat{y}_n$	$y'_x = i' X + i' R$ (9)	
	$\therefore i' = i' A_n + i' A_l$ (8)	$\therefore A_l y_n - X' i = (R - R') i$ (10)	$\lambda' a y_n = x' i$ (11)

Source: Pyatt & Round: 1979

$A_n = N \hat{y}_n^{-1}$ = Matrix of average endogenous expenditure propensities; i.e., the square matrix of the coefficients of the endogenous accounts.

$A_l = L \hat{y}_n^{-1}$ = matrix of average propensities to leak; That is, the coefficients in the rows of the exogenous accounts. These leakages are, for example, the induced demand for imports, government revenues, and savings.

$Ni = n$ = vector of row sums of $N = A_n \hat{y}_n \rightarrow n = A_n y_n$;

$Xi = x$ = Vector of row sums of X ;

$Li = l$ = Vector of row sums of $L = A_l \hat{y}_n \rightarrow l = A_l y_n$;

$\lambda'_a = i'A_l$ = Vector of column sums of A_l , i.e., the vector of aggregate average propensities to leak;

N = the matrix of SAM transactions between endogenous accounts;

X = the matrix of injections from exogenous into endogenous accounts;

L = the matrix of leakages from endogenous into exogenous accounts;

R = the matrix of SAM transactions between exogenous accounts.

Thus, for any given injection anywhere in the SAM, its influence is transmitted through the interdependent SAM system. The total direct and indirect effects of the injection on the endogenous accounts, i.e., the total outputs of the different activities and the incomes of the various factors and socio-economic groups, are estimated through the multiplier process.

By definition (the materials balance relationship) and from (3) we get a matrix of SAM multipliers:

$$\begin{aligned}
 y_n &= A_n y_n + x \\
 y_n - A_n y_n &= x \\
 (I - A_n) &= x \\
 y_n &= (I - A_n)^{-1} x \\
 y_n &= M_a x
 \end{aligned} \tag{12}$$

This can also be applied to leakages

$$\begin{aligned}
 l &= A_l y_n \\
 &= A_l (I - A_n)^{-1} x \\
 &= A_l M_a x
 \end{aligned} \tag{13}$$

And the equilibrium condition of Keynesian macroeconomics, 'injection equal to withdrawals', is given by:

$$[i'A_n + i'A_l] \hat{y}_n]' i = y'_n i = i'(A_n y_n + x)$$

Note that to derive and illustrate the underlying logic of this methodology, we maintain the previous assumption that the only three accounts that are endogenously determined are activities, factors and households, while Government, capital and the rest of the world are exogenous.

The Results of the SAM- income and Price Multipliers

There are two SAM multiplier results that this paper presents in order to capture the effects of global trade liberalization on poverty. The first covers changes in income through improved export earnings following enhanced market access especially in the industrialized countries. Improved market access is very important for developing countries as currently due to tariffs, subsidies and other trade barriers like technical standards, they cannot increase their export earnings for development hence the ongoing WTO negotiations to open up markets, etc.

While it is true that the poor do not have resources to benefit from improved market access, there have limited livestock (cattle and goats) that they could export as meat subject to improved management, skills, productivity, access to infrastructure, etc. Further, Botswana also harvests veldt products such a mophane worm, which is exported, to several countries including South Africa as food and livestock feed. An improved marketing and environmentally benign harvesting system coupled with better packaging and distribution could enhance the incomes of several households in the Central district where most phane is harvested. Of course prevailing sanitary and phyto-sanitary (SPS) measures should be observed to regulate phone trade. Further through direct employment in tourism and textiles some of the poor households can benefit if they are also empowered with knowledge and skills. Tourism and textiles are currently receiving foreign earnings from exports.

To analyse the effects of changes in export earnings in the meat, phane, tourism and textiles on poverty, we will use the fixed- price income multiplier based on the 1996/97 SAM. The fixed-price income multiplier assumes that prices do not change when income varies. As indicated earlier some accounts are treated as exogenous while others are endogenous. Conventionally, government, capital and the rest of the world (international trade) are treated as exogenous accounts or variables while factors (labour and capital), households and other institutions and activities are endogenous accounts. This means the change in income or export earnings is introduced as a shock into endogenous accounts while prices are kept constant. The external policy shock here is the rest of the world.

Besides, the fixed-price income multiplier, this study will also evaluate the effects of changes in tariffs on poverty. In this case, the poor in Botswana are faced with import tariffs for food, clothing, etc that Botswana and other SACU members impose on competing imports from third countries. As indicated in Chapter 3 on partial equilibrium analysis, SACU import duties tend to protect large-scale producers while poor households suffer. Trade liberalization also implies reduction of import duties by countries such as Botswana to improve, among others, market access for goods from outside SACU. To capture the effects of price changes following tariff reduction or liberalization, a price multiplier analysis is used. Like the fixed-price income multiplier, government, capital and the rest of the world are still treated as exogenous accounts through policy shocks are imposed on endogenous accounts (factors,

households/institutions and activities). Below we analyse the results of the two SAM multipliers following global trade liberalization.

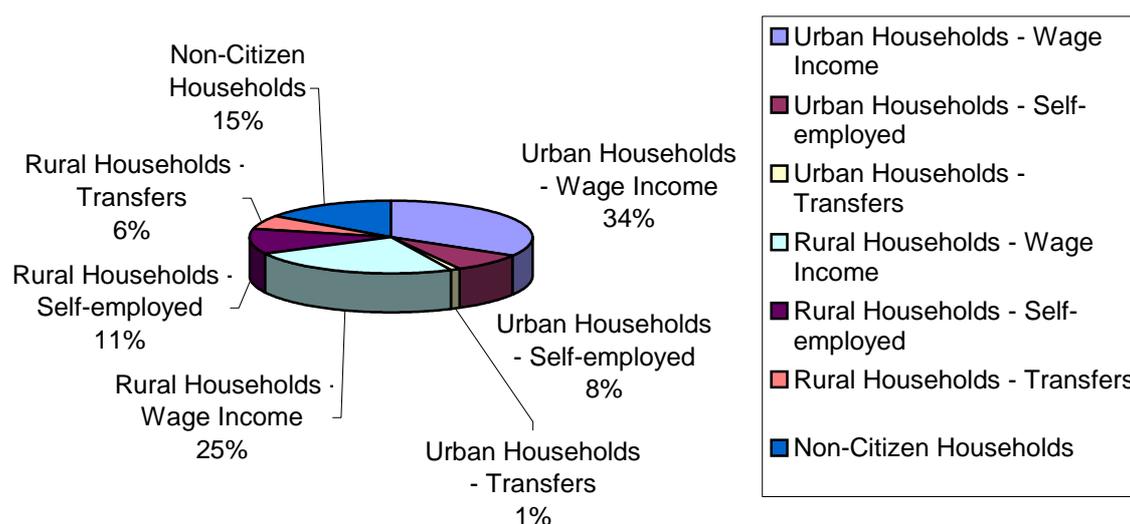
Results of the Fixed-price Income Multiplier Analysis

Effects of improved Beef export earnings on Poor Households

In the 1996/97 SAM there are seven types of households of which six are citizen while the last type is for non-citizen. Among the six citizen-type households there are three in urban areas based on, wage-income, self-employment and transfers. In the rural areas we also have the same three types of households based on wage-income, self-employment and transfers. Households whose income is based on transfers are considered poor in this study. Households whose income is based on transfers in both rural and urban areas altogether account for just 7 percent of total household income while the waged-based families in both areas(urban and rural) received about 59 percent of total income.

Further poor households spent at least 30 percent of their income on food, clothing, etc the bulk of which is imported hence the critical role of global trade liberalization to improve income and food security for the poor. The picture during the 1993/94 SAM was hardly different from the 1996/97 SAM. Consequently, in this study special interest will be paid on how trade liberalization affects households whose income is based on transfers in both urban and rural areas. Further, poor households are characterized by low levels of formal education and skills (NDP 9, 2003).

Figure 1: Share of total Household Income by Household type



When beef export earnings increased by 10 percent due to improved market access globally, we identified the following effects at factor, household and activity levels.

Factor Level:

Except for mixed income which registered a 2 percent increase in income after a 10 percent increase in beef export earnings, all other factors recorded less than 1 percent increase in income. Mixed income represents factor income for households that depend on informal sector income in this particular case .all employed workers including gross operating surplus or return to owners of capital only witnessed less than 1 percent increase in income after a 10 percent increase in beef export earnings.

Household Level:

Among households, it is only the self-employed households based in both urban and rural areas that experienced about 1per cent each increase in their income after a 10 percent increase in beef export earnings. Other households gained less than 1 percent increase in income after an increase in beef export earnings. Self-employed households own cattle and therefore it is not surprising that an increase in beef export earnings also affects them significantly. Poor citizen households in both urban and rural areas whose income is from transfers did not benefit from improved beef export earnings as they do not own cattle. About 45 percent of rural households do not own cattle in Botswana(CSO, 2002). This means poverty alleviation in Botswana will not necessarily benefit from improved beef market access. Botswana has been exporting beef for more than four decades and has indeed benefited from premium beef markets under the EU-ACP trade agreement but this does not seem to have structurally improved the welfare of the poor (SAMs for 1992/93, 1993/94 and 1996/97). Consequently, as rightly advocated by most developing countries, global trade liberalization should include development, food security, poverty reduction, economic growth to generate employment, investment, etc hence the WTO-Doha Development Agenda (WTO, 2001).

Activity Level:

Following the 10 percent increase in beef export earnings, there are activities whose output/income increases. As expected meat processing witnesses a 5.7percent increase in output/income after beef earnings have improved while cattle rearing in both traditional and free-hold area record each about 2.7 percent increase in income or output after an increase in beef export earnings. Other farming activities as well as, dairy production, gathering and hunting just gain about 1 percent in income. The increase in income or output of livestock-related activities including meat processing following in improvements in beef export earnings shows income and demand linkages in the economy. Other several activities witness an increase in income or output but the gain is less than 1 percent. As the SAM captures the circular flow of income and expenditure in an economy, an increase in beef export earnings positively affects several activities in the economy even though some experience output/income increase less than 1 percent.

Improved Tourism export earnings on Poor Households

Government has identified tourism as an important sector for economic diversification and employment creation especially in the rural areas, which could possibly contribute to improving incomes of the poor if unskilled personnel are employed. Some communities in Botswana have entered into agreement with tourist operators to view game in their areas at negotiated fees. The fees are to be used by the community for development. Further, tourism export earnings are among the top four sources of foreign exchange in Botswana. We now examine the effects of a 10 percent increase in tourism export earnings on factors, households and activities in Botswana.

Factor Level:

Among factors, both employees and gross operating surplus witness less than 1 percent increase in income after a 10 percent increase in tourism export earnings. This means very limited income and demand linkages with tourism sector and that the sector may not contribute significantly to reducing unemployment among the unskilled.

Household level:

All households experienced less than 1 percent increase in income following a 10 percent increase in tourism export earnings. This once again shows very limited income and demand linkages between the tourism sector and household welfare. The poor households are therefore not likely to benefit from a booming tourism industry despite the government commitment to this sector. As a relatively as a superior good, tourism requires higher disposable income for households to benefit hence the limited participation by households based on income transfers.

Government has come up with financial assistance schemes such as Citizen Entrepreneurial Development Agency (CEDA) to empower citizens to participate in sectors like tourism. However, given the relatively capital intensive nature of tourism it is unlikely that poor households will benefit from the expansion of this export led industry.

Activity level:

Among activities, hotel and restaurants, trade, transport and business services benefit from an increased tourism export income. As expected hotels and restaurants witness at 6.2 percent increase in their income after a 10 percent increase in tourism export income. Other activities only witness less than 1 percent increase in output/income. This also shows very limited inter-industry income and demand linkages in the tourism sector. Hopefully the government's CEDA programme will help strengthen these linkages to benefit among others the tourism industry. For instance, sectors like the food, agricultural, transport and business sectors are normally expected to benefit from a booming tourism industry but this is not the

case in Botswana. Possibly programmes like CEDA could help develop strong linkages between tourism and the rest of the economy.

Effects of improved Textiles export earnings on Poor Households

The textiles industry in Botswana is currently benefiting under the preferential US-Africa trade initiative through which exporters are exempted from duty. Further, the industry has over the years been identified as one of the important manufacturing activities for economic diversification, and as a result the sector has benefited from public financial support. Besides, the industry is considered as a possible source of employment especially among unskilled and semi-skilled persons who constitute the largest number of the unemployed people in the country. It is currently estimated that about 20 percent of the 15-60 age population or labour force is unemployed (NDP 9, 2003). We examine the effects of a 10 percent increase in textiles export earnings on poor household welfare. It is assumed that as the textiles industry is likely to employ unskilled persons, possibly the poor households could benefit.

Factor Level:

Among workers, an increase in textiles export earnings all witnessed very insignificant income improvements (less than 1 percent). Textiles are expected to generate additional employment opportunities especially for the unskilled members of the labour force. This result shows very limited positive effect on employment including unskilled workers.

Household level:

All households witness less than 1 percent increase in income after a 10 percent increase in textiles export revenue. For the households whose income is based on transfers once again, as the poorest families, they do not benefit from global export market access primarily because they lack resources and skills. As wage income is very important among households, improved access to skills and resources could enable members from poor households to benefit from sectors such as textiles.

Activity level:

While the textiles industry records a 9 percent increase in income after a 10 percent increase in export earnings, other activities only register less than 1 percent increase in output/income. It is evident that in general, the textiles industry has relatively weak linkages with several sectors in the domestic economy. Assuming the industry is globally competitive, it is possible to generate more income-demand linkages if existing trade distortions and technical barriers are reduced/removed while productivity is enhanced. As a result public goods like education, infrastructure, health, technology/research, etc will need to be developed for the textiles industry to be competitive and for the poor households to benefit.

It should be remembered that import tariff reduction in this study refers to those of SACU as Botswana is a signatory of the customs agreement since 1969. The SACU agreement has since been re-negotiated and new trade dispensation since 2002 is in place with a Secretariat, Council of Ministers to make decisions on tariffs, etc. Botswana like other SACU or developing countries are expected to reduce tariffs to improve market access to developed and developing countries as part of the WTO provisions. Below we examine the effects of import tariff reduction on poverty at factor, household and activity levels. Government, capital and the rest of the world are still treated as exogenous accounts from which policy shocks are imposed on endogenous accounts(factors, households and activities).

Results of the Price Multiplier Analysis

Effects of Tariff reduction on Beef on Household Welfare

Beef is one of the agricultural products whose bound and applied import tariff rates are high in SACU because the commodity is classified as sensitive because of its food security and economic linkages in the member countries. Other sensitive products are dairy, maize, wheat and sugar. Currently protein malnutrition among the under five year olds is very high in Botswana and yet the country is self-sufficient in meat products(beef, sheep, goat and chicken). Poor households in particular cannot easily access meat products because of the high domestic cost and import duties. We now examine the effects of a 10 percent reduction in beef import duties on factors, households and activities.

Factor level:

Among citizen workers, professional, technical, administrative, managerial, clerical, skilled and unskilled personnel benefit from a 10 percent tariff reduction in beef import duties. Specifically their food expenditure declines by 1 percent following the reduction in SACU beef import duties. Other citizen workers only witness very insignificant(less than 1 percent) decline in food expenditure. A decline in food expenditure is important especially for workers as this could minimize the demand for higher real wage increase. Mixed or informal sector income also declines by 1 percent following an import tariff reduction in beef. As import tariffs decline, every thing being equal, so does the domestic price of beef which reduces income for those who market the commodity.

Household level:

As indicated earlier, poor households in particular spend a sizeable amount of their disposable income on food. Following a 10 percent import tariff reduction on beef, all citizen households enjoy a 1 percent decline in their food expenditures. Citizen households depended on income transfers also benefit from an import reduction on beef. The benefit by poor households from tariff reduction is indeed very necessary for them to increase their per capita protein consumption which currently is low especially among children(NDP 9, 2003).

However, it is observed that a 10 percent tariff reduction in imported beef only leads to a modest 1 percent decline in household food expenditure. Part of the reason for the low decline in food expenditure could be poor price transmission due to imperfect competition in the beef industry and allied industries (transport, services, etc). Consequently, an effective competition policy to regulate the behaviour of firms is critical for poor households in particular to benefit from global trade liberalization.

Activity level:

Following a 10 percent reduction in beef import tariff traditional cattle and other agricultural primary production witness a 1 percent decline in output as domestic prices are adversely affected. Specifically, the domestic price of primary livestock related production including cattle farming declines as duties on beef are reduced. Beef import duties protect both primary cattle producers as well as beef manufacturing firms. This could reduce the relative profitability of cattle and beef production as beef imports improve their competitiveness against local commodities.

Similarly, domestic meat processing faces two effects. For the processing beef manufacturing industry using local primary inputs, its output/income will decline by about **10 percent** because the price is correspondingly by a decline in beef import duties. However, for the local meat processing using imported beef as a raw material, an import duty reduction on the raw material constitutes a decline in the cost of production by a **10 percent**. As currently Botswana does not allow the importation of beef for use by the domestic meat processing, it means a **10 percent** decline in beef import duties directly reduces the output/income of the local meat processing. The current SACU/Botswana beef import duty protects the local beef industry hence a reduction/removal of a duty directly reduces the income of this industry.

Effects of Tariff reduction on Dairy on Household Welfare

Dairy products are classified as sensitive products under Botswana/SACU trade policy. Botswana heavily depends on dairy imports as the country is generally not suitable for dairy industry unless cheaper feed is identified. The most consumed dairy products in the country are concentrated/powdered, fresh milk and butter. Currently within SACU, Botswana and other SACU developing countries are allowed to import these dairy products for their domestic use under a free-duty system provided the products are not re-exported to South Africa. We examine the effects of an import reduction on concentrated/powdered milk on household welfare.

Factor level:

Citizen professional, technical, administrative, clerical, skilled and unskilled personnel experience a **1 percent** decline in food expenditure after a 10 percent import duty reduction in concentrated milk. Dairy products are an important protein source in Botswana and this is also true of working population. Like in the case of beef import duty reduction, a decline in food expenditure could directly benefit industrialization by reducing the need for increasing wage rate as a food budget share is very significant especially among the low-income workers.

Household level:

All citizen households both in the urban and rural areas witness a **1 percent** decline in their food expenditure following a 10 percent reduction in dairy import duties. The decline in food expenditure especially for the poor households depended on income transfers is necessary for them to increase per capita food consumption. Like in the beef case, the low decline in food expenditure could be due to poor price transmission or simply limited market competition. A policy/law on competition is about to be established to protect households as well as the economy at large.

Activity level:

Several activities experience a decline in their cost of production following a 10 percent reduction in dairy import duties. This is due to circular flow of expenditure in an economy as captured by a SAM. Traditional, free-hold cattle farming, other farming, bakery, chemicals, meat processing, village industries and beverages witness a **1 percent** decline each in production costs as the dairy industry (concentrated milk industry) is more liberalized. Evidently in a food deficit country like Botswana with significant sectoral linkages, a reduction of production cost in a competitive economy is expected to benefit the country and contribute to welfare improvement.

In as far as the dairy industry is concerned, a 10 percent reduction in dairy import duties leads to a **13 percent** decline in production costs. A reduction in costs in the dairy industry is necessary to enhance the competitiveness of the sector. It is in the long-term interest of Botswana to develop value-adding industries that can over time compete globally and regionally otherwise prolonged could tax the economy and hurt the poor households, etc.

Conclusion

In a nutshell, trade liberalization through tariff liberalization in general has more potential benefits to the poor than improved export market access. Tariff reduction in food products like beef, dairy etc benefit the poor very significantly while increase in export earnings has limited effects. The results of the **income multiplier analysis** show limited impact on poverty compared to those of the **price multiplier analysis**.

However, the results also point to the limitation of trade liberalization in addressing poverty alleviation. More specifically there is a need for the development and implementation of complimentary policies to reduce market failures and poor price transmission normally caused by inadequate institutional and legal support systems. Further, poor households will also need to be empowered with skills, education, financial resources, negotiation skills and be effectively involved in policies and programmes designed for their welfare.

It is therefore difficult to see how Botswana would be able to overcome all the economic and social challenges it would face at the end of a preferential trade arrangement with the EU and AGOA with the USA. Botswana has one of the highest HIV/AIDS infection rate in the world. This poses a threat to continued economic growth in Botswana, mostly because of its impact on the labour force, but also because of its possible impacts on savings and investment. A study carried out by the UNDP (2000) on the Socio-Economic impact of HIV/AIDS in Botswana showed that, HIV/AIDS would reduce the growth rate of GDP by 1.5% such that after 25 years the economy would be 31% smaller than it would otherwise have been.

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