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HIV/AIDS and South Africa's Agricultural Sector: Impact on Food Demand*

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Abstract

South Africa has one of the highest cases of HIV infections in the world. With the epidemic continuing at an alarming rate, the government of South Africa has regarded the HIV/AIDS epidemic a developmental and socio-economic policy issue. The study explores the impact of HIV/AIDS on food demand in South Africa. The food demand function is specified and estimated using time-series data for the period 1970 to 2000. Simulation analysis is performed to examine the impact of 'with AIDS' and 'without AIDS' scenarios. The empirical results indicate that the HIV/AIDS epidemic could have a major impact on food demand patterns for selected food items in South Africa.

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1. Introduction

The HIV/AIDS epidemic is evolving at an alarming rate in Sub-Saharan Africa. Over 36.1 million people are infected with HIV/AIDS worldwide, about 71 percent live in Sub-Saharan Africa (FAO, 2001). In the Sub-Saharan African region, it is estimated that 23 million adults and children are living with HIV/AIDS, of which 18 percent live in South Africa. In 1996, there were approximately 2 million HIV infected people in South Africa. This figure has more than doubled to over 4 million in 2001. South Africa has the highest level of new cases in the world and stands at the brink of an AIDS crisis. Recent estimates indicate that more than 500,000 South Africans have died of AIDS-related causes. By 2015, this number is projected to grow by a factor of 20 to more than 10 million deaths. By 2008, life expectancy in South Africa is forecast to fall from its pre-epidemic high of 65 years to only 40 years (Arndt and Lewis, 2000).

A common feature of the structure of developing economies is the declining trend of the contribution of agriculture to Gross Domestic Product (GDP). In South Africa, agriculture, which includes all economic activities from the provision of farm inputs, farming and value adding, remains an important sector of the South African economy (DoA, 2001); impacting on household incomes, food security and overall economic growth. In 1965, the contribution of the agricultural sector (which includes agriculture, forestry and fishing) to the economy's gross value added was 4.8 percent. This declined to 4.6 percent by 1997 (Statistics South Africa, 1998). In 2001, primary agriculture accounted for about 4.5% of the GDP of South Africa while the larger agro-food complex accounts for another 9%. Agriculture employs about 1 million workers, accounting for about 11% of total employment in the formal sector in South Africa (DoA, 2001).

Despite the declining trend in the contribution of the agricultural sector to Gross Domestic Product, agriculture still remains an important sector to the South African economy. More than half of the provinces and about 40% of the country's total population are dependent on the agricultural sector (DoA, 2001). Recent agricultural policy reforms in South Africa have had a dramatic impact on agricultural production and consumption. The market-oriented food policies and liberalised trade policies of the government have given consumers greater freedom and alternatives in their consumption decision-making.

While the impact of HIV/AIDS on the South African economy is well documented in the literature, the impact on food demand is limited. The HIV/AIDS pandemic will influence the rate of economic growth and structural changes, including changes in household food consumption patterns in South Africa. (Arndt and Lewis 2001). The intent of this research is to expand the understanding of the nature and extent of these structural changes with respect to food demand in South Africa. More specifically, we utilise a simple econometric model to estimate the relationship between demand of some selected food items and prices, and per capital real income. The results indicate that, with the spread of HIV, the demand of rice, pork, beef and milk is likely to decline while that of maize, wheat, mutton, chicken and eggs will rise. From the empirical estimation, policy makers should stimulate growth in food items for which there is an expected increase in consumption.

The article is composed of five sections beyond the introduction. In the next section, we examine the factors influencing the spread of HIV in South Africa, followed by a brief outline of the government's policy on HIV/AIDS. Next, we analyse the likely impact of HIV/AIDS on food demand. The article closes with a summary of empirical results and some concluding remarks.

2. Factors influencing the spread of HIV/AIDS in South Africa

This section discusses the main factors identified as influencing the spread of HIV/AIDS in South Africa. The factors include mainly poverty and malnutrition; poor sanitation and access to health care; population and labour migration; pricing strategies of pharmaceutical companies and the attitude of the Government of South Africa.

Poverty and malnutrition are major factors contributing to the spread of HIV/AIDS. Despite being an upper-middle-income country, the majority of South African households are poor with monthly income levels of below US\$200. Malnutrition increases the susceptibility to other infections and consequently worsens the severity of the HIV/AIDS disease, which in turn results in a further deterioration of nutritional status of households. This is indicated and suggested in a study of households in Uganda, where it was found that food insecurity and malnutrition are the most immediate problems faced by female-headed AIDS-affected households (FAO, 2001). Since the return to democracy in 1994, the importance of reducing poverty, malnutrition and inequality has been on the forefront of policies implemented by the

new government of South Africa. Progress has been in the percentage of people who are regarded as the poorest of the poor; it has dropped from about 20 percent in 1994 to roughly 5 percent in 2001. The number of workers earning more than US\$600 per month has also increased from 10 percent to 18 percent during this time (Hawthorne, 2002).

Poor sanitation and lack of access to health care and medicines are other factors contributing to the spread of HIV/AIDS in South Africa. The existence of undiagnosed and untreated sexually transmitted diseases is cofactors in the transmission of HIV (Poku, 2001). In recent times, attempts have been made by the government to address the poor sanitation problem. Water delivery has improved by 85 percent and half of rural homes now have access to electricity (Hawthorne, 2002).

Other factors contributing to the spread of HIV/AIDS in South Africa is the rise in population mobility and labour migration from rural to the urban areas and also from neighbouring countries in search of jobs and better prospects. This has facilitated the spread of the disease in South Africa. Rural poverty contributes to labour migration, which in most cases the husband or male of the household leaves in search of employment. A study conducted in rural Kwa-Zulu Natal indicated that 13 percent of women whose husbands worked away from home for about two-thirds of the time were infected with HIV (Poku, 2001). In addition, in the agricultural sector, the cost price squeeze as a consequence of the falling output price of agricultural products and the rising input price, has meant that most workers on the farm in rural areas migrated to the urban areas in search for jobs. A study of urbanisation in South Africa revealed that the annual percentage growth of urban population rose from 2.3 percent in 1975-79 to 2.5 percent in 1980-89, but declined to 2.0 percent in 1989-96 (World Bank, 1998). In the early 1990s, when cross-border migration to South Africa was relatively low, the HIV infection rate was less than 1 percent. The migration into South Africa from neighbouring countries was principally due to the worsening economic and political conditions in those countries that brought with it migrants with HIV/AIDS. Labour migration is particularly high in the mining and trucking sectors (AEGIS, 2001); the HIV prevalence rate per 100 workers is expected to range between 23 percent and 26 percent by 2010 (ING Barings, 2000). Coupled with this is the dislocation of populations due to war and natural disasters resulting in border migration. Unable to find employment, these migrants resort to prostitution causing a further spread of the disease.

Another contributing factor is the pricing strategies of large pharmaceutical companies in developing countries, including South Africa. The retail margins of pharmaceutical companies are high due to cartel-like arrangements making it extremely expensive for those infected with HIV/AIDS to acquire the drugs. Compounding the problem is the inadequate health care infrastructure to monitor the distribution and dosage of AIDS drugs in Sub-Saharan African countries, including South Africa.

There is evidence to suggest that the South African government has been hostile to the acceptance of free AIDS drugs from pharmaceutical companies (Reekie, 2000; Bloom, 2001). As Bloom (2000) notes, in 1999 a German manufacturer offered to supply a free drug called nevirapine to South Africa, a drug proven to be capable of reducing the transmission of HIV from pregnant mothers to their unborn infants by 50 percent. The Government of South Africa rejected this offer, as the further research needs to be conducted. However, in recent times, there has been a change in political stance by the Government of South Africa that is deemed to be in the right direction.

3. Government Policy on HIV/AIDS in South Africa

In 1992, the government established a committee with the task of reviewing the current status of HIV/AIDS in South Africa. The committee's recommendations led to the development of a National AIDS Plan in 1994. The Plan was formally launched in 2000 under the National AIDS Strategic Plan for South Africa. The aims of the Strategic Plan are to reduce the number of new HIV infections and to curtail the impact of HIV/AIDS on society. The Strategic Plan focuses primarily on four areas: (1) Prevention; (2) Treatment, Care and Support; (3) Human and Legal Rights; (4) Monitoring, Research and Surveillance (NDH, 2000). Despite its merits, the Strategic Plan is criticised on two fronts; first it is too broad and lacks focus, and second, the plan provides no mechanisms for monitoring and evaluating the progress of the programme (Grimwood, et. al. 2000).

In the 1990s, expenditure on HIV/AIDS programmes had been low relative to health expenditure and total government expenditure. The national health budget accounts for about 11 percent of the overall government budget. Research indicates that national government spending on health and social services are likely to increase significantly over the next few years as the spread of HIV/AIDS accelerates. The public sector provides almost free health care to about 80 percent of the nation's population.

This will certainly put a drain on the government's resources. Furthermore, in early 2000, in recognising the impact of the epidemic on the economy, the South African government proposed an increase its expenditure on HIV/AIDS.

Table 1 below shows the trends projected for HIV/AIDS spending as a proportion of total health expenditure. Closely related to HIV/AIDS is the Tuberculosis (TB) disease. In the region of between 40 to 50 percent of TB patients are infected with HIV. Table 1 also shows the government's budgeted total health spending and expenditure on HIV/AIDS (including TB) for the period 2000-01 to 2004-05. From the table below, it can be seen that total funding for HIV/AIDS will reach almost R2 billion by 2004-05; almost 5 percent of total public sector health expenditure. The government's budgeting strategy for the National HIV/AIDS Programme attempts to mitigate the impact of HIV/AIDS, especially for the economically poor. The programme enables the recruitment of skilled health professionals, especially in rural areas. Provision is made for supporting children and youth affected by HIV/AIDS with the child support grant. Funding for life-skill programmes in schools is made available in an attempt to educate and train teachers and learners. Voluntary testing and counselling and related programmes are available. Funding for the mother-to-child prevention programme was projected to reach R155 million annually by the end of 2002. Care and support strategies, which comprises of home-based care, step-down care and community-based support and care are projected to increase substantially from R8 million in 2000-01 and is expected to reach R158 million per annum by 2004-05.

Table 1. Government of South Africa's expenditure on the health sector and HIV/AIDS

Expenditure	2000/01 (R bill)	2001/02 (R bill)	2002/03 ^a (R bill)	2003/04 ^a (R bill)	2004/05 ^a (R bill)
Total health expenditure	28.6	31.7	34.0	36.6	38.7
HIV/AIDS ^b	0.214	0.343	0.997	1.326	1.8
Share of HIV/AIDS in total health expenditure	0.75%	1.1%	2.9%	3.6%	4.6%

Note: ^aFigures represent estimates.

^bFigures represents expenditure on HIV/AIDS including health conditional grants, education conditional grants and social development conditional grants to provinces, and NDH.

Source: 2002 Budget review, mid-term expenditure estimates.

The experience of Uganda and Thailand suggest that high level of political commitment and strong government support are capable of reducing HIV/AIDS prevalence. Hence, South Africa needs a broad based approach and a strong political leadership to collaborate with non-governmental organisations, religious groups, local communities and people living with HIV/AIDS. In Botswana, the government took a similar stance in the fight against HIV/AIDS to that of Thailand and Uganda. This was achieved not only by getting the government to prioritise prevention strategies for HIV/AIDS in critical areas and providing more public resources to HIV/AIDS programmes, but also by providing support to improve the implementation, monitoring and evaluation thereby mainstreaming the management of HIV/AIDS in Botswana (UNDP, 2002).

4. Methods and Procedures

4.1. *Brief overview of the literature*

A number of studies have estimated the macroeconomic impact of the HIV/AIDS epidemic on the South African economy. Research evidence suggests that the HIV/AIDS epidemic is likely to have severe effects on labour supply and productivity, and increased aggregate costs to society; especially costs relating to medical care and funeral expenses. Lower investment and savings are expected, which in turn will contribute to a reduction in the nation's gross domestic product (GDP) (Bollinger and Stover, 1999). According to BusinessMap SA, the AIDS epidemic has increased the risk profile for investment in South Africa; foreign investors expect premium rates of return of between 15 and 20 percent. Arndt and Lewis (2000) developed an economy-wide Computable General Equilibrium (CGE) model to estimate the impact of HIV/AIDS epidemic on the South African economy. The model projects that population growth is expected to slow down considerably (Arndt and Lewis, 2000) and real GDP per capita to increase (Balyamujura, et. al., 2000). Arndt and Lewis (2000) find evidence that household spending patterns will shift towards health and related expenditures inducing higher government spending on health, education and social services. The Agricultural sector is a key sector in the South African economy, especially in terms of its contribution to Gross Domestic Product (GDP) and employment. In 1998, agriculture (including forestry, fishing and hunting) accounted for 3.3 percent to GDP and employed about 1.4 million workers.

According to Topouzis (2000) agricultural sectors in developing countries tend to be disproportionately affected relative to the industry and service sectors by the impact of HIV/AIDS epidemic. He also maintains that it is difficult to isolate and measure the impact of HIV/AIDS on agriculture because of the adverse effects other factors such as natural disasters. Two forms of agriculture exist in South Africa, namely a viable commercial sector and a poorer subsistence smallholder sector. It is estimated that there are over a million smallholders in South Africa (Fiscu, 2001). HIV/AIDS undermines agricultural systems and affects agricultural production, nutritional situation and food security of rural families. The disease also depletes both the human capital base through reducing the availability of labour skills and time. Household income that may be diverted to cover costs related to sickness and death (FAO, 2001).

The HIV/AIDS epidemic is having and will continue to have a significant impact on agricultural production if the spread is not curtailed. The consequence of labour shortage on agricultural output as described by FAO (2000) is summarised. Three examples illustrate how HIV/AIDS affects agricultural production. First, sickness and death of an adult can result in the inability of the household to cultivate all the land at its disposal resulting in the reduction in land area under cultivation. The allocation of household incomes to care for the sick, and often times resulting in the sale of livestock, which often represents a form of savings of households, leads to a decline in livestock production. A case study conducted in the United Republic of Tanzania revealed that one person in a household falling ill due to AIDS allocates 29 percent of household savings to take care of the ill individual (UNAIDS, 2002).

Second, the inability to maintain the labour force needed for the farming activities could lead to households abandoning their farms. Households may resort to growing less labour-intensive crops at the expense of cash crops that are labour intensive. This shift from cash-oriented production to subsistence production may result in a change in cropping patterns. There is also the likelihood of delay in farming operations such as tillage, planting and weeding and a reduction in the ability to control crop pests. Third, there is loss of agricultural knowledge and management skills since the head of households with the skills are dying leaving the unskilled labour in the family. Owing to the gender division of labour and knowledge, the surviving parent is not always able to transfer the skills of the deceased one (du Guerny, 1999; Topouzis, 2000). Fourth, HIV/AIDS also influences food security. The HIV/AIDS pandemic causes a reduction in labour productivity and supply, and the allocation of productive

time to care for the sick and for the mourning. It is estimated that in some parts of Africa, families mourn for up to 40 days. In rural areas where there is often lack of food, this exacerbates the poverty situation. The incidence of stunting increases among orphans, and household food demand in urban and rural areas declines when an adult dies. Due to the loss of labour, household food security are likely to reduce through an increase in the number of people to feed arising from caring for the sick and fostering children (du Guerny, 1999). AIDS-affected households in Ethiopia were found to spend between 11.6 and 16.4 mean hours per week performing agricultural duties, compared with a mean of 33.6 hours for AIDS-unaffected households (UNAIDS, 2002).

The incidence of HIV/AIDS has important implications for South Africa because of its effects on food demand and security, household expenditure, agricultural production and productivity. A number of studies (FAO, 1995, Evans, 1992, Gillespie, 1989) have been undertaken to examine the socio-economic impact of HIV/AIDS on rural households and their productive systems in some parts of Africa. Although interrelations between the HIV/AIDS epidemic and overall economic growth and development of a country have been acknowledged in the literature, the linkages to agriculture have received less attention because of the perceived notion that it is largely an urban disease. Recent studies suggest that the HIV/AIDS epidemic is spreading to the rural areas at an alarming rate.

In South Africa, few studies have examined the impact of HIV/AIDS on agriculture and rural societies. Given that the impact of HIV/AIDS on farming communities will differ from country to country (FAO, 2001), it is pertinent that we examine the impact of the epidemic on the agricultural sector in South Africa, and more importantly food demand patterns. Recent studies conducted in South Africa have indicated that the loss in agricultural labour due to HIV/AIDS will result in a reduction in agricultural production (Bollinger and Stover, 1999). Table 2 below shows the projected losses with regard to impact of HIV/AIDS on the agricultural labour force in a few African countries, including South Africa. Another study conducted in South Africa indicated that commercial farmers were not particularly concerned of the impact of HIV/AIDS epidemic on their labour force because they perceive unskilled workers to be relatively easily replaced (Simbi and Aliber, 2000). On the other hand, when considering the high rate of orphanage together with young adult mortality, labour supply in agriculture is likely to be adversely affected. Especially, in terms of the loss of agricultural knowledge, skills and practices that might not be easily replaced as is

commonly assumed (Topouzis, 2000). In an attempt to demonstrate the likely impact of HIV/AIDS on the rural workforce in agriculture, one may refer to the study conducted by Morris, et. al. (2000) on Sugar Mill workers in Kwa-Zulu Natal, South Africa. The study indicated that over an 8 year period in which the study ran there was a 5 percent death rate, 5.7 percent ill-health retirement among workers, and only 58 percent of those that were initially infected were still employed at the end of the study period. Given the high HIV prevalence, the impact of the HIV/AIDS disease on this segment of the agricultural workforce provides a proxy for the general agricultural workforce in South Africa. Labour losses in the agricultural sector will contribute to the decline in agricultural production and food insecurity.

Table 2: Impact of HIV/AIDS on agricultural labour force in the most affected African countries (Projected losses in percentages)

Country	Period	
	2000	2020
Namibia	3.0	26.0
Botswana	6.6	23.2
Zimbabwe	9.6	22.7
Mozambique	2.3	20.0
South Africa	3.9	19.9
Kenya	3.9	16.8
Malawi	5.8	13.8
Uganda	12.8	13.7
Tanzania	5.8	12.7
Central African Rep	6.3	12.6
Ivory Coast	5.6	11.4
Cameroon	2.9	10.7

Source: FAO/SDWP

It has been projected that per capita income will increase ‘with AIDS’ (Arndt and Lewis, 2000) and total expenditure on food will decline ‘with AIDS’ in South Africa in the future (Balyamujura, et. al., 2001). However, selected food items will be affected differently as a result of level of incomes, tastes and preferences, population

group, prices of substitute food items, prevailing world prices, and seasonal factors. The HIV/AIDS phenomenon represents both a demand-side factor influencing food consumption and supply-side factor influencing costs of production. Estimated future consumption will depend on future real prices, which in turn will depend on supply and demand elasticities (Nieuwoudt, 1998b). The relatively higher population growth rate projection for the Black population compared to the White population implies that food items consumed by Blacks are likely to increase in demand in South Africa in the future. It is further implied that the rural Black population in South Africa will be the most affected by the HIV/AIDS epidemic with respect to the consumption of certain food items and food security in general.

4.2 Empirical model specification

In order to examine the impact of HIV/AIDS on food demand for some agricultural food products, a demand function relating the quantity of food products consumed to own-price and competing prices, per capita real gross domestic product and time trend is specified and estimated using time series for the period 1970-2000. Natural logarithms were used to transform the variables used in the analysis. A simulation analysis was performed to examine the impact of ‘without AIDS’ and ‘with AIDS’ scenarios. Population estimates for the period 2003-2010 were derived based on ASSA projections, which indicates a decline in population by 4.3 percent in 2004 and 12 percent in 2009 due to HIV/AIDS (ASSA, 2000). Real gross domestic product (RGDP) growth for the period 2003-2010 were estimated following ING Barings projected estimates of a decline in RGDP ‘with AIDS’ scenario of 1.6 percent in 2004 and 3.1 percent in 2009 (ING Barings, 1999). Given that RGDP growth is expected to be higher than population growth during the period 2003-2010, the result will be an increase in per capita real GDP (PGDP) over this period.

The regression equation is specified as:

$$D_{it} = f(P_{it}, PGDP_t, T) \quad (1)$$

where

P_{it} = price of food item and where $i = 1, 2, \dots, 9$, is price of maize, wheat, pork, beef, mutton, chicken, milk, eggs, and rice, respectively;

$PGDP_t$ = per capita real GDP; and

T = time variable to capture trends in food consumption.

5. Results and Discussion

Table 3 below reports the estimated growth rates in the demand for food of some selected food products under ‘without AIDS’ and ‘with AIDS’ scenarios. The parameter estimates of the final model were consistent in sign with economic theory and are generally significant. The R²-adjusted (goodness-of-fit) measure range between 0.37 and 0.99. Based on the results of this study, the estimated difference in growth rates of the two scenarios indicates the following points. Figure 1 indicates the expected average net growth rates for food demand of some agricultural food products in South Africa for the period 2003 to 2010. The empirical findings are summarized.

Table 3: Growth rates in the demand for selected food items in South Africa

Year	Maize	Wheat	Rice	Pork	Beef	Mutton	Chick	Milk	Eggs
Without AIDS									
2003	0.74	3.64	6.15	1.70	0.03	1.09	7.21	1.34	4.15
2006	0.47	2.83	6.76	1.90	0.14	0.20	6.73	1.35	3.98
2010	0.53	3.02	6.62	1.85	0.11	0.40	6.84	1.34	4.02
<i>Average*</i>	0.52	2.97	6.65	1.86	0.12	0.35	6.82	1.35	4.01
With AIDS									
2003	1.33	5.44	4.83	1.25	-0.21	3.10	8.28	1.32	4.53
2006	1.10	4.73	5.35	1.43	-0.12	2.31	7.86	1.33	4.38
2010	1.00	4.43	5.57	1.50	-0.08	1.97	7.68	1.33	4.32
<i>Average*</i>	1.15	4.90	5.23	1.39	-0.15	2.49	7.96	1.33	4.42
Difference in growth rates*									
	0.64	1.93	-1.42	-0.48	-0.26	2.14	1.14	-0.02	0.40

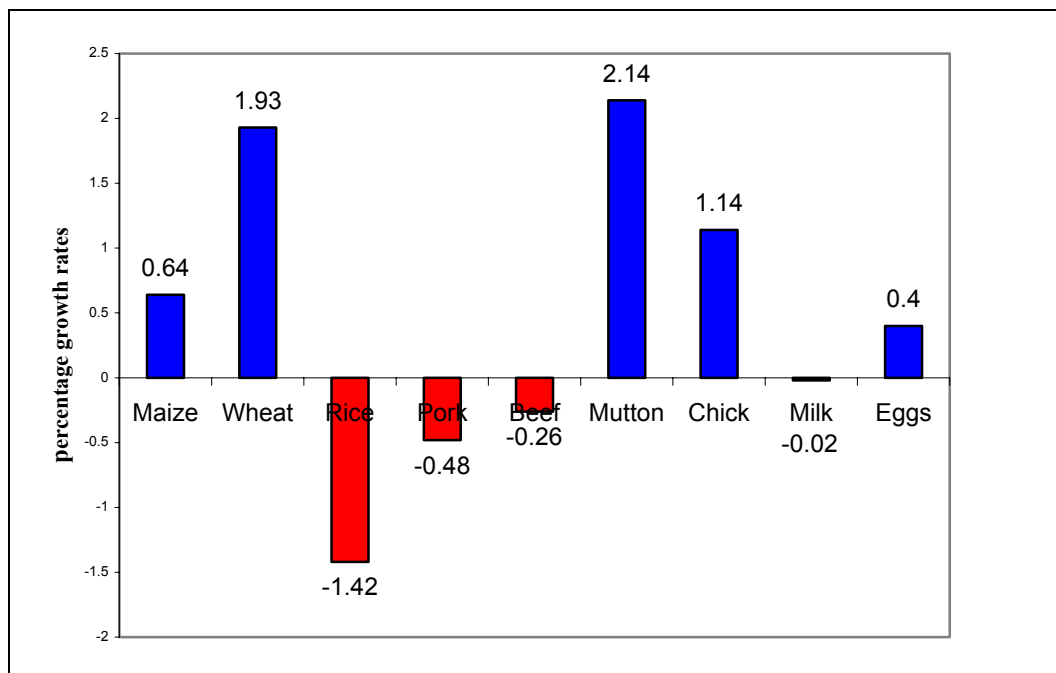
Note: Asterisks indicate the period from 2003-2010

First, the difference in expected net growth rates for maize, wheat, mutton, chicken and eggs are positive. This indicates that the demand for these products under ‘with AIDS’ are greater than ‘without AIDS’ scenario. The implication of the result is that there is likely to be an increase in the demand for these food items. The

consumption of wheat and maize will increase by average rate of 4.90 percent and 1.15 percent under ‘with AIDS’, which is higher than ‘without AIDS’. In South Africa, maize and wheat are staple foods for large parts of the rural population dependent on subsistence farming. A rise in demand is likely to push prices up, which will make it even more difficult for HIV/AIDS-affected consumers to afford these food items, especially female-headed and orphan-headed households with lower incomes per household.

Furthermore, the empirical results suggest that the expected net growth rates in the demand for mutton, chicken and eggs under ‘with AIDS’ and ‘without AIDS’ scenarios are positive; 2.14 percent, 1.14 percent and 0.40 percent respectively. These results imply that HIV/AIDS-affected households will mainly consume these food items. The expected demand for chicken will increase under ‘with AIDS’ whereas the demand for beef will decrease. The net growth rate in the demand for beef under ‘with AIDS’ and ‘without AIDS’ scenario is -percent0.26 percent for the period 2003-2010, and this is consistent with the findings of Balyamujura, *et. al.* (2001) who also found that the consumption of beef per capita will decline under the ‘with AIDS’ scenario.

Figure 1: Estimated average net growth rates for food demand of some agricultural food products in South Africa, 2003-2010



Second, the expected net growth rates in the demand for rice, milk, pork and beef under 'with AIDS' is less than 'without AIDS'. This demonstrates that, should the HIV prevalence continue to persist at the current rate, the demand for these products will decline. A fall in demand will make these food items unattractive to produce. The consumption of milk under 'with AIDS' will fall marginally by an estimated -0.02 percent over the period 2003-2010. In the absence of AIDS, Nieuwoudt (1998b) reveals that per capita consumption amongst Black South Africans (who are the most affected by the disease) for milk is low while for White South Africans it is relatively high. Thus, if the most infected population group consume less milk, the future growth in milk consumption will decline. Our study further shows that on average the demand for pork is expected to decline by a net growth rate of -0.48 'with AIDS' and the consumption of rice is also expected to decline 'with AIDS'.

6. Conclusions

This study provides evidence to support the general assertion that HIV/AIDS will affect food demand patterns. The changing trend in the expected demand for these food products necessitates the need for governments to reconsider their interventionist policies to address the problem of structural change. Further, the results demonstrate that there is likely to be pressure on the South African government to stimulate increased production of food items whose demand is expected to increase in future. The agricultural sector needs to take cognisance of the likely structural changes in food demand and plan accordingly. In addition, the government should put in place policies that will offset the negative effects of the HIV/AIDS epidemic to avoid overproduction and shortages of these food items in South Africa.

The results of this study raises questions as to whether the Government of South Africa should regulate the relative prices of food items whose demand is likely to increase in the future. While higher prices may be necessary to stimulate growth in food production, the government needs to take into account the impact of such a policy on consumers in South Africa. The regulation of food prices will have the effect of price distortions. A possible solution might be that the government of South Africa should target poverty-stricken households within society through the provision of subsidies at the consumption level, such as food stamps. Further research into the provision and effects of such a subsidy-type is required. In addition, the government should consider

providing household coping mechanisms in response to the HIV/AIDS epidemic, especially for female-headed households. Programmes include appropriate education and training, family planning and improved health care services. Research shows that non-governmental organisations (NGOs) have a key role to play in curtailing the epidemic by providing social services, training and community development projects. The government of South Africa should initiate and collaborate with NGOs in this regard.

With respect to agricultural production, the government should consider stimulating domestic production of agricultural products by monitoring interest rates and exchange rates. This is particularly important since these macroeconomic variables have a major impact on agricultural input prices, and hence output prices. However, this is a multifaceted issue. On a microeconomic level, the government might consider the introduction of micro-incentive schemes to boost small-scale production of agricultural products whose production levels might be affected by HIV/AIDS.

References

- Agbola, F.W, Damoense M. Y. and Saini Y. K. (2002). *The impact of HIV/AIDS on the South African Economy: A case study of the Agricultural Sector*. Published paper of the XIV International AIDS Conference, pp99-104. Monduzzi Editore, International Proceedings Division. Italy.
- Arndt, C., Lewis J. D. 2000. The Macro Implications of HIV/AIDS in South Africa: A Preliminary Assessment. *The South African Journal of Economics* **68**(5): 856-887.
- Arndt, C., Lewis J. D. 2001. The HIV/AIDS Pandemic in South Africa: Sectoral Impacts and Unemployment. *Journal of International Development*, **13**(1): 427-449.
- ASSA 2000. *AIDS Model*. Actuarial Association of South Africa, Johannesburg.
- Balyamujura, H., Jooste A., van Schalkwyk, H., Carstens, J. 2001. Impact of the HIV/AIDS Pandemic on the Demand for Food in South Africa, mimeo.
- DoA 2001. *The Strategic Plan for South African Agriculture*. Department of Agriculture, Pretoria, South Africa.
- Du Guerny, J., 1999. AIDS and agriculture in Africa: can agricultural policy make a difference? *FNA/ANA* 25. Food and Agriculture Organisation, Rome.

- FAO 2001. *The Impact of HIV/AIDS on Traditional Coping Mechanisms in Rural Economies*. Food and Agriculture Organisation, Rome.
<http://www.undp.org/popin/fao/aids/hiv.htm>.
- FISCU 2001. *The 2001 Regional Economic Review Southern Africa Economic Summit*. SADC Finance and Investment Sector Co-ordinating Unit, National Treasury, South Africa.
- Grimwood, A, Crewe, M., Betteridge, D. 2000. HIV/AIDS – Current Issues SAHR.
<http://www.hst.org.za/sahr/2000/chapter14.htm> (Accessed on 15 March 2002).
- Haddad, L., Gillespie S. 2001. Effective Food and Nutrition Policy Response to HIV/AIDS: What We Know and What We Need to Know. *Journal of International Development* **13**(2): 487-511.
- Hawthorne, P. 2002. The Selling of Mbeki's Deal. *Time Magazine*, 10 June.
- ING Barings 1999. The Demographic Impact of AIDS on the South African Economy. *South African Research*, ING Barings, Johannesburg, 17 December.
- Morris, C. N., Burdge, D. R and Cheevers, E. J. 2000. Economic Impact of HIV Infection in a Cohort of Male Sugar Mill Workers in South Africa from the Perspective of Industry. *The South African Journal of Economics* **68**(5): 933-945.
- NDH 2000. *HIV/AIDS/STD Strategic Plan for South Africa 2001-2005*. National Department of Health, Pretoria, South Africa.
- Nieuwoudt, W. L., 1998a. "The Demand for Livestock Products in South Africa for 2000, 2010 and 2020: Part I". *Agrekon*, 37(2), June, 130-142.
- Nieuwoudt, W. L., 1998b. „The Demand for Livestock Products in South Africa for 2000, 2010 and 2020: Part II". *Agrekon*, 37(2), June, 143-161.
- Poku, N. 2001. "The Crisis of AIDS in Africa and the Politics of Response." In Poku, N., ed., *Security and Development in Southern Africa*. Praeger Publishers, Westport.
- Reekie, D. 2000. "South Africa's Battle with AIDS and Drug Prices". *Brief Analysis No. 334*, National Centre for Policy Analysis, 15 August.
- Simbi, T. and Aliber, M. (2000). *Agricultural Employment Crisis in South Africa*. Trade and Industrial Policy Secretariat (TIPS) Working Paper, 13.
- Topouzis, D. 2000. *Measuring the Impact of HIV/AIDS on the Agricultural Sector in Africa*. Mimeo.
- UNAIDS 2002. *Report on the Global HIV/AIDS Epidemic*. Joint United Nations Programme on HIV/AIDS, United Nations Commission of AIDS, Geneva, July.