

Trends in agricultural and poverty indicators in Zambia

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Introduction: Effective agricultural and food security policies in Africa need to be based on a solid empirical foundation. In Zambia, it is widely perceived that poverty rates are increasing, agricultural growth is stagnant, and real food prices are higher as food production declines. This study examines these trends and finds that all of these perceptions are wrong. Rural poverty rates have declined substantially in rural Zambia since the early 1990s, although they are still unacceptably high. Real staple food prices for consumers have declined by 20 percent over the past decade, thanks to major reductions in maize milling and retailing margins. And there is evidence of impressive production growth for some crops that are becoming increasingly important sources of income and food security for Zambian farmers, despite evidence of stagnant production for other key crops. This note examines the relationship between trends in agricultural sector performance and rural poverty in Zambia, the likely factors driving these trends, and the future implications for agricultural policy and investment strategies.

Analysis is drawn from crop production estimates of the Post Harvest Surveys (PHS), which are the official estimates of the Government of the Republic of Zambia. The nationally representative PHS was initiated in the 1990/91 crop season and conducted thereafter annually by the Central Statistical Office (CSO). The PHS is based on a sample frame of about 8,000 small-scale (0.1–5 hectares) and medium-scale (5–20 hectares) farm households, 86 percent of which are in the former category. For shorthand, we refer to the full sample of both categories as the “smallholder” sector.

Unfortunately, official data (the national crop forecast estimates) on agricultural production in the smallholder sector during the 1970s and 1980s are considered highly unreliable, including that of the large-scale farm sector, and is based

on a set of crops that do not match well with smallholder production patterns in the 1990s and 2000s. Because of important shifts over time in cropping patterns, the lack of coverage of certain crops in earlier periods that are known to be important now, and the inclusion of large-scale production in earlier Crop Forecast estimates, it is potentially misleading to examine trends in the total value of agricultural output from the 1970s to the present time based on the set of crops that were found to be most important in the 1970s. And even the PHS excludes crops that have risen dramatically in recent years, such as fresh fruits, vegetables, and animal products. Evidence compiled in related nationally-representative surveys using the same sample frame as the PHS find, for example, that in 2002/03, the value of horticultural and animal product sales were each almost as high as the value of maize sales by the smallholder sector (Zulu, Jayne and Beaver 2006). It is important to keep these data limitations in mind when trying to understand performance in the sector, particularly prior to 1990. It is likely that official production estimates increasingly underestimate true production to the extent that smallholders’ agricultural activities are increasingly dissimilar to the crops covered in the official estimates.

After pursuing a state-led program of agricultural development for decades, Zambia undertook structural adjustment and agricultural market reforms in the early 1990s. Consumer food subsidies were eliminated, marketing board support to smallholder maize production was contracted, and massive fertilizer subsidies were scaled back. In the late 1980s, Zambia’s National Agricultural Marketing Board’s operating losses were roughly 17 percent of total government budgets (Howard and Mungoma, 1994). These programs contributed to macroeconomic instability and forced the government to scale-back state subsidies to both small farmers and consumers in the early 1990s. There has

been very little understanding to date as to how Zambia’s agricultural sector has fared since this time and how this performance has affected rural poverty.

Main findings: Figure 1 presents trends in total cropped area and the inflation-adjusted value of total agricultural production from the smallholder sector. Cropped area was largely unchanged during the first half of the 1990s, then increased gradually until 2001/02 before dropping abruptly in the two seasons that followed.² The total gross value of agricultural output, while stagnating for the first half of the 1990s, has risen by over 50 percent between the mid-1990s and the last 3 seasons for which data is available (2001/02 to 2003/04). Also, as indicated earlier, activities believed to have grown rapidly in recent years (fresh fruits, vegetables, and animal products) are not counted in these production statistics.

Figure 2 presents trends in the value of crop output per hectare. For each year, households were separated into low-, medium and high-wealth groups, based on the value of farm assets; this was done to detect potential differences in trends according to wealth group. Crop output per hectare is normalized to the mean of the first 3 seasons of the PHS³. For each of the three wealth groups, there is no clear increase or decline in the value of crop output per hectare, although recent productivity gains appear to have been achieved by the lowest wealth group in the past two seasons. At this stage, it is difficult to identify the factors driving this, or even whether the data indicate a clear upturn.

There have been noticeable differences in crop production growth rates (Table 1). The worst performance has been registered for the staple grains and beans, while impressive production growth has been achieved for cassava, sweet potatoes, cotton, and groundnuts. Since the early 1990s, government support for maize

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² The drop-off of area in the 2002/03 and 2003/04 years coincide with a fundamental change in sample design of the PHS, calling into question the comparability of pre- and post-2002/03 estimates.

³ This includes the major drought year of 1991/92 but also contains 1992/93, which registered the greatest value of agricultural production of the 1990s.

production has been withdrawn as marketing board depots were closed, maize meal subsidies were eliminated, and massive fertilizer subsidy programs were scaled-back. Production in the more remote regions of northern Zambia declined substantially as area formerly under maize was shifted to cassava, groundnuts, and sweet potatoes. Cassava, sweet potato, and groundnut productivity have all benefited from the introduction of improved varieties in the early to mid-1990s. Cotton has also made big inroads; by 2003/04, one out of every five small farms grew cotton, thanks to substantial private investment in smallholder outgrower arrangements.

Horticultural crops and animal products (while unmeasured in the PHS surveys) also appear to be growing rapidly. Nationally-representative survey evidence from 2002/03 indicates that 45 percent and 17 percent of smallholder households derive income from the sale of animal products and horticultural products, respectively (Zulu, Jayne and Beaver, 2006). The value of animal product and horticultural sales are almost as high as that for maize. Major production growth is being achieved in other unregulated crops as well, notably groundnut, soyabeans, and tobacco (Govereh and Wamulume, 2006).

Throughout the liberalization process, fertilizer subsidies have remained important in Zambia. In the last 4 years, the government has distributed roughly 45,000 tons each year at a 50 percent subsidy under its Fertilizer Support Programme for use by smallholders on maize. PHS data indicates that roughly 90 percent of all fertilizer used by small farmers over the past decade has been on maize. Perhaps ironically, these fertilizer subsidies have not been effective in achieving more than a 0.6 percent growth rate in maize production. On the other hand, the fastest growth is being registered among crops that are handled almost completely by the private sector and to which no fertilizer subsidies are devoted.

Lower real prices of maize meal: inflation-adjusted maize meal prices have declined significantly over the 1994-2005 period, for each of the nine provincial markets except one. Figure 3 shows trends in wholesale maize and retail maize meal prices in Lusaka. Moreover, we find very significant downward trends in maize marketing margins at the milling and retailing levels (Jayne, Chapoto and Zulu, 2006). This is good news for consumers, especially for low-income consumers who may spend up to 30 percent of their disposable incomes on maize meal. Declining marketing margins spurred by increased competition from informal millers and retailers was one of the anticipated benefits of maize market liberalization that appears to have manifested in Zambia.

Trends in rural livelihoods and poverty: At the start of the liberalization process in 1991, 88 percent of rural households were estimated to be under the poverty line. Following the major drought of 1991/92, the rural poverty rate increased to 92 percent in 1993. However, since this point, rural poverty

appears to have declined markedly, to 83 percent in the late 1990s, and to 74 percent by 2003 (Table 2). Estimates of "extreme poverty" in rural areas have also declined as well over the past decade. This may be considered a remarkable achievement considering the range of adverse processes affecting Zambia during this period,

Figure 1: Trends in area planted and standardized value of crop production, Zambia.

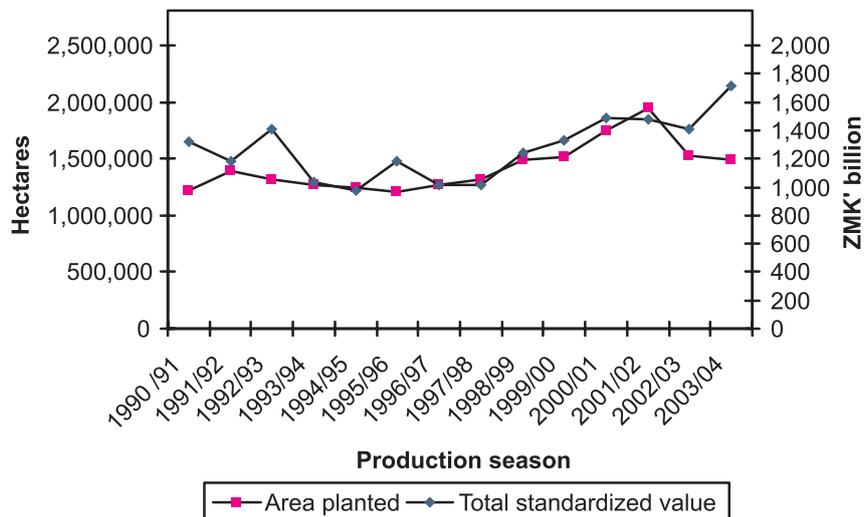


Figure 2: Mean household crop output per hectare, Zambia (1991/2-2003/4 crop years 1991/92-2003/04 crop season).

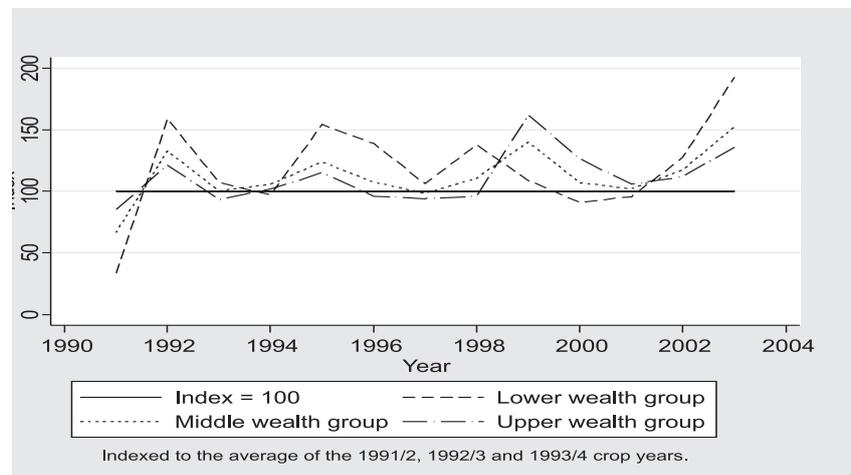


Table 1: Growth Rates (% per annum) for selected crops produced by smallholder farmers Zambia 1991 – 2004.

Crop	Area	Yield	Production
Maize	0.2	0.5	0.6
Sorghum	-0.3	0.7	0.4
Millet	0.0	0.5	0.6
Cassava	1.6	1.7	3.3
Groundnuts	0.9	3.0	4.0
Cotton	3.6	1.7	5.3
Soybean	2.9	1.8	4.8
Sunflower	-0.5	1.4	0.9
Sweet potatoes	4.6	2.0	6.6
Mixed beans	1.8	-1.3	0.6

including high rates of HIV prevalence, declining copper revenues up to 2005, frequent drought, and the contraction of public budget support to agriculture. In the 1980s, up to 17 percent of the national budget was devoted to maize and fertilizer policies, while in the past 2-3 years the government has allocated only 6 percent of its budget to the entire agricultural sector.

Urban poverty, on the other hand, has risen somewhat over between 1991 and 2003. This may reflect both the decline of the copper industry and the elimination of consumer food subsidies in the early 1990s. The increase in urban poverty and decline in rural poverty is all the more interesting in light of evidence of

reverse urban-to-rural migration; rural population growth over the 1990-2000 period was 2.9 percent compared to 1.5 percent for urban areas (Govere et al. 2006).

It is indeed difficult to find sources of economic dynamism in Zambia that could explain this substantial reduction in rural poverty rates other than the impressive agricultural growth registered for the non-maize crops shown in Table 1. Fynn and Haggblade (2006) contend that the reduction in poverty over the past decade has been driven by the combination of growth of increasingly important food crops such as cassava, sweet potatoes, groundnuts (and most likely, domestically consumed horticultural crops) as well

as the export-led growth in cotton and tobacco, which have helped to buoy rural incomes despite the decline in maize production and the well-documented negative shocks affecting rural livelihoods mentioned earlier.

Where from here: The question remains – what about the rural poor? Notwithstanding the positive developments in rural poverty reduction in the past 15 years, still over 60 percent of the rural population remains in poverty.

Faster progress in bringing down both rural and urban poverty rates will depend on faster agricultural productivity growth. The government has a crucially important role to play in this process. A great deal of research evidence from southern Africa as well as around the world indicates that the greatest contribution that public sector resources can make to sustained agricultural growth and poverty reduction is from sustained investment in crop science, effective extension programs, physical infrastructure, and a stable and supportive policy environment (Mellor, 1976; Byerlee and Eicher, 1997; Alston, Chan-Kang, Marra, Pardey and Wyatt, 2000; Evenson, 2001).

Achieving the twin goals of agricultural productivity growth and poverty reduction will require some reallocations of the government budget. Over the past several years, about 40 percent of the Ministry of Agriculture budget has been devoted to its Fertilizer Support Programme, which has distributed 35,000 to 50,000 tons of fertilizer to small farmers at 50 percent of the full cost. Meanwhile, the genetic advances that were a major factor in maize productivity growth in earlier decades, have waned as funding by both donors and government has declined. The Government of Zambia has devoted roughly 6 percent of its annual budget to the agricultural sector over the past several years, and of this, less than 4 percent has been allocated to agricultural research and extension. Of this 4 percent, 75 percent is for salaries and wages. Effectively, public sector agricultural research and extension has come to a standstill in Zambia. Rural poverty alleviation will require renewed commitment to public investments in these key areas.

Only 20 percent of small farmers use fertilizer in Zambia. Growth in fertilizer use will be a precondition to achieve appreciable income growth and sustained poverty reduction. However, fertilizer promotion must be considered holistically. It is not simply a technical or logistical problem of delivering large amounts of fertilizer to small farmers and expecting a sustainable solution. Achieving sustained growth in fertilizer consumption involves building farmers' effective demand for fertilizer, by making its use profitable, and by developing output markets

Figure 3: Trend in maize grain and breakfast meal prices in Zambia, 1994-2005

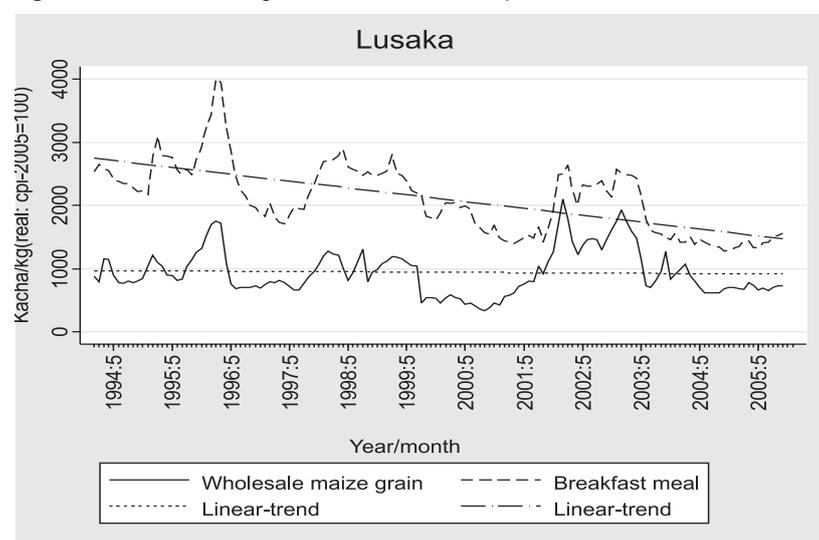


Table 2: Trends in Poverty, HIV Prevalence Rates and Drought, Zambia, 1991-2005

Year	Overall Urban Poverty	Overall Rural Poverty	Extreme Rural Poverty	Drought	Estimated HIV Prevalence Rate
1991	48.6	88.0	80.6		
1992				X	
1993	44.9	92.2	83.5		
1994				X	
1995					16.7
1996	46.0	82.8	68.4		
1997					
1998	56.0	83.1	70.9	X	
1999					
2000					15.8
2001				X	15.6
2002				X	15.2
2003	52.0	74.0	52.4		14.8
2004					14.4
2005					13.9

Sources: Mason et al. 2006, drawing from the Zambia Poverty Reduction Strategy Paper 2002-2003 (2003) and CSO (2003a). HIV Epidemiological Projections from CSO (2003b). Drought information from Govere and Wamulume (2006).

and regional trade patterns that can absorb the increased production that higher levels of fertilizer will bring. This involves the same kinds of government commitment as identified above: (1) well-functioning crop science and extension programs to improve crop productivity, particularly for the staple food crops, for small farmers; (2) extension programs that stop assuming all farmers are the same, and which focus on taking advantage of the higher marginal rates of return at the lower ends of the production function; (3) investing in rural infrastructure and rehabilitation of the regional rail and port facilities, to drive down the costs of input and output marketing. High transport costs are a major constraint on the profitability of (and hence demand for) commercial fertilizer by small farmers.

Building sustainable growth in fertilizer consumption also requires a supportive policy

environment that attracts local and foreign direct investment in building fertilizer and crop output markets. The case of Kenya shows how a stable government policy environment has generated an impressive private sector response that has enabled more than 65 percent of smallholder farmers nationwide to use fertilizer (Ariga, Jayne, and Nyoro 2006). In other countries, the implementation of large subsidy programs, while designed to make fertilizer more accessible to small farmers, has inhibited the type of private investment response seen in Kenya, due to the risks that this introduces for private firms. In countries where government involvement in food and input markets is seen as part of a transitional phase towards full market reform, predictable and transparent rules governing state involvement in the markets would reduce market risks and enable greater coordination between private and public decisions in these markets.

The phenomenon of subsidized government intervention in the market, or the threat of it, leading to private sector inaction, is one of the greatest problems plaguing the food and input marketing systems in the region. While targeted assistance to vulnerable households will remain an important component of a comprehensive food security and poverty reduction strategy in almost all African countries, such programs must be carefully designed so as not to interfere with the long-term development of agricultural markets, which will be critical for sustained poverty reduction. The strategic interactions between government and private sector and their potential effects on food security underscore the need for greater transparency and consultation between private and public market actors in both input and output markets to achieve reasonable levels of food price stability, productivity growth, and sustained poverty reduction.

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The ReSAKSS-SA aims to identify and assess strategic options for agricultural growth particularly poverty alleviation in southern Africa. ReSAKSS-SA supports review and learning processes in the region to contribute to the successful implementation of agriculture and rural development strategies with particular emphasis on Comprehensive Africa Agriculture Development Programme (CAADP) and Southern Africa Development Community Regional Indicative Strategic Development Plan (SADC RISDP). ReSAKSS-SA is jointly implemented by the International Crops Research Institute for the Semi-Arid Tropics (ICRISAT) and the International Water Management Institute (IWMI), in collaboration with the International Food Policy Research Institute (IFPRI), regional and national partners.

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