SMALLHOLDER INCOME DIVERSIFICATION IN ZAMBIA: THE WAY OUT OF POVERTY ?

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Main Points

1) One can achieve poverty reduction in rural areas of Zambia by both growth and inequality reduction, but growth must be the main driver;
2) Rural income growth does not come from agriculture alone so options to diversify income are very important and should be pursued;
3) But careful attention is required to focus on improved endowments and reduced constraints facing households trying to improve agriculture directly as well as trying to improve possibilities of income diversification away from agriculture; and
4) Land per labourer, education, and location (market access and infrastructure) are key dimensions to understand and figure out how to improve.

BACKGROUND: Bigsten and Shimeles (2007) analysed the growth-redistribution trade-off for various African countries, and found that to reduce poverty by half by 2015, Zambia would need to achieve an annual increase in per capita income of 4.0%, assuming an unchanged income distribution (Gini-coefficient). However, the impact of growth on poverty depends on the pattern of growth. A pro-poor growth-pattern would be one where smallholders, who make up the majority of the poor in Zambia, do well. An important economic development question is therefore whether fast income growth for smallholders is associated with diversification of their incomes.

OBJECTIVE: This policy brief summarizes key points from a larger working paper with the goal of investigating the relationship between income diversification and income change within Zambian smallholder households. The analysis also investigates the constraints of smallholder income diversification.

METHODS AND DATA: A CSO, MACO and FSRP supplemental survey panel data set of roughly 7000 smallholder farmer households interviewed in 2001 and 2004 is used. This data builds on the Zambia Post-Harvest Surveys (PHS) for agricultural years 1991/1992 to 2003/2004. The PHS is carried out by the Central Statistical Office (CSO) in conjunction with the Ministry of Agriculture and Cooperatives (MACO). The survey is designed to be nationally representative. Different combinations of the four main smallholder income generating activities – farm income, agricultural wage work, non-agricultural wage-work, and own-business income – are analyzed. Tabular and bi-variate analyses, as well as econometric methods are used.

SUMMARY OF FINDINGS: This study highlights seven important findings:

First. We showed that poverty as measured by the head-count index declined by about 5.4 percentage points between 1998 and 2004. We decomposed this change into a 6.6 percentage point reduction due to growth, and a 1.2 percentage point increase due to a slight change in inequality. We also looked at growth-incidence across consumption-deciles. According to our estimates, all deciles experienced an increase in consumption during the period. Overall, the increase seems to have been somewhat larger in rural areas, with the exception of the top urban decile, which experienced an even more rapid consumption

increase. Still, poverty remains much more severe in rural than in urban areas. See Figures 1 and 2.

Second. Our descriptive analysis of the pattern of income diversification then showed, among other things, that the lower quintiles had strikingly low incomes per adult-equivalent, but one should keep in mind that this does not mean that consumption levels are that low. See Tables 1 and 2. The overall picture is that the higher the quintile, the lower the farm-income share of income. Households engaged in non-agricultural work or had their own business had generally higher incomes than others.

Third. To be able to identify some livelihood strategies, we classified households according to which sources they derived income from, including farm income (F), agricultural wage-work (A), non-agricultural wage-work (N), and own-business income (B). The most common activity-combinations were F, FB, FN, FA, FNB and FAB, in falling order. See Table 3. About 30% of the households that were full-time farmers (F) in 2001 had diversified further into wage-work and/or business in 2004. Most of those getting income from a combination of their own farm and work on the farms of others (FA) in 2001 did not do any agricultural wage-work in 2004. Thus, working on others' farms is not generally a permanent feature of smallholder income generation in Zambia.

Fourth. Panel-data analysis showed that greater diversification is associated with higher income per labourer. Combination FA gives 35% higher income than F alone, while FN, FB and FAB give approximately 70% and FNB 109% higher income. The negative effect of having a female household-head is about 17%, while an increase of the land/labour ratio has a strong positive effect on income. We also ran standard OLS regressions to make it possible to include a broader range of control variables in the analysis, but the effect of activity combination remained more or less the same. All our estimates showed that good education and an accessible location, such as Lusaka province, had a strong positive effect on income. In line with this we also found that shifting into more diversified activity-combinations was associated with higher growth of income per labourer.

Fifth. We further studied what determines selection into an activity combination. The most striking result is that location, that is, province, matters a lot. If you are in a more diversified and urbanised environment, you are able to diversify more easily. Luapula and Western stand out, however, as remote regions but nevertheless having a high probability of diversification into business. Primary and secondary education opens up opportunities for non-agricultural wage-work. It also opens up the route to business, though this is less dependent on education. Diversification into agricultural wage-work depends especially on land shortage, which suggests that this is more of a distress-diversification. Households with more market-oriented agricultural production were more likely to have diversified into business (FB), which also reduces the probability of entering also agricultural wage work (FA). A possible interpretation of this is that the cash income generated by market-oriented agriculture helps lift the cash-constraint on entering business.

Sixth. Female-headed households were less likely to have the combination FN, which may reflect the fact the females are often less geographically mobile (because of traditional household or family duties) than males.

Seventh. Land per labourer, education and gender of the household head, and province did not just influence income indirectly via choice of activity-combination, but also directly. In other words, the endowments and constraints that a household faces not only affect the possibility for diversification, they also affect how successful the household is within the activity-combination chosen. The negative direct effect of being in Luapula or Western more than offset the positive indirect effect via high probability of diversification.

POLICY IMPLICATIONS: Policy-makers should thus keep in mind that rural household incomes are not derived from agriculture alone. A major focus should be on measures that strive to facilitate smallholder income-diversification. Typically, these are policies that develop the overall economic environment and help smallholders get better market access. Agriculture is a major part of the private sector in Zambia, and should receive higher priority.

Figure 1. Rural Growth-incidence Curve

Annualised growth 1998-2004 for each consumption decile (%)
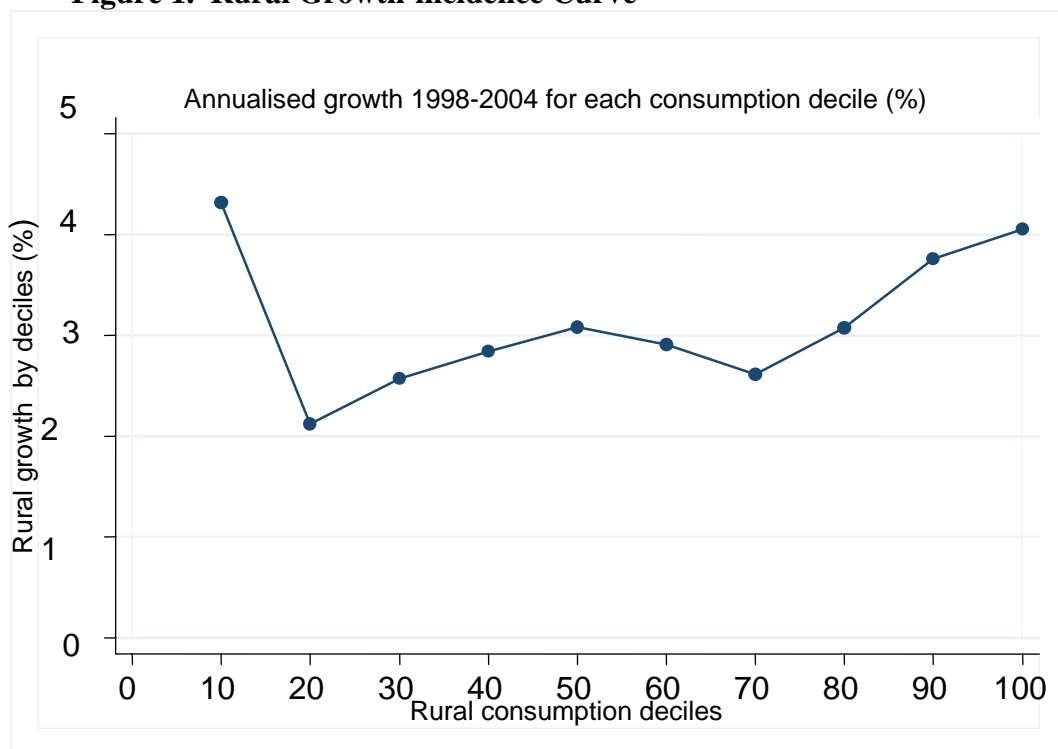
Source: Own calculations

Figure 2: Urban Growth-incidence Curve

Annualised growth 1998-2004 for each consumption decile (%)
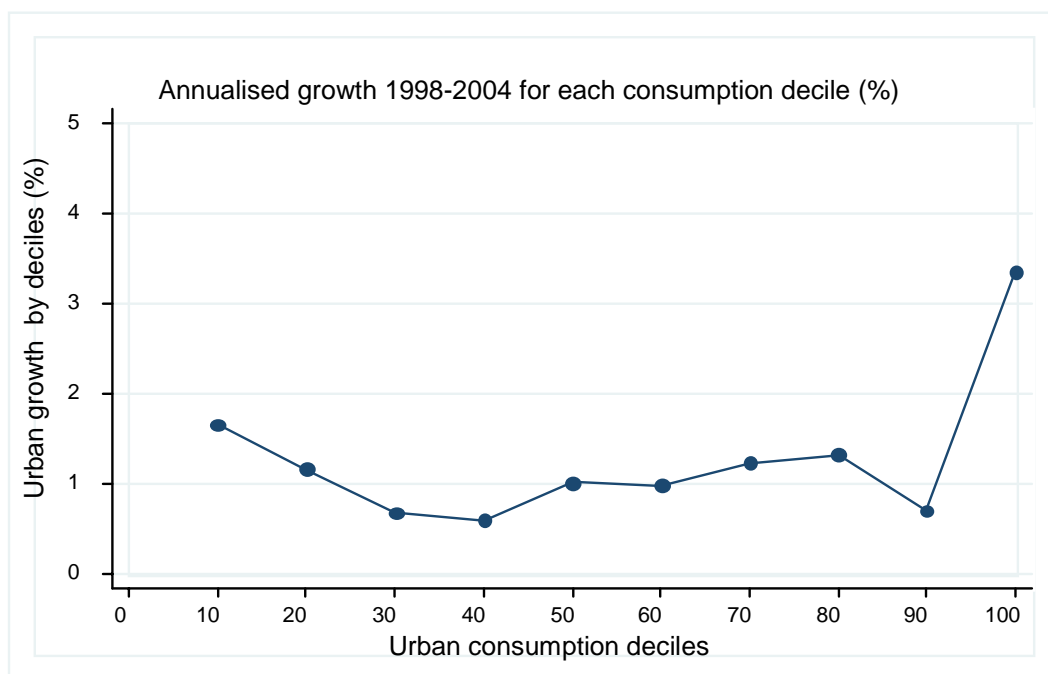
Source: Own calculations

Table 1. 2001 and 2004 Overall Income Diversification, in Percent and in 2004 Kwacha

	Percent		Per a.e. (000')		Per capita (000')		Total (billions)	
Income Source	2001	2004	2001	2004	2001	2004	2001	2004
Farm income	49.1	56.3	211	296	163.2	245	1077	1829
Farm work	2.6	2.3	11.3	12.0	8.8	10.0	58	74
Non-farm work	19.7	16.4	84.5	86.3	65.3	71.5	431	534
Own business income	26.5	23.8	113.8	125	88.0	104	581	773
Remittances	2.1	1.1	8.8	5.6	6.8	4.6	45.1	34.5
Sum	100	100	429.5	524.8	332.2	435	2190	3240

Note: The discount factor 1.7619 was used (IMF 2007a), based on CPI for April/May 2001 and June/July 2004.
Source: Own calculations

Table 2. 2001 and 2004 Income Diversification per Adult-Equivalent by Quintile

Quintile	1		2		3		4		5	
Year	2001	2004	2001	2004	2001	2004	2001	2004	2001	2004
Income Source	\-2004 Kwacha per ae (in 1000s) \-									
Farm income	48,8	54	107	129	182,9	208	269	334	446	749
Farm work	0.9	1.4	1.9	1.9	6.5	6.0	13.6	16.7	33.7	33.9
Non-farm work	0.6	1.3	3.2	4.6	6.5	10.9	42.2	29.7	369.2	381.7
Own business income	3.7	2.4	13.6	12.2	28.1	28.3	72.0	62.8	450.9	514.5
Remittances	2.9	1.5	5.8	2.7	7.6	4.4	11.2	5.8	16.6	13.5
Sum	56.8	60.5	131.7	150.1	231.7	257.5	407.8	449.1	1316.4	1692.4

Source: Own calculations

Table 3. Income by Activity Combinations per Adult Equivalents. 2004 ('000 Kwacha)

	Farm income	Farm work	Non-Farm work	Own business	Total income	Activity Freq.%
F	301.83	0.00	0.00	0.00	301.83	53.49
FA	199.11	155.32	0.00	0.00	353.92	5.09
A	0.00	83.05	0.00	0.00	83.05	0.17
FN	310.54	0.00	554.91	0.00	865.45	10.21
N	0.00	0.00	697.48	0.00	697.48	0.14
FB	345.62	0.00	0.00	368.34	713.97	22.08
FAB	206.21	94.62	0.00	180.94	482.18	2.58
FNB	312.90	0.00	417.55	405.00	1135.45	4.93
B	0.00	0.00	0.00	838.27	838.27	0.29
AB	0.00	14.93	0.00	11.64	26.65	0.02
NB	0.00	0.00	1137.88	436.07	1573.95	0.08
FAN	216.36	84.64	97.86	0.00	399.39	0.49
FANB	197.48	77.43	168.67	150.06	593.03	0.44
	302.18	11.32	80.97	108.72	503.17	100.00

Note: F = Farm income, A = Agricultural wage-work, N = Non-agricultural wage-work,
B = Own-business income. Activity-frequency is based on population, not on households.

Of course, poverty may also be reduced by households leaving agriculture altogether and migrating to town. This will also be the long-term pattern, but at this stage in the development of Zambia this type of migration will only be relevant for a minority (Bigsten 1988).

It is thus clear that the focus of poverty-oriented policies must largely be on the rural sector. Since Zambia is a very unequal society, with a high Gini coefficient, poverty-levels could also be reduced by lowering inequality. But since average income and consumption are extremely low, growth is crucial for poverty reduction. To make agriculture more efficient, and thus reduce rural poverty, resources should be used to improve infrastructure such as roads and electricity, extension services, and education, rather than for subsidy schemes.

The strongest result of our regressions is that province matters very much, which can be seen as an indicator of the quality of infrastructure or access to markets. More than half of the Ministry of Agriculture budget has gone to fertilizer subsidies (mostly for maize) and maize programmes. However, there has been diversification, and in recent years it is for example, cassava, sweet potatoes, and livestock production that have performed well. Secure property rights are of course also a crucial determinant of rural investment. Cash constraints hinder diversification both into business and into new crops. Therefore it is crucial to give more household's access to credit. This can be via direct measures, but also by strengthening the overall economic environment. While the Fifth National Development Plan emphasises the measures just mentioned, implementation in these areas seems to be low and slow.

Strengthening the position of women could have a strong positive effect on smallholder income, both indirectly by making it easier for female-headed households to diversify, and directly via higher income irrespectively of activity combination chosen. We also find that education had a strong positive effect on income, both directly and indirectly. Empowering women and improving education are obviously not things that can be handled easily and quickly, but rather things that should be integrated into policies in general. There are measures that could also have short run effects. One is child support, conditional on school-attendance, and higher for girls. It could be in the form of free school lunches, or school uniforms, or cash transfers to families whose children showed up frequently enough in school. Such measures can be focused on girls and on districts with low income levels, and that could be a signal that women and their education are important. At the same time, it would strengthen education, and stimulate rural income.

In the 1980s, up to 17% of the national budget was devoted to maize and fertilizer policies, but this programme was later scaled back. However, in recent years as much as 70% of the Ministry of Agriculture budget has gone to fertilizer subsidies and maize marketing, plus stockholding programmes, but still only 20% of small farmers in Zambia use fertilizers. Farmers' effective demand for fertilizer must be built up by making it profitable to use it, by developing output markets and regional trade. Jayne et al. (2007) argue that "sustained investment in crop science, effective extension programs, physical infrastructure, and a stable and supportive policy environment" is where public sector resources could be best used. Our analysis certainly supports the notion the market access is a key determinant of smallholder income-diversification and growth, and, for peripheral regions, improvements in market access require investments in infrastructure. The regional gaps in Zambia are very substantial.

Development of agriculture itself is also important to bring about the structural change required for long-term growth. But the introduction of a complex set of subsidy programmes via local governments and cooperatives does not seem to be the most efficient route to develop agriculture. Private sellers of fertilizer are in trouble, and many do not even hold fertilizer stocks any more, since their market has been taken away. Local traders and network sellers need a predictable environment for incentives for long-term engagement in the sector. The recent huge government maize-purchases point in the wrong direction. The private traders who had entered

the market are squeezed, holding back development of a sustainable marketing infrastructure in the rural areas is held back.

The Food Reserve Agency should be just that, not a buyer of last resort. The policy in this area was straightforward until the last election, when purchasing by the agency shot up from 50 to some 400 thousand tonnes. The surplus was supposed to be exported but there is considerable uncertainty about that. In addition there seems to be a high risk that physical and financial losses will be very high. The government seems to have had a roadmap for private sector growth in agriculture, but now there seems to be a move toward more state-intervention, more subsidy-schemes. Now subsidised fertilizers are sold through farmers' unions and the like, and well-connected farmers end up getting it. There seem to be very extensive rent-seeking activities going on, where the elite get some of the cheap fertilizer, and other portions of it are sold onto the open market for other farmers to purchase at higher prices.

Hence, the introduction of these subsidy-schemes is problematic, not only from an efficiency perspective but also from a distributional point of view. Since 75% of farmers do not sell maize at all and a small (2%) minority sells half of it, the distributional impact of these subsidies is highly skewed. The subsidy-scheme has also had other distortionary effects. Since the guaranteed prices are higher than in neighbouring countries, it seems obvious that in some years maize is being carried over the border and sold into the Zambian reserves. There are at least four places along the borders where in past years buying stations have bought much more than the local farmers produced and sold.

There is high variation within districts in terms of land-ownership, which is an important income-determining factor. In areas under traditional tenure (94% of the land), the chief decides on allocation of land. Everyone is supposed to have land according to capability, but this is of course a flexible concept; influence seems to matter a lot as well. Local allocation of land in fairer ways seems highly important. Insecurity of tenure may have substantial effects on the willingness of farmers to invest, and on their ability to use land as collateral for loans to finance investment. Since land-ownership is

clearly related to income, it is also a problem that some cultivable Zambian land is not cultivated.

Overall the analysis has shown that smallholders in Zambia are dependent on a range of off-farm income sources, and that it is therefore important not to look at rural policies as only those concerning agriculture. Paving the way for diversification is key in a package of poverty-reducing policies. Infrastructure that facilitates income-generating activities other than agriculture of course includes many things that are also beneficial for agriculture, e.g., good transportation. The diversification route to higher income for rural households requires a well-functioning economic environment and general policies that make it possible for new income-generating activities to emerge.

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For further references see the Working Paper.