

Why Poverty Remains High in Tanzania: And What to Do About It?

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Abstract

By using growth incidence curves and pseudo-cohort analysis, we show that Tanzania's growth from 2001 to 2007 has not been favourable to the poor. The underlying reason for this disparity appears to be the slow growth in agriculture, on which most rural poor make a living. However, we argue that development of agriculture alone would not enable sustainable poverty alleviation in Tanzania. Instead, the country needs to emphasize both productivity improvements in smallscale agriculture and growth in non-farm employment. Increased farm production will only enable higher farm incomes if greater supply of agricultural products is matched with greater demand for those products. Growth in non-farm sectors and greater urban job creation are crucial to creating such demand.

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Introduction

Real GDP in Tanzania grew on average of seven per cent annually during 2001–2007, well above the average growth rate of most other Sub-Saharan African (SSA) countries. But this high rate of economic growth has not translated into a corresponding decline in poverty, which dropped by only two percentage points during this period. As a result, Tanzania's "basic needs" poverty rate remains very high at 33.6 percent.¹ While the industry and service sectors became more dynamic, with growth rates of 12.7 per cent and 9.6 per cent respectively over this period, their employment generation did not keep up with the need for jobs. Agriculture, on which the livelihood of the majority of rural poor depends, grew only by 4.5 per cent annually during the period 2001–2007, barely enough to raise the real per capita income of the rural poor given the high population growth rate.

The objective of this study is to analyse why growth in national GDP has not translated into a corresponding reduction in poverty and why agricultural productivity and incomes remain low. Specifically, this paper asks:

- Is the lack of progress in poverty reduction just a brief interlude before seeing the benefits of the current pattern of growth trickle down?
- Is the lack of progress in poverty reduction solely a reflection of a failure of policy to allocate enough resources to agriculture?
- Could there be a larger failure of policy design? Is a paradigm shift in development policy required for the economy to take off on a more substantial growth path while also ensuring a significant reduction in poverty?
- How can Tanzania retain high growth while also making it propoor?

The National Bureau of Statistics (NBS) defines poverty as the state in which a household's total consumption is inadequate to meet its basic needs. Since households can gain access to goods and services either through their participation in economic markets or by non-market transfers of resources, there are only three possible ways in which economic growth can benefit the poor:

- (1) If growth in GDP implies higher incomes for previously poor people, because what they have to sell (i.e. agricultural commodities or labour services) commands better prices or can be sold in greater amounts or both;
- (2) If growth in GDP implies growth in tax revenue which enables increases in government services or transfers received by the poor;
- (3) If the affluent who benefit from growth in GDP voluntarily donate their increased income to the poor.

¹ Unless otherwise noted explicitly, this paper will use the HBS basic needs poverty line definition, which is set at 1.37 times the "food poverty line", defined as the minimum expenditure required to obtain 2,200 calories per adult equivalent per day (see HBS2007; Appendix A). At 13,998 Tshs per adult equivalent per 28 days, the basic needs poverty line was equivalent to US \$ 26.94 in PPP terms in 2007. Although the literature on poverty measurement is now vast (for surveys, see Osberg and Xu, 2008; Osberg, 2010) and many authors now emphasize the multidimensionality of poverty, the core problem of inadequate total command over goods and services remains.

Possibility (iii) – that over time, as GDP grows, the poor will benefit significantly from greater voluntary charitable donations – is only included here for logical completeness. There is no record of this practice ever having more than a marginal influence on poverty trends. Historically, in rich nations much of the reduction in poverty observed during the last century has in fact relied on (ii) – the “tax and spend” powers of government – either in the form of redistributive income transfers (like pensions for the elderly) or income enhancing services (like public education).

In any event, the scope for poverty reduction by redistribution through the tax/transfer system is now limited by Tanzania’s relatively small tax load as a percentage of GDP (14.0% in 2006).² High-level political decisions would clearly be needed to expand the tax share of GDP. A full discussion of the redistributive impact of public policy in Tanzania lies beyond the scope of this paper. Our focus is, therefore, on possibility (i) – the link between GDP growth and the market income of poor households.

Section II gives an overview of growth patterns in Tanzania as a way to highlight the unevenness of development. A comparison of GDP growth and household income per capita is provided in Section III, while Section IV goes on to discuss the evidence of growth incidence, as seen in the available data from HBS. Preliminary evidence from pseudocohorts and life-cycle effects are also discussed in Appendix B. The rather slow growth in income in Tanzania’s small-scale agriculture is analysed in Section V. Finally, policy implications are discussed in Section VI, and Section VII presents the conclusion.

Methodology and Data

Our investigation of the key questions is based on, first, a critical analysis of aggregate data from National Accounts. We confirm our initial findings by using micro-data from the Household Budget Survey (HBS). In the latter we rely on growth incidence curves and pseudocohort analysis.

The quality of data from both National Accounts and the HBS has been a debated issue. Mkenda, Luvanda, and Ruhinduka (2010) have, for example, criticized data collection methods and adjustments made in the National Accounts data, arguing that agricultural production data is estimated incorrectly. On the other hand, when measuring poverty, HBS excludes public expenditures on education, health, communications, utilities, and the use value of durable assets. Similar problems are apparent in most SSA countries. Garcia-Verdu, Selassie, and Thomas (2011), for instance, show that overestimation of consumer prices might underestimate real incomes of SSA countries. While this paper does not go into details of data issues, we do emphasize the need for caution in interpreting results.

² See Foreign Investment Advisory Service (2006:vii).

In the course of economic development, agriculture³ typically shrinks as a percentage of GDP relative to other sectors, because the growth rate of the primary sector typically lags behind that of industry and services.⁴ Tanzania is no exception to this rule. During 2001–2007, agricultural output in Tanzania grew only by 4.5 per cent per year compared to the 9.4 per cent annual growth in industry⁵ and 7.7 per cent growth in services⁶ (see Table 1). The mining and construction sub-sectors in the industrial sector grew more rapidly at 15.2 and 10.8 per cent, respectively. The end result is that in Tanzania, agriculture's share of GDP dropped from 30.6 per cent in 2001 to 26.2 per cent in 2007 (NBS, 2008), and declined further to 25.6 per cent in 2008 (Bank of Tanzania, 2010).

Reporting the growth rates of different sectors, as illustrated in Table 1, does not, however, indicate the magnitude of each sector's contribution to aggregate growth. Mining in Tanzania has grown very rapidly, but from a very small base, as a percentage of GDP. Arguably, foreign-owned mines in Tanzania comprise an enclave economy, with relatively few linkages to the local economy. In Tanzania, as in other nations, the capital-intensive method of production and specialized technology of modern mining imply that on locally purchased inputs to provide many backward linkages to local economic activity. Particularly for precious metals like gold, there is also not much possibility of forward linkages – once gold is poured into ingots, local processing of gold output essentially ceases. Local hiring is a trivial proportion of the labour force of a country of 40 million people. Indeed, the share of mining in total employment doubled between 2000 and 2006, although it was still only 0.5 per cent of employment in 2006, including employment in artisanal mining (ILFS 2000/01 and 2006). Hence, because the mining sector has few linkages to local markets, the market-mediated impact of GDP growth on the poor in Tanzania depends on the growth rate of GDP *excluding mining*.

As Table 1A indicates, including or excluding the mining and quarrying sector from measured GDP makes relatively little difference to measured aggregate growth in Tanzania over this period. If the mining sector continues to expand, it will become a larger fraction of GDP, and its rate of growth will make more difference to economic growth in the future, as measured by GDP, than it does now. Nevertheless, the capital-intensive nature and specialized technology of the mining sector are unlikely to change, which implies that mining is likely to remain an enclave within the wider Tanzanian economy.

At the same time, while the impact of mining in Tanzania on labour markets and local commodity demand is not likely to be a large percentage of aggregate national economic activity in the foreseeable future, this does not imply that the sector is necessarily irrelevant to poverty reduction – at least potentially. In Tanzania, as anywhere else in the world, the effect on poverty reduction of the growth of resource extraction sectors depends primarily on what happens to the profits – i.e. who receives the rents from natural resource extraction. As Appendix A illustrates, the profits of the mining sector are now large enough that their taxation could make a significant difference to poverty – if those profits were to be taxed in Tanzania.

³ This includes forestry and fishing, as well as crops and livestock.

⁴ Another way to say the same thing is to note that the income elasticity of demand for primary commodities is less than that of services or manufactured goods.

⁵ Industry includes mining and quarrying, manufacturing, electricity production, gas, water supply, and construction.

⁶ Services include trade and repairs, hotels and restaurants, transportation, communications, financial intermediation, real estate and business services, public administration, education, and health.

Table 1: Comparison of Sectoral Growth

Sector	Growth rate (%) 2001–2007	Share of GDP (%) 2001	Share of GDP (%) 2007
<i>Production method</i>			
Agriculture	4.5	30.6	26.2
Crops	4.8	21.4	18.6
Industry and construction	9.4	18.0	20.9
Mining	15.2	1.8	2.7
Manufacturing	8.2	8.4	9.2
Construction	10.8	5.2	6.5
Services	7.7	45.5	47.3
Trade	8.0	13.0	13.8
Real estate and business services	6.6	10.3	10.2
<i>Expenditure method</i>			
Final consumption	6.7	86.8	90.7
Households	6.0	75.0	72.6
Government	9.5	11.8	18.1
Gross capital formation	14.3	17.4	24.3
Gross fixed capital formation	14.5	17.0	24.0
Agriculture	6.0	0.5	0.4
Mining	12.6	1.7	2.1
Manufacturing	9.8	2.8	3.5
Construction	20.0	5.3	10.0
Exports of goods and services	11.4	17.0	20.1
Imports of goods and services	15.6	21.3	35.1

Source: National Accounts of Tanzania Mainland, 1998–2007

Table 1A: The Impact of Mining on Aggregate Growth

	2001 million/Tshs	2007 million/Tshs	Cumulative growth	Annual average
GDP at constant 2001 market prices	9,100,274	13,801,849	51.7%	7.0%
Mining and quarrying	159,979	377,487	136.0%	15.2%
GDP minus mining and quarrying	8,940,295	13,424,362	50.2%	6.8%

Source: Authors' calculations and National Accounts of Tanzania Mainland, 1998–2007

The non-mining sectors – agriculture, services, construction, and manufacturing – generate tax revenue, local commodity demands, and jobs. Hence their potential impact on poverty reduction is not just felt through tax and spending. The remainder of this paper will focus on how increases in the household market incomes generated by growth in these sectors might be made more favourable to the poor. Because most Tanzanians depend on agriculture for their livelihood, the growth rate of agricultural income is particularly crucial to poverty reduction, and sectoral growth is closely linked to the level of investment in each sector. Between 2001 and 2007, gross fixed capital formation in agriculture increased by only 6.0 per cent a year, in contrast to 20.0 per cent for construction, 12.6 per cent for mining, and 9.8 per cent for manufacturing.

From an institutional perspective, the private sector has only recently regained its role in capital formation after nearly five years of public-sector dominance in investment (see Figure 1). With low quantities of investment in the sector, agriculture retains a static technological base, one with limited potential for the rural poor who are dependent on agriculture for their income.

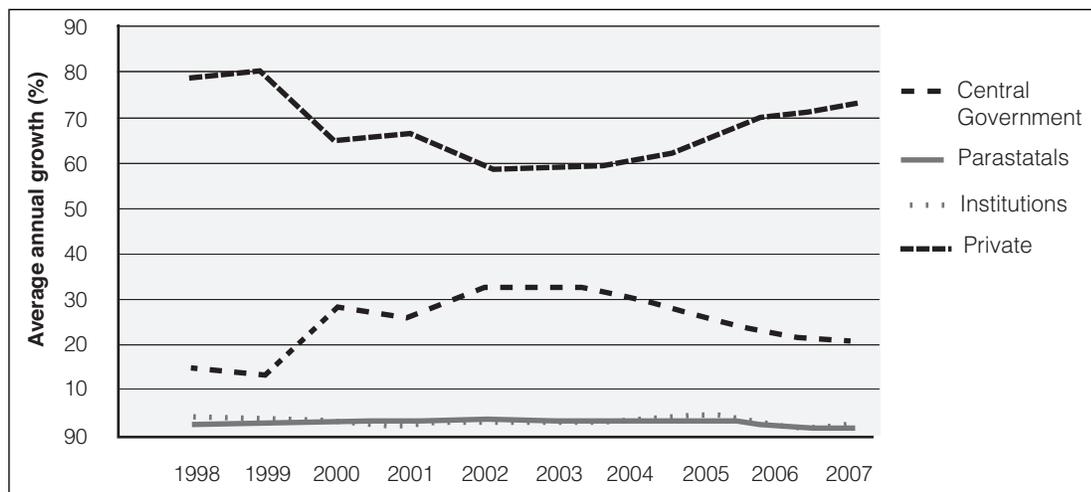
Despite agriculture's declining share in GDP, the number of households dependent on agriculture appears to be growing steadily. For example, based on HBS data (2001 and 2007) on the distribution of employment for each sector, and assuming that it could be applied proportionately to the whole population, a linear extrapolation indicates that the number of people who depend on agriculture has grown by 3.7 per cent per annum since 2001. Apparently migration from agriculture to other sectors is constrained by limited employment opportunities, trapping those who may desire to leave the agriculture sector. The process seems to have been complicated by a shift in investments from the private sector to the state sector since 1999, although there is a recovery from 2005 onwards (see Table 2 and Figure 1).

Table 2: Gross Fixed Capital Formation

	2001 (% growth)	2007 (% growth)	Average annual growth (%) 2001 – 07
Central government	26.7	22.1	-2.9
Parastatals	2.9	2.3	-3.4
Institutions	3.6	2.4	-5.7
Private	66.8	73.2	1.6

Source: National Accounts of Tanzania Mainland, 1998–2007

Figure 1: Gross Fixed Capital Formation



Source: National Accounts of Tanzania Mainland, 1998–2007

The Economic Survey also provides data on regional GDP. Regional GDP figures do establish some useful information, even though they are compiled from the national aggregates and are at best only indicative, since standard methodologies may not be applied in the computations.

Table 3: Regional Distribution of GDP Per Capita (Tsh)

Region	2001	2007	Average annual growth (%)
Dodoma	173118	193036.2	1.9
Arusha	310244	370567.8	3.2
Kilimanjaro	170021	383059.2	20.9
Tanga	213779	379457.2	12.9
Morogoro	229672	342117.1	8.2
Pwani	201984	238184.9	3.0
Dar es salaam	619987	676003.9	1.5
Lindi	206050	278415.8	5.9
Mtwara	295181	242765.8	-3.0
Ruvuma	231140	394601.3	11.8
Iringa	276638	406215.8	7.8
Mbeya	225477	368929.6	10.6
Singida	204778	182288.2	-1.8
Tabora	205246	245982.9	3.3
Rukwa	246928	320284.2	5.0
Kigoma	172868	237032.9	6.2
Shinyanga	257025	219589.5	-2.4
Kagera	167588	219457.2	5.2
Mwanza	309083	330938.2	1.2
Mara	204052	295218.4	7.4
Manyara (2002)	298117	345126.3	3.2
TANZANIA MAINLAND	258130	326271.1	4.4

Source: National Accounts of Tanzania Mainland, 1998–2007

Being over and above the national average rate of growth, the per capita growth in regions such as Kilimanjaro (20.9%), Tanga (12.9%), Ruvuma (11.8%), Mbeya (10.6%), and Morogoro (8.2%) indicates the presence of some progress in the regional distribution of wealth and poverty reduction in these regions during the 1998–2007 period.

The signs of the emergence of regional growth centres could provide a further boost to increased production and reduced poverty in the long run. Several regions have, however, experienced stagnation or a drop in per capita income. Since these represent declines from already low incomes, rising poverty in these regions is very likely (see Table 3).

Income Inequality

The wide differences in sectoral growth rates as well as the concentration of the majority of the labour force in low productive sectors, such as agriculture, appear to have contributed to high levels of income inequality. The Gini coefficient of income inequality has been nearly constant, increasing only from 0.33 in 2001 to 0.34 in 2007. However, as Milanovic, Lindert, and Williamson (2011) have recently noted, because the poor must receive some income if they are to survive, it is not possible for the rich to get all the national income. This puts a maximum upper boundary on the Gini index, which is lower at lower levels of per capita income. They estimate the maximum feasible Gini index for Tanzania to be 0.44,⁷ which is not very far from its current level.

All the same, it has long been known that the Gini index is highly sensitive to changes in the middle part of the income distribution, while the Theil index and the generalized entropy family of indices are more sensitive to changes in the lower end of the income distribution.⁸ When looking at Tanzania, Mkenda, Luvanda, and Ruhinduka (2010) indicate that there has been a substantial increase (19%) in inequality (from 0.31 in 2001 to 0.37 in 2007) when using a theta value of 2, which is more sensitive to the distribution among the poorest.

⁷ Milanovic, Lindert, and Williamson (2009) note that the survival subsistence needs of workers can be satisfied with a smaller percentage of national income in rich countries, so the maximum inequality level rises with the mean income. For countries like the US, Germany, or Sweden, survival subsistence needs are a small fraction of total national income, so the maximum feasible Gini is approximately 0.98. Their assumption that survival subsistence is an absolute income level of \$300 PPP per capita in all countries at all times is crucial to their calculations of maximum possible inequality.

⁸ See Jenkins (1991), among others.



Comparing National Accounts and Household Survey Estimates of Trends in Living Standards

As Deaton (2005), Atkinson and Lugo (2010), Mkenda, Luvanda, and Ruhinduka (2010), and others have emphasized, divergences between National Accounts and household survey-based estimates of consumption are not unusual in international data.⁹ Per capita “household sector” consumption as reported in the National Accounts often shows different rates of growth and varying levels when compared to the average consumption expenditures which households report in household surveys. These differences can be explained (at least partially) by conceptual dissimilarities between the household sector in the System of National Accounts (SNA) and actual households in surveys, and by methodological differences. Discrepancies like these are particularly stark in Tanzania. Per capita household sector consumption, as reported in the National Accounts, stood at Tsh 21,810 per month in 2007, indicating a growth of 3.4 per cent per annum. In contrast, household consumption, as per HBS 2007, stood only at Tsh 10,473, reflecting an average annual growth of 0.8 per cent during 2001–2007.

Computing the trend of real average income growth requires estimating both the trend in nominal incomes and the calculation of an accurate deflator for price inflation trends. Tanzania is certainly not the only country in which both calculations can be contested terrain. It is noteworthy, however, that even if some Tanzanian data sets diverge,¹⁰ available subjective estimates of income growth broadly agree in noting a lack of progress in perceptions of real income trends.

In 2007, REPOA’s “Views of the People Survey” asked 4,986 randomly selected respondents from mainland Tanzania who were 25 years of age or older to answer the following question: “What is your economic situation now compared to three years ago?”. “Much worse” was the response given by 26.7 per cent, while 23.2 per cent said “a little worse”. Since 26.0 per cent said their situation was “the same”, that left only 22.7 per cent to say “a little better”. Less than 1 per cent reported their economic situation as being “much better”. The Household Budget Survey of 2007 asked 10,452 household heads a similar question, albeit with a different reference period (“How do you compare the overall economic situation of the household with one year ago?”). The responses were broadly similar to those obtained in the REPOA survey: “Much worse now” was reported by 21.7 per cent, while another 22.0 per cent stated “a little worse now”. The most common answer – 27.8 per cent – was “same”, while 25.1 per cent said “a little better now”. Only 1.8 per cent thought their economic situation was “much better now”.

In short, roughly half of the population from Tanzania mainland report being “much” or “a little” worse off, about a quarter say there has been no change in their economic conditions, and almost all of the remaining quarter reporting being “a little” better off now when compared to the past.¹¹ This is not what one would expect if household incomes were, in general, growing steadily at seven percent per annum – i.e. the rate of growth of real GDP.

⁹ These divergences are not unique to developing countries. Indeed, some discrepancies are arguably more important in affluent nations – e.g. the household sector in National Income Accounts includes non-profit organizations and some nonbank financial intermediaries (such as hedge funds).

¹⁰ In Tanzania, there are sometimes important dissimilarities in estimates derived from different statistical sources. For example, Table 5.4 of the Integrated Labour Force Survey of 2006 puts the percentage of mainland Tanzanians working in agriculture at 55.0%. The Human Development Report (2009) uses the Household Budget Survey of 2007 to put the number at 55.0%. UN (4.9%) and HBS (6.1%) estimates of the percentage of the populations over 60 diverge appreciably. The percentage of houses with tin roofs (surely an objective and easily ascertainable characteristic!) is not at all the same in HBS 2007 as what is found in data from the same year in REPOA’s “Views of the People Survey”. And the list could go on. All things considered, cross-validation from multiple sources, wherever possible, seems to be the desirable strategy.

Additional evidence which shows that most people have experienced marginal growth in living standards comes from the HBS 2007 micro-data, where food expenditures were 63.7 per cent of total household expenditure of all types for the median Tanzanian household.¹² This percentage rises even higher, as Engel's Law has long held, for those households below the median. Spending on food is such a central part of the household budgets of Tanzania's poor and nearpoor, to the extent that if incomes at the bottom of Tanzania's income distribution had risen appreciably, one would expect to have seen increases in per capita food consumption. Hence, the observation made by Atkinson and Lugo (2010:15)¹³, namely that "per capita food consumption has hardly changed" between 2001 and 2007, is an important confirmation of the subjective response to stagnating living standards at the bottom of Tanzania's income distribution.

Although Mkenda, Luvanda, and Ruhinduka (2010:30) note that the 2001–2007 period saw improvements in ownership of consumer durables (such as radios or bicycles) and housing standards (in non-earth floors and durable roofs and walls), these changes were typically fairly small for the poorest quintile, and were concentrated, as one would expect, among wealthier income quintiles. Although the authors are undoubtedly right to say that "the exclusion of durables in the consumption aggregates underestimates the welfare improvement between 2000 and 2007" (2010:31), one should note that this underestimate can be expected to be greatest for the most affluent households.

In general, because assessing the value of service flows from durables and housing involves complex and often very problematic estimates, and because the resulting numbers are also typically not very large for poor households, this issue is ignored in poverty measurements made in all countries. In this respect, Tanzania's data are not so unusual. Mkenda et al. (2010:31–38) also note that the value of in-kind education and health care services received by poorer Tanzanians also increased between 2001 and 2007. Were poverty to be measured using a multi-dimensional index of deprivation, such trends in services received might somewhat alter the time trend of measured poverty. However, omitting the changing value of in-kind government services from the official measurement of poverty is not something unique to Tanzania – in fact, in this respect Tanzania is again completely typical.

Meanwhile, although SNA data indicate that compensation of employees grew at a healthy 9.4 per cent a year, one has to remember that paid jobs with government, parastatals, and private employers comprise of only 11.6 per cent of the economically active population. State-sector dominance in resource use is confirmed by an annual growth of 11 per cent in government consumption. Even if one excludes recurrent education expenditures from government consumption expenditures, the story remains the same, as education expenditures per capita grew by 6.6 per cent per annum during this period, much less than in other areas.¹⁴

¹¹ Similar answers were obtained when the question concerned the economic situation of the community – 20.2% "much worse off"; 19.7% "a little worse now"; 29.3% "same"; 24.4% "a little better now"; and only 1.7% "much better now".

¹² Calculations by authors.

¹³ The underlying analysis is Hoogeveen and Ruhinduka (2009:Table 2.2).

¹⁴ One can assume that education expenditures could be treated as those on human capital development and as such are a part of capital expenditures. Education expenditure data are from UNData.

Table 4: Per Capita Household Consumption and Compensation for Employees

	2001	2007	Average growth (%)
Household consumption (annual)	207,592	261,723	3.4
Government consumption (annual)	32,702	65,184	11.0
Government consumption exp on education	6,449	6,588	6.6
Government consumption excluding Education	26,253	58,595	12.8
Compensation of employees (annually)	43,824.3	46,053.9	9.4
Household consumption: SNA (monthly)	17,299	21,810	3.4
Household consumption: HBS (monthly) ¹⁵	10,711	11,220	0.8

Source: National Accounts of Tanzania Mainland, 1998–2007 and HBS 2007

The huge gap in household consumption when using SNA and HBS data can be partly explained by differences in the price deflators employed in the two scenarios.¹⁶ In fact, the difference arising from the two price deflators alone accounts for 42 per cent of the gap. With the linear approach adopted above to estimate the number of people dependent on agriculture, we can compute the per capita income of those dependent on agriculture to be Tsh 10,719 (2001 prices) against Tsh 8,507 for rural household, as per HBS 2007. If one applies the same price deflator used in SNA, this would increase to Tsh 11,561, a comparable figure for that under SNA.

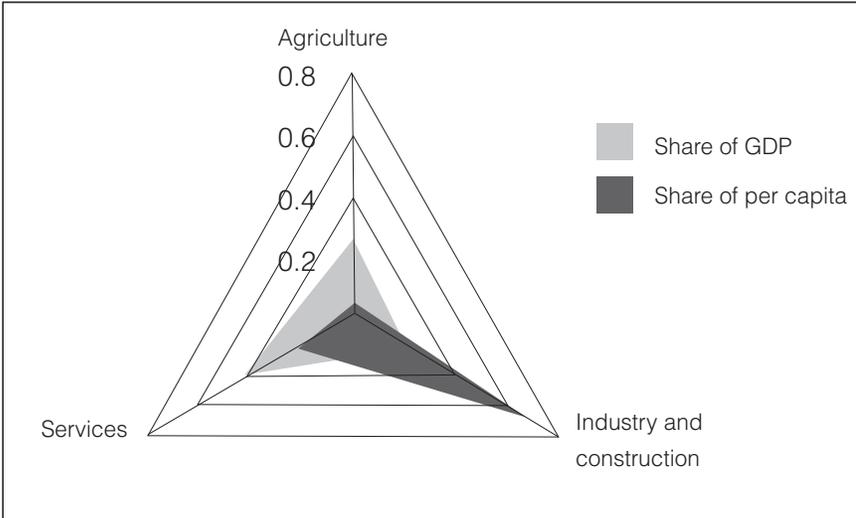
The differences between sectors in terms of household consumption in Tanzania are not unusual. Incomes in traditional agriculture are typically lower than incomes in the expanding manufacturing and service sectors – indeed it is the expectations of higher incomes in the non-agricultural sector which typically motivate labour mobility between sectors, and facilitate the long-term decline in percentage employed in agriculture that accompanies development. As Harris and Todaro (1970) pointed out many years ago, migrants from rural areas have to make a bet on their chances of getting good jobs in urban areas, versus their chances of subsisting in the informal economy, and many lose that bet. In Tanzania, the social problem is that non-agricultural sectors are not generating the job growth necessary for productively employing those who have been enticed out of agriculture.

Figure 2 shows the sectoral disparities in GDP and per capita income. Slow growth in agriculture has a dampening effect on overall growth and per capita income. Per capita income growth in this segment of the population was only 0.7 per cent per annum, against 7.7 per cent in the non-agricultural sector. If growing non-agricultural sectors fail to pull enough excess labour out of agriculture, the growth in the agricultural labour force, combined with relative stagnancy in agricultural output, will inevitably push people into poverty (see Figure 3). Average growth of roughly 4.5 per cent in agricultural output during 2001–2007 is highly inadequate to raise per capita income in the context of a growing rural population. If one takes the relatively rich farmers out of this picture, it is hardly surprising that the income of the bottom 40 per cent of the population did not change at all during the period captured by HBS 2007.

¹⁵ HBS data for 28 days adjusted for one month.

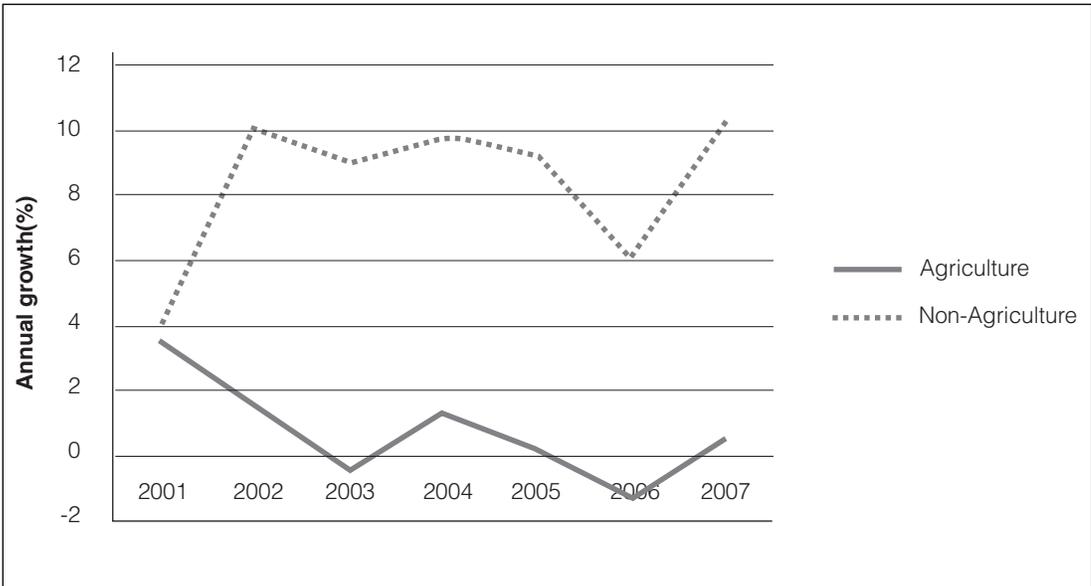
¹⁶ See Atkinson and Lugo (2010) for an analysis of how the measurement of poverty depends a lot on the type of deflator used.

Figure 2: Sectoral disparities in GDP and Per Capita Income - 2007



Source: National Accounts of Tanzania Mainland, 1998–2007

Figure 3: Per Capita Income Growth



Source: National Accounts of Tanzania Mainland, 1998–2007 and Bank of Tanzania Annual Report 2008

Between 2001 and 2007, marketed agricultural output increased only by 4.7 percent.¹⁷ Among the cash crops, only cotton (34.4%) and tobacco (56.4%) registered increases in volume during 2001–2007. While the volume of crops like coffee (-2.3%), tea (-1.3%), and cashew nuts (-56.6%) in fact dropped during the period, the production volume of sisal

¹⁷ It is assumed that the monetary value of agricultural output represents the marketed agricultural output.

remained stagnant. When looking at their proportion of the total value in agriculture and fishing, the value of these cash crops increased only marginally, from 5.1 per cent in 2001 to 7.7 per cent in 2007. Moreover, most cash crops experienced significant variations in prices and production volumes. Despite gains in the volume of production (except sorghum), productivity of staple crops like maize (0.5%), rice (10%), wheat (5.5%), cassava (39%), and sorghum (9.4%) also dropped as a result of deteriorating technology.

In agriculture, as in other industries, output is generally obtained when land, labour, and capital are combined at a given workplace using a specific technology. Therefore, low levels of average labour productivity can be seen as products of one or more of the following: (1) relatively little capital and other inputs for the available workforce, (2) the use of inefficient production technology, or (3) too much labour for the amount of productive land, capital, and other inputs currently available. Much policy emphasis in Tanzania has historically been placed on attempting to remedy the first two issues. Much less attention has been paid to the third and to the fact that improving labour productivity will not, in itself, necessarily guarantee higher farm incomes if the price of output falls as the level of production rises.

Tanzanian farms have, on average, few non-labour inputs. Access to electricity in rural Tanzania through the national grid is only 2.5 per cent according to the Household Budget Survey (HBS 2007), hampering any prospect of value addition at the local level. It was only 2.0 per cent in 2000/01, indicating an annual increase of just over 3 percent. Slow mechanization of the agricultural sector is also limiting the sector's progress. In Tanzania, the initial thrust of mechanization of agriculture has dwindled over time. Tractors per 100 square kilometre of arable land in Tanzania dropped from 32 in 1961 to 23 in 2005. This trend was also reflected in HBS 2007, which reported a drop in the number of tractors held by households from 0.2 per cent in 2000/01 to 0.1 per cent in 2007. HBS 2007 also reveals similar declines in other agriculture-related productive assets, such as ploughs and coffee pulping machines held by households. The use of fertilizer, among other factors, plays a critical role in increasing agricultural productivity. However, fertilizer consumption in Tanzania remained low at 10.4 kg per hectare in 2005 (one tenth of what Thailand, a major producer of rice, uses in its farms).

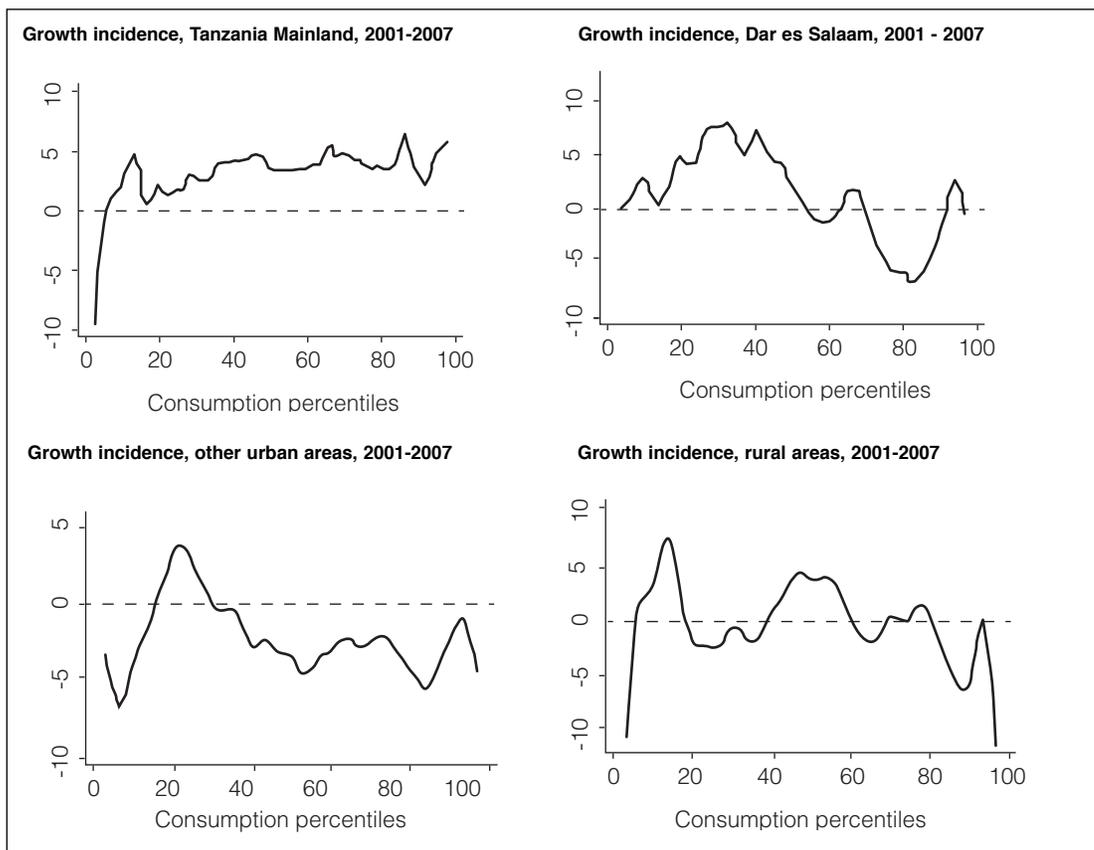
One way for the poor in rural Tanzania to escape poverty is by continuing to work in agriculture, increasing their productivity, and making more farm income. An alternative possibility is to leave the farm and make more income elsewhere. If the latter possibility had been widespread – i.e. if more jobs had been available in nonagricultural employment – more people would have escaped poverty by leaving farming, which would have had the added benefit of increasing the productivity and incomes of the remaining agricultural workers, because these workers would have been scarcer. If the non-agricultural sector is an attractor – i.e. a source of employment for excess labour in the agricultural sector – the average incomes of those remaining in agriculture tend automatically to rise.

However, the fact that poverty did not diminish is evidence that neither option was widely available in Tanzania between 2001 and 2007. The problem of inadequate growth for Tanzania's poor is thus related to both insufficient creation of non-agricultural employment and inadequate growth of farm productivity.

Growth Incidence from HBS 2001 and HBS 2007 Data

So far this paper has relied on aggregate National Accounts data, but the same basic picture emerges from an analysis of micro-data related to household income and expenditures. A standard tool used when looking at the distributional incidence of growth is the “growth incidence” idea¹⁸ – i.e. calculate the percentage change in expenditure at each percentile of the distribution of expenditures. Using this idea, growth could be considered “absolutely pro-poor” if the mean growth rate for the poor is greater than zero and “relatively pro-poor” if, in addition, the mean growth rate for the poor is at least as large as the growth rate in the overall mean. Hence, “absolute pro-poor growth” only requires that the poor be better off on average in absolute terms, while “relative pro-poor growth” requires the distributional shifts to be pro-poor as well (Hoogeveen and Ruhinduka, 2009). Hoogeveen and Ruhinduka (2009:14–15) use HBS 2001 and HBS 2007 and note that the growth incidence curve for Tanzania mainland lies almost entirely above zero and is flat, as seen in Figure 4 below. As Figure 4 also shows, the growth incidence curve for rural areas is the most concerning, as it hovers around the zero-growth line. For most people living in rural areas there has been a negligible to no increase in consumption between 2001 and 2007.

Figure 4: Growth Incidence Curves for Tanzania



Source: Hoogeveen and Ruhinduka (2009) Figure 2.5

¹⁸ See Martin Ravallion (2004).

The virtue of the growth incidence curve is that it shows in detail which parts of the consumption distribution have shifted up and which have not. But one has to be careful in interpretation because:

(i) HBS 2001 and HBS 2007 are sampled from the Tanzanian population at two different points in time. Over time, the composition of the population changes – 20.74 per cent of the population are six years of age or less in HBS 2007, and are thus individuals who could not possibly have been sampled in HBS 2001.

(ii) There is constant ‘churning’ in relative incomes, as the economically fortunate move up the income hierarchy, while others fall in relative position. Even if one were to look only at persons seven years of age and up in 2001, the changing rankings of individuals in the income distribution imply that, for example, the bottom ten per cent in 2007 are not necessarily all, or even mostly, the same people as the bottom ten per cent in 2001.

Appendix B therefore uses a pseudo-cohort approach, analysing the growth of incomes by comparing the expenditures of birth cohorts in 2001 and 2007. It compares, for example, the total spending of 26-year-olds in HBS 2007 with the total spending of the same birth cohorts six years earlier (i.e. 20-year-olds in HBS 2001).

In the pseudo-cohort analysis, the year-to-year variability in mean expenditure is especially noticeable among the elderly. The increase in mean expenditure of the young, as they age from, for example, 8 to 14, largely reflects the rise in earning power of their parents. Younger individuals during the time between 2001 and 2007 experienced sharply increasing changes in average (or median) expenditure – at least in early life. However, further analysis shows that this growth is limited to the non-agricultural sector. There appears to be no consistent increase in income with age for those Tanzanians who work in agriculture.

Income Growth in Small-Scale Agriculture in Tanzania 2001–2007

Section IV and Appendix B use micro-data from HBS 2001 and HBS 2007. However, those data do not explain why poverty failed to decline. Although such micro-data are essential for measuring the welfare implications for individual households, in order to design economic policy which encourages pro-poor growth in Tanzania, one cannot simply generalize from the past micro-economic experiences of individuals. Fundamentally speaking, growth is a macro-economic phenomenon, in which sectors of the economy interact through markets in a general equilibrium setting. Macro-economic data show that:

- (1) growth in agricultural output has been relatively slow (4.1% per year, 2001–2009);
- (2) 74.2 per cent of the poor in Tanzania are employed in agriculture¹⁹; and
- (3) growth in agricultural income was much slower than growth in non-agricultural income.

Nevertheless, based on these observations, one cannot conclude that positive development for the Tanzanian poor is just a matter of transferring resources to agriculture so as to increase the agricultural output of poor farmers. Although this may be a necessary condition, it is not sufficient for sustaining high rates of growth in the rural economy and for reducing rural poverty.

The problem is found in the fact that Tanzanian farmers cannot control the prices at which they sell their crops. While it is possible for an individual farmer to escape poverty by increasing output, if all poor farmers were to increase their production and attempt to sell their increased output in local markets, prices would fall – indeed the inelastic nature of local demand implies that aggregate farm revenues would fall.

Binswanger-Mkhize and Gautam (2010) argue that this is the reason why the route out of rural poverty for Tanzania must be based on increased agricultural productivity and export sales. The Kilimo Kwanza initiative, which can be seen as Tanzania's green revolution to transform its agricultural sector into a modern and commercial one, is intended to raise agricultural productivity through enhanced investments, both public and private, in rural infrastructure such as roads and irrigation, and inputs such as high-yielding seed varieties, fertilizers, credit, and technology. The Southern Agricultural Growth Corridor of Tanzania (SAGCOT), an initiative that envisages contributing to Kilimo Kwanza's vision, is intended to benefit both commercial agriculture and rural communities. If the products from growth in Tanzanian agricultural output could be sold on international markets, either to neighbouring countries or overseas, the expectation is that, in these larger markets, greater amounts of Tanzanian output could be sold without a decline in market prices. In other words, farmers would no longer face declining prices in the local market, which would otherwise negate the increase in their marketed output.

¹⁹ "Agriculture" in this context means farming, livestock, fishing, and forestry (see PHDR 2009, Table 45, page 166; see also footnotes 5 and 16 above).

However, full integration into world food markets comes with a strategic, and possibly a political, price tag. At present, Tanzania is (on a net basis) nearly self-sufficient in food production and thus relatively insulated from the variability of world markets.²⁰ The desired objective of greater integration of Tanzanian agriculture into global food markets is based on the idea of offering domestic producers the opportunity to profit from international shortages. Yet this also necessarily implies that domestic consumers become more exposed to international variability in food prices. As Bryceson (1990, 1993) has emphasized, solving the “food security” problem has been central to the legitimacy of the state in Tanzania, in both colonial times and since independence. Because such a large percentage of household income in Tanzania is spent on food, food price fluctuations are serious business, both economically and politically.²¹ Tanzanian policy makers have therefore been cautious about fully integrating local markets into global food markets.

At any rate, whatever the policy stance the government takes towards global food markets, there cannot be large-scale increases in agricultural exports unless the necessary infrastructure is developed. Constrained as they are by present export capacity, if small farmers in Tanzania are to stay in agriculture and escape poverty, they must be able both to produce more output, and to sell it locally without substantial declines in prices. The only way that can happen is if the local demand for agricultural output increases, which can only happen if the size and/or income of the non-agricultural population expands. Growth of the non-agricultural population depends in turn on the availability of other types of employment. In this context, and recognizing the infrastructure constraints to which it is subject, it is worth noting how well manufacturing has done in Tanzania. Despite continual interruptions in electricity supply and long delays in port shipments of inputs and exports, annual growth averaged 8.5 per cent between 2001 and 2009 – over twice the growth rate in agriculture. This means that manufacturing GDP grew from 29 per cent to 41 per cent of agricultural GDP. The problem for Tanzania’s poor is that manufacturing did not grow faster, did not generate more jobs (still only 2.6 per cent of total employment in 2006), and did not act to attract the rural poor.

Therefore, the two critical components of growth for Tanzania’s poor are (1) productivity improvements in small-scale agriculture, which enable increased farm production, and (2) growth in nonagricultural employment, which generates income directly and provides the markets needed for increased agricultural output. Neither component can by itself be very effective in reducing poverty – indeed, decreased rural incomes and increased rural poverty will be the result if greater farm output depresses agricultural prices more than the proportionate increase in output.

²⁰ Minot (2011:21) examines the impact of world prices on local market prices during 2007–2008 in eight local markets in Tanzania. Only in Arusha was there a significant relationship with the world price of maize. Four of eight local rice markets in Tanzania appeared to be linked to world rice markets, but only between 24% and 54% of the changes in world prices are transmitted to Tanzanians.

²¹ In HBS 2007 data, 63.7% of the total expenditures of the median households in Tanzania were spent on food (calculations by author).



Policy Implications

The above analysis leads us to a few key points:

- (1) Agriculture has grown slowly compared to other sectors, as productivity has been low. This could be due to low investments in the agricultural sector; private fixed capital formation has been very low.
- (2) While high growth rates have been seen in other sectors, such as mining and industry, these sectors have failed to generate enough employment to attract excess rural labour.
- (3) Some signs of regional growth centres seem to be emerging, indicating a certain level of redistribution of income through regional growth. But regional disparities remain with some regions stagnating or even experiencing declines in income.
- (4) Despite the fact that questions remain on the quality of data, Tanzania seems to enjoy a high rate of growth. Yet both data sources indicate continuing income disparities. Micro-data confirms that rising income is concentrated mostly in the nonagricultural sector.

What are some policy implications? Because agriculture remains the livelihood of the majority of Tanzanians, its development warrants special attention. The Kilimo Kwanza initiatives and programmes like SAGCOT do address that policy imperative.

However, farming has always been subject to weather risks, and global warming is increasing those risks. When faced with greater uncertainty, the purchase of more 'insurance' is often a rational response – and there are many possible 'insurance' options. Investing now in research on crop varieties with greater heat tolerance can, for example, be seen as having an insurance value against the risk that currently available crop varieties will suffer substantial yield declines in the future. Investing in rural road networks, built to a standard that can cope with torrential rains, may also yield greater returns than would be estimated with data on past climate patterns, if one can expect greater future volatility in rainfall. A futuristic approach would also involve the effective use of technology, including cell-phones in agricultural extension work and in connecting farmers to markets.

Tanzania is yet to exploit its potential gains from regional trade. Tanzania's trade with neighbouring countries and the rest of Africa remains low, and there is immense potential for cross-border trade, particularly in agricultural products with neighbouring land-locked countries. Recently, Binswanger-Mkhize and Gautam (2010) have argued that greater export orientation can offer the market access that Tanzanian farmers need, if improvements in their productivity are not just to imply lower prices for their crops. Likewise, it is desirable to have a world where structural trends point to higher food prices, since those higher prices would enable fuller utilization of Tanzania's agricultural potential.

Agriculture is important in employment generation and poverty reduction, but it cannot stand alone. While attempts have to be made to increase agricultural productivity, other sectors must have a supporting role by generating employment for the excess labour in agriculture,

thus creating demand for agricultural products. Furthermore, if Tanzanian farmers become more prosperous in future years, they will gain the income to enable greater investments in more capital intensive production, instead of the stagnancy observed between 2001 and 2007.²² But if this happens, there are clear implications for rural/urban migration; when tractors instead of jembes are used to till the soil, average incomes in agriculture will be much higher, but far fewer farm workers will be needed. The dilemma for poverty reduction is that displaced farm workers need jobs. Progress is not found when the rural poor simply move to the cities to become the urban poor.

The fact that sectors such as mining and manufacturing have not been generating adequate employment warrants promoting private sector involvement in labour-intensive industries. One of the critical constraints to the development of small- and medium-scale industries in Tanzania, which could be directly linked to farm products, has been the lack of access to reliable energy sources, particularly electricity. Other infrastructure inadequacies, such as inadequate port capacity, are equally important. A frequent complaint has pointed to the not-sofriendly business environment in Tanzania. Removing such bottlenecks should be at the top of the national development agenda. As indicated earlier, the mining industry has few forward linkages, but a proper taxation system could give the government ample fiscal space to develop not only the sectors that are currently more dynamic, but also to make sectors such as agriculture more vital in the years to come.

The signs of emerging regional growth centres are a welcome development, and these centres need further incentives and support. An important driver for regions that are lagging behind could be the supply of electricity and water and the building of roads, which would enable rural villages to connect to cities.

²² See PHDR 2009 Table 41, page163



Conclusions

We analysed growth incidence curves and pseudo-cohorts to show that Tanzania's growth has not been pro-poor. The underlying reason appears to be the slow growth in agriculture, on which most rural poor make a living. Because agriculture is the main livelihood for many people and contributes to a quarter of the GDP, the development of agriculture is essential for poverty reduction in Tanzania. However, we argue that developing agriculture alone would not enable Tanzania to make a dent in addressing poverty in a sustainable manner. For effective poverty reduction Tanzania needs to focus on both improving productivity in small-scale agriculture, which will increase farm production and raise farm incomes, and achieving growth in non-agricultural employment, which will generate income directly, thus providing the local markets needed for increased agricultural output. This paper began with four questions, and below we present our tentative answers to them.

- (1) Is the lack of progress in poverty reduction in Tanzania just a brief interlude before the trickle down of the benefits from the current pattern of growth?
 - a. If the momentum behind the robust growth found in certain regions continues, then the answer may be yes. However, if the current growth pattern continues, one that excludes the rural poor, the answer may be no. If revenues from extractive industries continue to be miniscule or misused, growth of the extractive industry enclave will remain irrelevant to poverty reduction. Finally, if Kilimo Kwanza is interpreted to mean focussing only on growth in agricultural output, then the initiative is like trying to run with one leg.
- (2) Is the lack of progress in poverty reduction solely a reflection of a failure of policy to allocate enough resources to agriculture?
 - a. Not solely. Since most of the poor now get their incomes from agriculture, it is clear that higher prices or greater output for Tanzanian farmers has to be an important ingredient for poverty reduction. At the same time, this paper has emphasized the fact that pro-poor growth, which reduces agricultural poverty, has to also generate sufficient non-agricultural employment to absorb the labour displaced by improved agricultural productivity and to provide a local market for agricultural output. In a sense, the latter point is a reflection of policy failure – although not a failure of policy *towards agriculture*.
- (3) Could there be a bigger failure of policy design? Is a paradigm shift in development policy required for the economy to take off on a more robust growth path while also ensuring a significant reduction in poverty?
 - a. Probably yes. Official documents like the National Strategy for Growth and Reduction of Poverty (NSGRP) and the Five Year Development Plan contain many worthwhile objectives, some of which (e.g. increasing the growth of the manufacturing sector, repairing rural roads, etc.) duplicate the goals emphasized here. But a sharper focus on the need for job creation in the non-agricultural sectors of the economy is essential, and the implementation of such policies is even more important.

(4) How can Tanzania retain high growth that is simultaneously pro-poor?

- a. While one could argue that agriculture is a driver of growth in Tanzania (as it contributes to one quarter of the GDP and provides employment to the majority), one could equally argue that agriculture is a poverty trap in its current state. A productivity drive could make the sector a driver of growth and make it pro-poor, as most poor live in rural areas and depend on agriculture. But this would happen *only if agricultural prices do not decline*. Greater demand is essential if greater agricultural output is to be absorbed. While development of agriculture should be a priority, faster economic growth is usually generated in sectors like industry and services, where private actors could play an important role. We have identified infrastructure bottlenecks as a key issue that needs to be addressed urgently. But other issues, such as efficient institutions, logistics, and a quality labour force, are equally important in sustaining pro-poor growth.

Appendix A

Illustrative Example of the Potential Anti-Poverty Impact of Resource Taxation

Barrick Gold Mines provides a concrete example of the unrealized antipoverty impact of tax revenues from resource extraction in Tanzania. Barrick is exempted from VAT on purchased inputs and has not paid the corporate profits tax since coming to Tanzania.²³ Royalty payments amounted to an average USD 37 per ounce in 2010.²⁴ However, in 2010 the production of 716,000 ounces of gold, which sold at a world price just over USD 1,400²⁵ an ounce and was produced with average costs (including amortization and taxes) of USD 725, meant that Barrick Gold had USD 514 million in profits on its Tanzanian operations.

If corporate tax had been paid on those profits at the US federal corporate tax rate of 35 per cent, the revenue would have been roughly Tshs 225 billion.²⁶ Tax revenue of this magnitude would have been more than sufficient to fund a universal monthly²⁷ pension of Tshs 10,000 for all Tanzanians over 65, and is about 80 per cent of what such a pension paid at age 60 would cost.²⁸ The benefits of a universal old-age pension would be widely shared. Because most elderly Tanzanians live in large extended families, most of the Tanzanians who would be moved out of poverty by an old-age pension are in fact the younger members of the households in which the elderly now live.

Hence, there would be a significant impact on poverty – a universal pension at age 60 of Tshs 10,000 paid every 28 days would, for example, cut 7.7 percentage points off the poverty rate (see Mboghoina and Osberg, 2011:Table 4).

Clearly, additional tax revenue of Tshs 225 billion could be spent in any number of ways. It is possible that some alternative expenditures might have an even larger anti-poverty impact than an old-age pension. This concrete example of government expenditure is chosen because:

- (a) it would have a large poverty-reducing impact;
- (b) its administrative feasibility has been demonstrated for twenty years in the South African context;
- (c) it is not happening now because the government of Tanzania cannot afford it now; and
- (d) the government of Tanzania could afford such a programme if the mining sector paid corporate tax at the US rate.

²³ Tanzania has introduced a new law (the Mining Act of 2010) that increases the rate of tax on minerals such as gold from 3 per cent to 4 per cent while also providing a provision for the government to own a stake in future mining projects.

²⁴ Total Tanzanian royalty revenue was USD 26,492,000 (= USD 37 per ounce on 716,000 ounces of production), or about 5.2% of operating profits. All financial and production data on Barrick are taken from: http://www.barrick.com/Theme/Barrick/files/docs_annualquarterly/2010/Q4-Year-End-Mine-Stats.pdf.

²⁵ Since 2010, the price of gold has risen significantly. Between mid-2011 and 2012, the price per ounce fluctuated in the USD 1600 to USD 1900 per ounce range.

²⁶ Using the exchange rate of USD 1 = Tshs 1,250 prevalent in 2010.

²⁷ This paper uses the term “month” to mean 28 days.

²⁸ For more details, see Mboghoina and Osberg (2011:Table 5) and Mboghoina and Osberg (2010). Tshs 10,000 per 28 days was approximately equal to the food poverty line per adult equivalent in 2007.

The more general point is that even if growth of the mining industry enclave in Tanzania is essentially irrelevant to marketmediated poverty reduction, profits in that sector are now large, so such growth is potentially important for tax and spend poverty reduction, *but only if the profits of the sector are taxed in Tanzania.*²⁹

²⁹ Note that corporate profits typically are taxed in the country of origin of the parent firm, so the absence of corporate profits taxation in Tanzania means a transfer of tax revenue from Tanzania to the treasury of the government of the parent firm's domicile. For example, Barrick's profits for 2010, at the tax rates applicable in 2010 in Canada (18% federal and 12% Ontario taxation of corporate profits) would be taxed at 30%. At these rates, a USD 514 million profit for Barrick in 2010 from its Tanzanian operations yields approximately USD 154 million in tax revenue to those governments (Canadian bilateral aid to Tanzania was substantially less – USD 80 Million in 2010 and USD 54 Million in 2009). Since tax treaties normally provide for reciprocal tax credit for foreign taxes paid, if corporate tax were payable in Tanzania, that revenue could flow to Tanzania, at the direct cost to the Canadian government. In general, by not taxing corporate profits from resource extraction in Tanzania, substantial revenue benefits are accrued by the government of the country of 36 domicile of the parent firm. However, because resource extraction firms are motivated by the after-tax return to their shareholders, they can be presumed not to care much about which government they pay taxes to.

Appendix B

Pseudo-cohorts and the Life-Cycle Growth of Income

Both HBS 2001 and HBS 2007 were cross-sectional surveys, but each drew samples from the Tanzanian population at different dates. For example, respondents aged 20 in HBS 2001 were a random sample of Tanzanian 20-year-olds in 2001. Most of the 20-year-olds of 2001 formed the population of 26-year-olds from which HBS 2007 drew a different sample of respondents.³⁰ Because both samples were drawn from the same underlying population, one can compare the two samples and ask, for example: “In the lived experience of individuals, how much did incomes go up, on average, between 2001 and 2007? What is the percentage increase in expenditure when comparing a cohort of a particular age in 2007 with the same cohort, but 6 years younger, in 2001?”

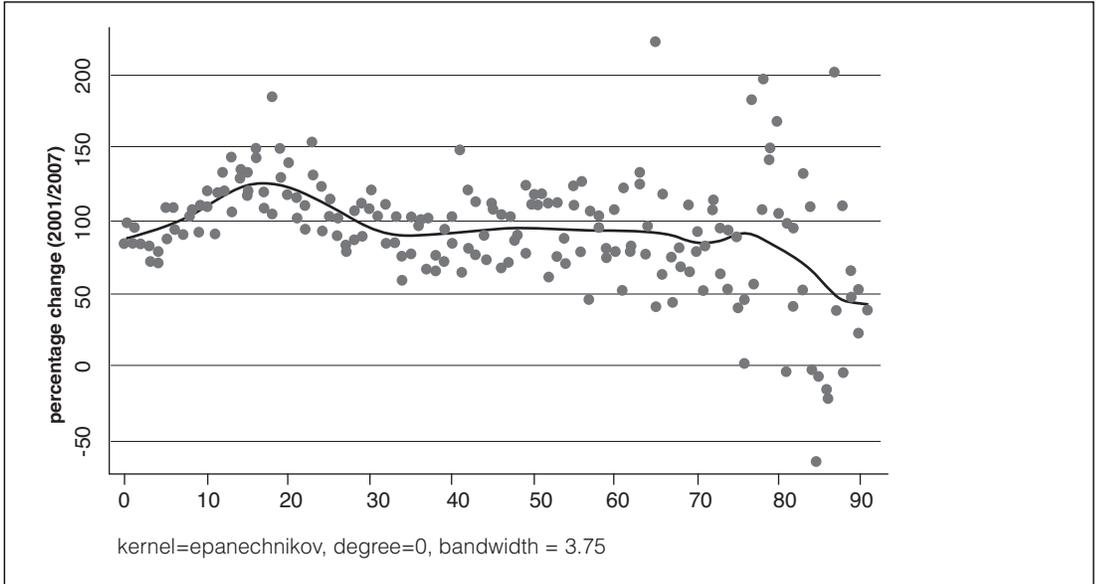
The age/earnings relationship can be compared to an escalator that is always taking people up, but also always staying in the same place. It is quite possible for the earnings of all individuals to increase even if the average wages of people of all ages remains constant, which implies a need to supplement the discussion of average income trends in Section 3 above with some analysis of cohort-specific trends. Furthermore, the “human capital” perspective on earnings argues that if early investments in skill formation come at the cost of depressed early earnings, the return on those investments comes in the form of higher wages later in life. This implies that wages will typically increase with age.

To calculate the ‘typical’ return-to-work experience, we compare the population of (for example) 26-year-olds in 2007 with the population of 20-year-olds in 2001. To ensure our results are robust, we compare two measures of central tendency – the median and the mean – and two measures of resources – per capita household expenditures and per adult equivalent household expenditures. Both measures depend on an assumption of equal sharing within the household if they are to have welfare significance.

Figure 5 below plots the percentage change in nominal expenditures by single year of age in 2001 and fits a kernel density function to the data. The year-to-year variability in mean expenditure is especially noticeable among the elderly, and although the human eye is naturally drawn to the scatter of points among Tanzanians over 65, this is a bit misleading – people over 65 were only about 4 per cent of the sample in HBS 2007. Because the HBS collects data on householdlevel expenditures, the increase in mean expenditure of the young, as they age from 8 to 14, for example, largely reflects the rise in earnings power of their parents.

³⁰ In countries with larger flows of international migration than Tanzania, the possibility of differences between the characteristics of emigrants and immigrants might also be empirically important.

Figure 5: Median Expenditure Per Capital Under 65 Years of Age



Figures 6 and 7 are therefore restricted to those under 65 years of age in 2001. Figure 6 presents the mean, and Figure 7 shows the median of per capita household expenditure.

Figure 6: Median Expenditure Per Capital Under 65 Years of Age

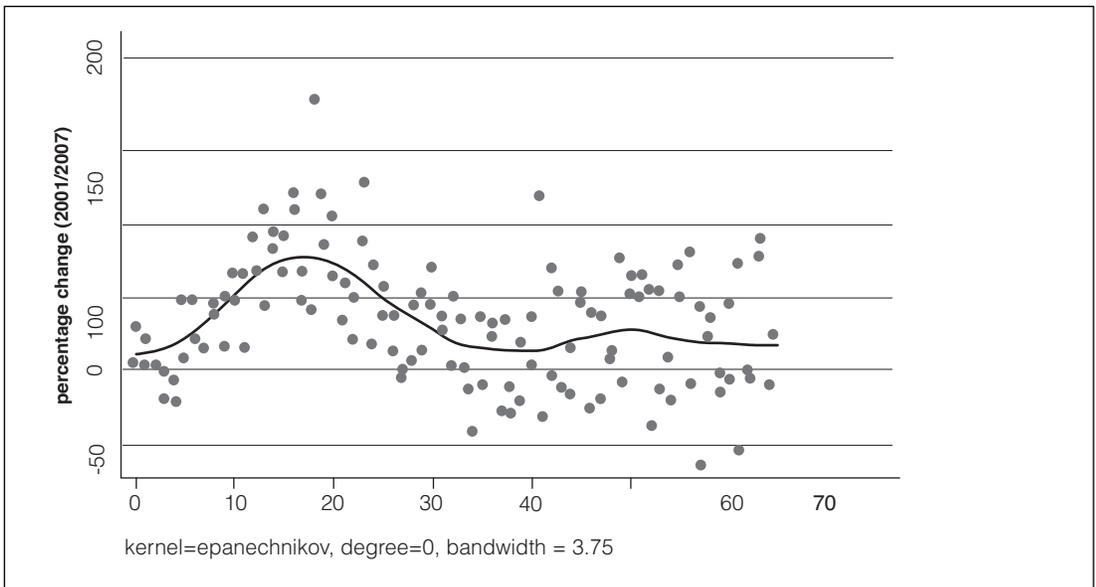
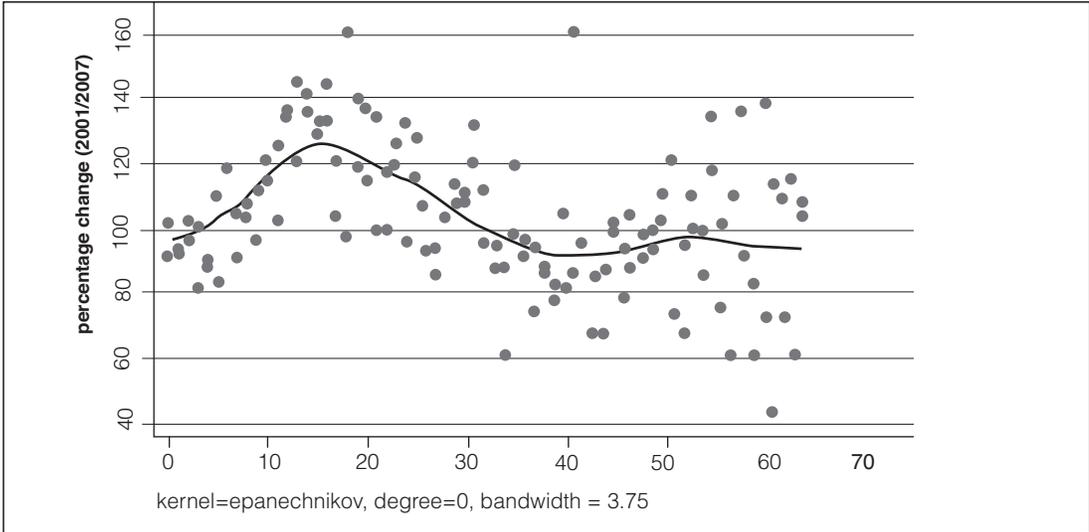
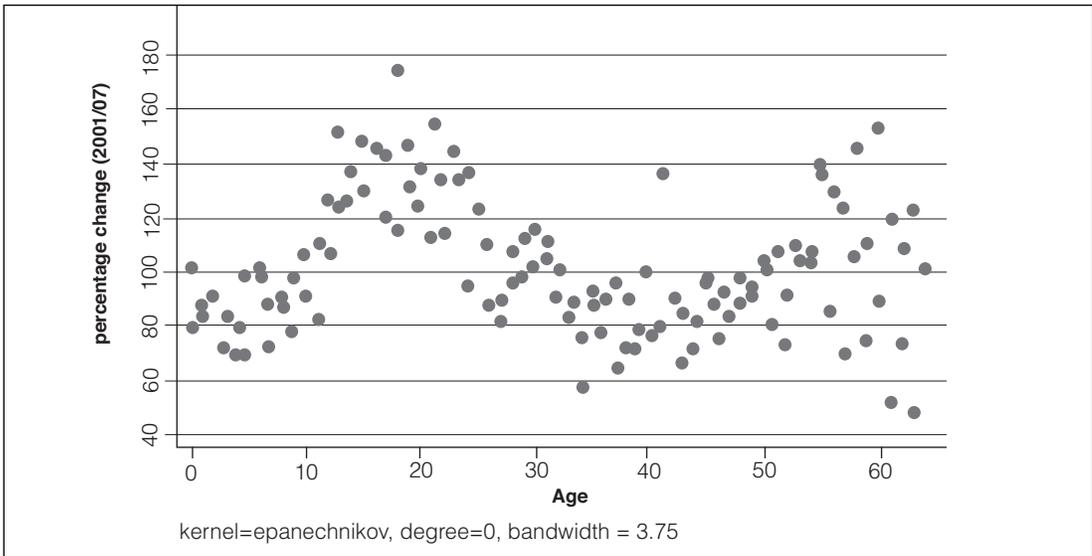


Figure 7: Median Expenditure Per Capital Under 65 Years of Age



Figures 5 to 7 are included here just to show that the general pattern of percentage increase in expenditures is robust to alternative measurement choices. Figure 8 is a better indicator of the lived experience of trends in living standards among the Tanzanian population, because it uses the median³¹ percentage increase, and because it adjusts for age and demographic composition of the household by calculating expenditure per adult equivalent. Figures 5 to 8 are reported in nominal terms. To convert nominal expenditure changes to real changes, one must subtract the increase of the consumer price index between 2001 and 2007, which the National Bureau of Statistics estimated to be 40.7 percent.

Figure 8: Median Expenditure per Adult Equivalent



³¹ Median expenditure is less subject to sampling variability than the mean and is a better indicator of the central tendency of a distribution, when the distribution is skewed, as it is in this case.

Thus far, the picture painted by the synthetic-cohort methodology is one in which younger individuals experienced sharply increasing changes in average (or median) expenditure between 2001 and 2007 – at least in early life. However, Figures 9 and 10 show that this is limited to the non-agricultural sector. There appears to be no consistent increase in income with age for those Tanzanians who work in agriculture.

Figure 9: Households Deriving Income from Agricultural Activities

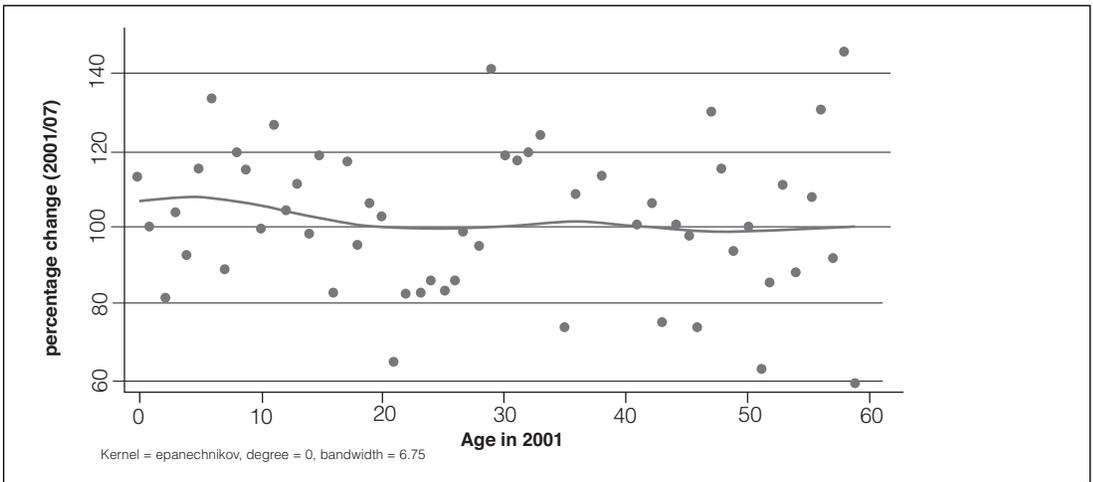
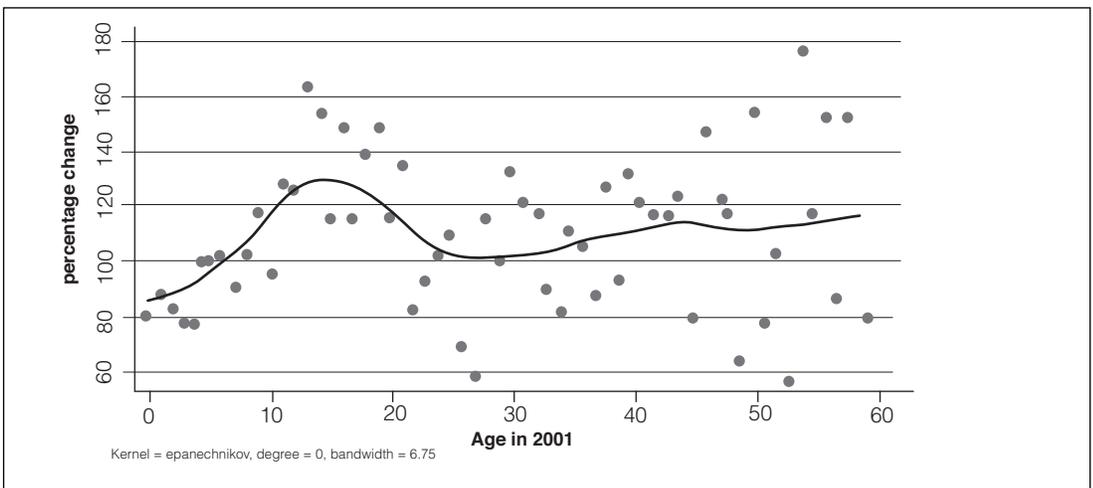


Figure 10: Households Deriving income from Non-agricultural Activities



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REPOA, is an independent, non-profit organization concerned with poverty and related policy issues in Tanzania. REPOA undertakes and facilitates research, enables monitoring, and promotes capacity building, dialogue and knowledge sharing.

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- **develop the research capacity in Tanzania;**
- **enhance stakeholders' knowledge of poverty issues and empower them to act;**
- **contribute to policy dialogue;**
- **support the monitoring of the implementation of poverty related policy;**
- **strengthen national and international poverty research networks, and forge linkages between research(ers) and users.**

It is our conviction that research provides the means for the acquisition of knowledge necessary for improving the quality of welfare in Tanzanian society.

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