THE POLITICAL ECONOMY OF AGRICULTURAL TECHNICAL CHANGE AND AFRICAN FOOD SECURITY

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Summary

Food security is both a widely accepted and a contested concept. There is wide agreement that “…all people, at all times, (should) have physical, social and economic access to sufficient, safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life” (FAO, 2001). Without food security human existence is threatened and social and economic activities undermined. But there is disagreement over the extent to which food security may be achieved through market exchange. Is food special in the sense that local control of its production is necessary, implying that it is rather “food sovereignty” that should be sought for? Such arguments have appeared both at local, and at national levels. When international food prices rose in 2007-08, many governments responded by restricting trade in food products in order to protect their own citizens.

In sub-Saharan Africa (SSA) lack of food security is widespread primarily in rural areas, especially among those producing their own food: subsistence farmers. Reasons behind this are manifold, and multi-level: local power relations in villages, lack of infrastructure and badly functioning markets, misdirected policies and regulations, unfair international trade relations and others. In order to improve food security, growth in the agricultural sector is imperative. This is because more food need to be produced, but primarily also because agricultural growth is especially effective at reducing poverty, through linkages with other economic activities.

Agricultural growth in sub-Saharan Africa faces numerous constraints, such as international trade rules, national policies, badly functioning markets and market institutions, lacking human capital, lacking security systems and others (Hårsmar, 2006). Furthermore, such growth needs to come through increased productivity, which in turn depends on technical change occurring. This chapter deals with how technical
change may be understood and promoted. It is argued that the innovation system approach is best placed to explain the technical change that is taking place. This approach allows a focus on various linkages that constitute constraints and possibilities for the promotion of technical change. Actors such as National Agricultural Research Systems (NARS), agricultural extension systems, farmers and farmer organizations, market actors of various sorts, politicians and regulators and the linkages between them are highlighted. Given the high degree of agro-ecological, socio-cultural, market and institutional diversity and complexity in SSA, a strong case for “selective learning”, or the decentralized “bazaar model” of innovation is made. This implies a need for active stakeholder participation in the adaptation and shaping of innovations.

While many research organizations see the need for such innovation strategies, weak capacity, a focus directed towards the international level, and pressure from large scale land investments create difficulties for decentralized practices. Hence, lessons need to be drawn from good examples, and good practices scaled up for food insecure people in sub-Saharan Africa to have improved control over their own lives.

1. Introduction

A majority of the population in sub-Saharan Africa (63%) lives in rural areas (World Bank 2009). This is a region where economies of most countries are dominated by agriculture. It is also the region in the world with the largest share of the population experiencing poverty. In 2005, 51% of the population in sub-Saharan Africa was living on 1.25 USD/day or less (ADI, Aug 2011). This marks a decrease from 59% living on 1.25 USD/day a decade earlier. However, poverty is still widespread, and primarily in rural areas. People living out of subsistence agriculture have experienced hunger more often than others. 31% in this category had experienced hunger “many times” or “always”, whereas comparable figures for people living in urban areas were between 7 and 12% (Afrobarometer, 2005).

While economic growth on average has been very rapid in many African countries during the 2000-2010, a number of these countries have experienced growth accompanied by slow reductions in poverty. In these cases, rural areas have been marginalized in growth processes (Härsman, 2010). Agriculture has an especially important role for reducing poverty in low income countries, particularly through its linkages to other economic, labor intensive sectors, such as rural industries and services. Against this backdrop it is especially note-worthy that agricultural productivity has been growing more slowly in SSA, compared to other regions in the world.

SSA is the only region in the world where agriculture was growing at a rate lower than the population growth rate during the period 1965-2000 and also slower than the growth rate in the agricultural labor force 1980-2000. Even if the quality of this data often is questionable, because of a large shares of subsistence farming in many countries, the overall pattern in SSA is that most of the increase in agricultural production that has taken place has come from expansion of the area under cultivation (“extensification”), and especially from expansion of the area under cereal cultivation at the expense of other crops. A simultaneous decrease in fertilizer use, and only a small increase in irrigation led only to meager increases in cereal yields (Dorward et al, 2002). The
economic growth during 2000-2010 has not changed the pattern of extensification of agricultural production. Rainfed cultivation continues to dominate massively, despite examples where gross margins of irrigation are more than double those of rainfed cultivation (Hagos et al. 2009:12). Agricultural value added per worker, which is a measure of agricultural productivity, has increased slowly for SSA, however recovering from a dip in the mid-1990s (WDI, 2011). Another indicator of the state of SSA agriculture is the net import of cereals, which has increased from 30 million tonnes in 1990 to 50 million tonnes in 2008 (Smedshaug, 2010: 42).

Common characteristics for many sub-Saharan Africa countries are the centrality of land as a productive factor and customary land tenure. A major part of all cultivated land in SSA has, partly or fully, been allocated through some kind of “customary” or “communal” tenure system (UNECA, 2004). Even in countries where the state has declared all land state property, multiple rights to land and to land use are common. This often implies various kinds of conflicts over land, despite a high flexibility and adaptability of customary tenure. Issues over land control have been high on the political agenda in a number of countries for many years, and aroused heated debates. A general trend of increased land investments is currently taking place in sub-Saharan Africa. This is driven by efforts at climate change mitigation through the increased use of bio-energy, and by increasing world market food prices peaking in 2007-08 and reaching even higher levels in 2011. Such land investments may have various aims. It might be a matter of cultivating food crops at large scale, or through small-holders sharecropping, for domestic or foreign markets. It might as well be a matter of cultivating energy crops for enhanced energy security or climate change mitigation purposes. The interest in African lands is motivated by its relative abundance and very low leasehold- or market prices by international standards.

Cultivated land in SSA amounts to about 200 million hectares. Rough estimates state that an additional 600-800 million hectares of potentially cultivable lands are available (FAO-IIASA, 2000, FAO, 2009). However, given that most of these lands currently provide ecosystem or other services (forest, savannah, tourism) or are situated far from markets and infrastructure, a more reasonable figure for additional cultivation until the year 2050 is about 65-70 million hectares (FAO, 2009, Bruinsma, 2009). Land investors may particularly aim for this land.

The scale of ongoing investments is unclear. The “Land Matrix Partnership” research consortium claims that 227 million hectares have been requested for sale or leasehold in the global South since 2001 (Oxfam, 2011). A significant part of this is in SSA, and the rate of investments increased considerably from 2007/08 (Oakland Institute, 2010). Investors comprise international corporations, sovereign wealth funds as well as domestic investors. When large scale investments occur, these may introduce agricultural systems that imply higher productivity. Newly introduced technologies may potentially also spread to surrounding farmers, raising the agricultural productivity more generally.

What from a macro level perspective seem to be a host of golden opportunities of freely available lands may involve significant complexities with various kinds of land user rights at a local level. Access to land usually comes in the form of bundles of rights,
which individuals or groups hold. Several individuals can hold different kinds of rights
to the same plot of land, as members of kinship or village groups or of other kinds of
organizations. Many planned land investments have not been implemented because
processes of negotiating mandatory final deals at village or district levels have proven
too cumbersome (Matondi et al, 2011). In addition, where large scale investments have
been undertaken, the spread of technologies has been very slow, if occurring at all
(Daniel and Mittal, 2009).

2. Links between Food Security and Technical Change in Agriculture

Food security has been defined in many different ways. A fair international agreement
on the definitions was reached at the World Food Summit in 1996, and further refined
in FAO’s State of Food Insecurity in 2001:
“Food security [is] a situation that exists when all people, at all times, have physical,
social and economic access to sufficient, safe and nutritious food that meets their
dietary needs and food preferences for an active and healthy life”

Food security is a concept that includes the physical, social as well as the economic
access to food that meets people’s nutrition needs and their food preferences. The
“healthy life” and the “social” parts are meant to capture the entitlements of households
and individuals, in line with the thinking of Amartya Sen (1981).

Food security is in this view built on three pillars:

- Food availability: having sufficient quantities of food available consistently.
- Food access: having sufficient resources to obtain a nutritious diet.
- Food use: appropriate use based on knowledge of basic nutrition and care,
  adequate water and sanitation as well as social acceptance of food.

Food security is a complex issue around which there has been a great deal of debate. For
instance, it has been argued that:

- There is enough food in the world to feed everyone; the problem is distribution.
- Future food needs cannot be met by current levels of production, especially
  since water will become increasingly scarce.
- National food security is paramount - or no longer necessary because of global
  trade.
- Globalization may - or may not - lead to the persistence of food insecurity and
  poverty in rural communities.

Furthermore, the food security concept as such has been questioned. Even though it
covers everyone’s right to have enough food to eat, it does not say anything about how
that food is produced, or where it comes from (Rosset, 2003). In reaction, the social
movement Via Campesina coined the term “food sovereignty” (1996). This concept – or
policy framework – includes seven principles:
(i) Food as a basic human right;
(ii) The need for agrarian reform in cases of landlessness;
(iii) Protection of natural resources in a sustainable way;
(iv) Reorganization of food trade so that imports do not replace food self-sufficiency;
(v) Ending the “globalization of hunger” that follows from the control that multinational corporations and international organizations exert over agricultural policies;
(vi) The avoidance of using food as a weapon; and
(vii) Democratic control over international and national decisions related to food.

This framework includes support for smallholders and for collectively owned farms, fisheries, etc., rather than the promotion of larger scale agriculture and international food trade.

These debates illustrate the lack of consensus around food security. Everyone does not agree that access to food is enough. Some see a need for local control over the production of food. Following the quickly rising food prices in 2007-08 it became evident that there exists mistrust against international trade in food also at governmental level in many countries. A number of governments restricted their food trade through various measures. Among them were a number of large food exporters such as Argentina, India, Indonesia Russia and Thailand (Benson et al., 2008). A rapid spread of bilateral trade agreements in the area of food trade is another indication of the same phenomenon. The contested issue – both at local, national and international levels – is whether food security requires local control over food production, or to what extent food security may be attained through trade and via market transactions.

While food security concerns a wider set of issues than those related to agricultural production (and hence agricultural technical change), issues relating to food production nevertheless seem important in more than one sense, as will be argued in the following.

When investigating who the food-insecure at local level are, we find a paradox. Information can be obtained from the Afrobarometer surveys, which are undertaken every third year in some 20 sub-Saharan countries. The surveys aim at obtaining information about various aspects of democratic developments. Hence, they cover countries with some level of political openness. The surveys questions have been put to a representatively selected group of approximately 1200 persons in each country, and include queries about the extent to which they have experienced hunger; hence this is an indicator of self perceived food insecurity. In 2005, this was reported for different occupational categories. The occupation most frequently connected to hunger was subsistence farming. Almost one out of three subsistence farmers (31.4%) had experienced hunger “many times or always”. They were followed by peasant farmers (21.5%), farm workers (21.1%) and domestic workers (20%). Even commercial farmers had a rather large share who had experienced hunger “many times or always” (17.2%). This placed them on the same level as fishermen (17.6%). Comparable shares for government workers, teachers, business owners and other professionals were between 7% and 12%. In analogy to this, subsistence farmers had the lowest share of people who had never experienced hunger. In other words, the pattern of hunger being mainly a rural problem was evident (Own calculations based on Afrobarometer surveys, various years). This is also part of the reason why growth in agriculture is many times more effective in reducing poverty among the poorest than growth in other economic sectors.
in low-income countries. In sub-Saharan Africa agricultural growth may be up to eleven times more poverty reducing among the poorest. However, effects disappear when people and countries grow richer: Growth in non-agricultural sectors becomes better at reducing poverty among the slightly less poor. And poverty-reducing effects from growth in agriculture decline sharply in middle-income, as well as in more unequal countries (Christiaensen et al, 2010). These are some findings from an empirical study of 80 countries during 1980-2002, reinforcing results from earlier studies using cross-country regressions (Ravallion and Datt, 1996, Timmer, 1997, Dorward et al, 2002, Haggblade et al, 2007, Ligon and Sadoulet, 2007).

Some 80% of all reductions in poverty come from reduced rural poverty (Ravallion et al, 2007). However, while most poverty reduction has occurred in rural areas this does not in itself prove that growth in agriculture has been the causal factor. In fact, much development theory has over the years treated agriculture as a backward sector. Following this view, labor and capital should preferably be shifted out of this sector into more productive use (Lewis, 1954, Collier and Dercon, 2009).

The major reason why agricultural growth reduces poverty is its effects on other economic sectors, its indirect poverty reducing effects. These indirect effects are observable through the existence of time lags. In a study of India, Datt and Ravallion (1998) found the poverty reducing effect of agriculture to be five times as great in the long run (three years and more) as in the short run (one year). They also found time lags in the effect of agricultural growth on rural wage rates. Similar time lags also appear in the study of Christiaensen et al (2010) where three-year averages for growth are used. The largest reduction in poverty does not come immediately when wages in agriculture rise, but later when peasants increase their consumption of local goods and services. This leads to increased wages in these economic activities (Mellor, 1999: 14). As well, some researchers point to gradual, possibly inter-generational processes of accumulation as essential to the agricultural pathway out of poverty (Shepherd, 2010:6)). However, for such effects to come about growth needs to first get started in agriculture, and contain both the direct and the indirect poverty reducing effects. There is a growing consensus that investments in agriculture might result in increased overall economic growth, even though agriculture itself grows slower than other economic sectors (Christiaensen et al, 2010: 8, Shepherd, 2010: 3). Agricultural growth multipliers act through different kinds of linkages (Haggblade et al, 2007: 143):

- Production linkages, which include increased demand for agricultural inputs and increased processing of agricultural products (“backward and forward linkages”);
- Consumption linkages, which occur when farmers spend increased incomes on locally produced goods and services such as milk, fruit and vegetables as well as health care and education;
- Factor market linkages, which occur when agricultural labor is freed up to move to non-farm sectors;
- Productivity linkages, which occur when increased productivity in agriculture leads to lower food prices, which in turn increases the productivity of poor manual laborers in other sectors, who for instance can afford more and healthier food.
In other words, most of the poverty reducing effect from agriculture stems from the rural non-farm sector, which is labor intensive, and where wages subsequently increase. The strategy to follow has been described as “walking on two legs” – agriculture and the rural non-farm sector (Shepherd, 2010). When farmer’s incomes increase, poor farmers spend around 80% on local products and services (Mellor, 1999). Richer farmers tend to spend lower shares of their incomes than the poor do, and not as much on local products and services. This is part of the reason why agricultural growth is less poverty reducing in situations where initial inequality is larger.

Growth in the agricultural sector can occur either through increased input of production factors already in use, such as labor, land, capital and biological/chemical resources, or through a more efficient use of them. The latter occurs through some process of technical change. Putting new products, processes or institutions into practical use is referred to as innovations. In SSA, the scope for raising productivity might be larger than elsewhere, since agricultural productivity has increased much slower than in other parts of the world.

In conclusion, linkages between food production, agricultural technical change and food security are multiple. The agricultural productivity level and the way agriculture is undertaken impact on livelihoods and economic opportunities for some of the most food insecure in many African countries. Higher productivity may contribute to open up pathways out of poverty. This comes in addition to their production of food for direct consumption. What the discussion on food sovereignty illustrates is furthermore that there are issues of unequal power relations to consider when analyzing food production from a food security perspective.

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Biographical Sketch

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