



Section 1

Developing Pro-poor Markets for African Smallholder Farmers

Challenges to pro-poor market development for African agriculture¹

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Introduction

Markets are as fundamental to African agricultural development and poverty reduction as technologies and macroeconomic policies. All three heavily influence the productivity, and thus the incomes, of rural land owners and workers, as well as the prices of agricultural commodities and the food security of poor populations. Scholars and policymakers have nonetheless paid far less attention to the promotion of improved institutions for exchange than they have to the development of improved production technologies or to the pursuit of more prudent macroeconomic policies. This is perhaps especially true in Africa, an agrarian continent that was largely bypassed by the Green Revolution technological innovations of the 1960s-1970s, and subsequently unresponsive to the macroeconomic reforms enacted during the structural adjustment era of the 1980s-1990s. Recent efforts at sparking a new Green Revolution for Africa are finally awakening observers to the continent's longstanding need to attend to market development.

There are multiple reasons to applaud the increased attention being paid to markets for African agricultural development. Enhanced performance of the institutions that govern the exchange of commodities across form (e.g., processing grain into flour), space (i.e., intra- and inter-national trade), and time (i.e., storage) can generate important benefits for low-income agrarian economies. First, the market defines the economic reach of the state. Markets transmit the policy signals sent by central governments through exchange rate, fiscal, monetary and trade policy. When markets function poorly, those signals are distorted or extinguished before they influence firms, households and workers by changing constraints or incentives. Given how much has been invested in trying to improve agricultural and macroeconomic policymaking in Africa over the past generation, it is essential to reinforce whatever improvements have been achieved by enhancing the market institutions that ultimately support effective states.

Second, well-functioning markets aggregate demand and supply across space and time in a manner that increases the price elasticity of demand and supply faced by individual agents. This enhances the responsiveness of farmers and firms to emergent technologies, helping to stimulate increased uptake of the fruits of modern science and engineering. Improved markets also encourage greater specialization according to comparative advantage, leading to efficiency gains in economies commonly impoverished in part by severe inefficiencies in production patterns. This aggregative function of markets also reduces price volatility, which has become a renewed concern since the 2007-08 global food price crisis. Markets thereby enhance the efficiency of and opportunities facing the poor relative to autarky or small, segmented community-scale exchange.

Third, well-functioning markets also communicate to all economic agents the relative scarcity of different factors of production and thereby help induce desirable institutional and technological innovations to conserve relatively scarce inputs (Hayami and Ruttan, 1985). Having been bypassed by the greatest gains of the Green Revolution, African agriculture depends heavily on private innovation to enhance the productivity of the continent's land, people and water. Those innovations are most generally beneficial when they respond to accurate market price signals.

Fourth, on a somewhat less positive note it is essential to pay greater attention to markets because the "market-based" approach adopted from roughly the mid-1980s until some time last decade was not wholly successful. The private sector has not always stepped up to fill the gaps left where the public sector has retreated, for example, the provision of seasonal credit, input delivery and output evacuation services through parastatal marketing boards. It is equally true that, market-oriented rhetoric notwithstanding, the state has not always stepped away so as to let the private sector emerge from the shadow of a powerful public sector (Kherallah et al., 2000).

Fifth, the global food price crisis of 2008-09 underscored the poor's vulnerability to food and agricultural input price spikes. Market risk remains a major concern as few African farmers enjoy access to effective price risk management tools given

¹Source data for this paper come from the World Bank, World Development Indicators Database (<http://data.worldbank.org/indicator>) using the most recently available poverty gap estimate based on the US\$ 2/day per person international poverty line in purchasing power parity (PPP) terms. The aggregate continental estimate is a population-weighted average of the available country-specific estimates.

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the underdeveloped nature of futures and options as well as insurance markets on the continent. Further state withdrawal from agricultural markets will expose producers and poor consumers to greater vulnerability to market disruptions unless active steps are taken to deepen markets and develop effective institutions for hedging risk.

Although the necessity of increased focus on market development for African agriculture is clear, for the reasons just enumerated the challenges to pro-poor market development in African agriculture are many. Success in this crucial endeavor requires building up and acting upon a growing base of rigorously established evidence. Toward that end, this paper offers one longtime observer's view of what we already know based on rigorous analysis and what we do not yet know with great confidence. Donor agencies, governments, nongovernmental organizations (NGOs), and private firms need to act based on the evidence in which we can already have reasonable confidence, and to invest in developing a firmer understanding of crucial issues on which we lack such evidence before gambling scarce resources. In the past, Africa has suffered gravely from policies based on simplistic ideologies – both statist and libertarian – that lacked solid empirical foundations. We need to identify what works and focus on evidence-based approaches. The remainder of this paper offers a modest contribution in that direction.

What we know

In this section, nine distinct and important points are enumerated on which the empirical evidence is sufficiently dense and rigorous that the development community can proceed with confidence. The details on these bits of evidence are reported in the cited works; in the interests of brevity descriptions of data or methods are omitted in order to focus just on essential take-home findings. This is not intended as a wide-ranging survey of the literature; the examples offered draw heavily on prior work by collaborators, students and the author to illustrate core points briefly advanced in the narrative.

1. The private sector must be the engine of poverty reduction in Africa

Overseas development assistance (ODA) is nowhere near sufficient to close Africa's US\$ 2/day poverty gap. According to the OECD (2010), Africa received US\$ 28.2 billion in net ODA disbursements in 2009, down 19% in inflation-adjusted terms

from the 2006 record high of US\$ 31.5 billion. Aid flows are dwarfed by the continent's US\$230 billion US\$ 2/day per person poverty gap (Table 1).⁴ It would take well in excess of ten times the record ODA inflows into Africa to close the poverty gap, especially as this crude comparison neglects the inevitable, significant leakage of aid as it flows to the poor. Aid is plainly not the solution, although it can be a useful stimulus to the private sector engine that must drive the investment, employment creation and innovation necessary for sustainable poverty reduction in Africa.

While clearly recognizing the importance of the private sector, it is equally important to guard against a naïve belief in the "free" market (Platteau, 2000; Fafchamps, 2004). No such thing exists; market transactions depend on a terribly expensive array of institutional and physical infrastructure necessary to induce private investors to put scarce capital at risk in contracts and investments. The state is a key partner in the essential task of creating an expensive market mechanism to generate the essential new income flows necessary to close Africa's yawning poverty gap.

2. Most poor Africans live in rural areas and pursue farming as a livelihood

In spite of rapid urbanization, more than three-quarters of Africa's poor still live in rural areas, where more than 90% of the population still lives on US\$2/day or less (IFAD 2010). The principal livelihoods are based on agricultural production, for auto-consumption at home and for market sale, and off-farm employment in agriculture and post-harvest processing and distribution. These basic descriptive statistics underscore that poverty reduction in Africa turns fundamentally on increasing the returns to agricultural labor and land, including post-harvest processing.

When policymakers and agricultural researchers think about improving the returns to factors of production, they almost invariably think first about improved production technologies. Technological advances that increase productivity are undeniably important and can be very effective tools for poverty reduction (Minten and Barrett, 2008). But we must begin to think equally about improving productivity via increasing producer prices by reducing the high (search, transaction, enforcement, etc.) costs of commercial exchange. Markets are analytically equivalent

⁴These aggregate estimates are lower bounds because of (i) non-random missing countries (e.g., Eritrea, Somalia, Sudan) that likely have higher-than-average poverty gaps and lack poverty estimates, and (ii) especially outdated estimates that are likely lower than current figures (e.g., Namibia, Zimbabwe).

Table 1: Estimated US\$ 2/day per person poverty gap in Africa, by country

Country	Year	\$2/day PG (PPP) (%)	Population (mn)	\$bn PG/year
Angola	2000	42.4	18	6
Benin	2003	33.5	9	2
Botswana	1994	22.3	2	0
Burkina Faso	2003	39.3	15	4
Burundi	2006	56.1	8	3
Cape Verde	2001	14.9	1	0
Cameroon	2001	23.7	19	3
CAR	2003	45.3	4	1
Chad	2003	43.9	11	3
Comoros	2004	34.2	1	0
Congo, Dem. Rep.	2006	42.4	64	20
Congo, Republic of	2005	38.8	4	1
Cote d'Ivoire	2002	17.6	21	3
Djibouti	2002	14.6	1	0
Ethiopia	2005	28.9	81	17
Gabon	2005	5.0	1	0
Gambia	2003	24.9	2	0
Ghana	2006	22.3	23	4
Guinea	2003	50.3	10	4
Guinea-Bissau	2002	34.8	2	0
Kenya	2005	15.1	39	4
Lesotho	2003	33.1	2	0
Liberia	2007	59.5	4	2
Madagascar	2005	46.9	19	7
Malawi	2004	51.8	15	6
Mali	2006	36.5	13	3
Mauritania	2000	15.9	3	0
Mozambique	2003	53.6	22	9
Namibia	1993	36.5	2	1
Niger	2005	46.7	15	5
Nigeria	2004	46.9	151	52
Rwanda	2000	55.7	10	4
Sao Tome & Principe	2001	21.6	0	0
Senegal	2005	24.7	12	2
Sierra Leone	2003	37.5	6	2
South Africa	2000	18.3	49	7
Swaziland	2001	45.8	1	0
Tanzania	2000	64.4	42	20
Togo	2006	27.9	6	1
Uganda	2005	36.4	32	8
Zambia	2004	48.3	13	4
Zimbabwe	1995-96	48.2	12	4
Sample sub-Total			763	215
Sub-Saharan African Total			820	230

to production technologies and offer similar avenues for productivity and income growth (Barrett, 2008). Moreover, improved productivity within the marketing channel – not just on the farm – enables squeezing marketing costs so as to avoid the “food price dilemma” (Timmer et al., 1983) policymakers routinely face, wherein increasing producer prices to stimulate farmer and farm worker incomes and investment incentives injures poor consumers who must pay higher prices for food. Squeezing marketing margins can both raise producer prices and reduce consumer prices, achieving win-win outcomes for the rural poor who at once depend upon agriculture for a large share of their income and are typically net food buyers vulnerable to price increases (Barrett, 2008).

3. Marketing costs in African agriculture are very high

Squeezing marketing costs is important because the very high costs of commerce in African agriculture sharply reduce producers’ and traders’ returns and induce self-selection out of higher-return crops, especially by the poor. Renkow et al. (2004) and Holloway et al. (2005) find that fixed transactions costs, on average, act like a 15-20% ad valorem tax on crop sales in rural Kenya and milk sales in rural Ethiopia, respectively. Similarly, Freund and Rochas (2009) estimate that a one-day decrease in inland transit time increases exports by roughly 7%. Variable costs are likewise high, often another 10-25% or more of sales value (Barrett, 2008). High marketing costs can distort crop choices by farmers, leading to far greater production of importable staple grains and less of exportable cash crops than would occur if marketing costs were appreciably lower (Jayne, 1994; Omamo, 1998). In more extreme cases, such as more remote areas of Madagascar, Cadot et al. (2006) find massive costs to entering markets: 124-153% of subsistence farmers’ annual production. The costs of bringing surplus commodities to market significantly dampen farmers’ returns from market participation, often to the point of shifting the crops they grow or discouraging them from entering the market at all.

The problem extends well beyond household-level transactions costs. Firms choose areas in which to contract in part based on the costs of collecting product and establishing and enforcing agreements (Minten et al., 2009; Barrett et al., 2010). The market-level costs of reaching international markets also play an important role by segmenting spatially distinct markets and thereby dampening both competition and price transmission (Stifel et al., 2003; Abdulai, 2007; Stifel and Minten, 2008; Moser et al., 2009). During the structural adjustment era,

fiscal retrenchment by governments cut sharply into roads maintenance, police protection and provision of other essential public goods and services, while exchange rate depreciation drove up the cost of tradable inputs (e.g., fuel), increasing the costs of commerce, driving some entire regions back towards subsistence production (Jayne, 1994; Barrett, 1995, 1997, 1999; Reardon et al., 1999). These effects have not been uniform and in many places have been outweighed by the added vigor of newfound competition in markets in which private intermediaries had long been banned from competing against parastatal marketing boards, as well as by the emergence of new information and communications technologies that have substantially reduced costs of coordination across space.

All of these empirical findings underscore the importance of increased focus on improving internal market functioning so as to reduce marketing costs. Balat et al. (2009) estimate the poverty reducing impacts of reduced marketing costs for high-return crops would be equivalent to up to a fourfold increase in world market prices. A big reason for the markedly pro-poor effect of reduced marketing margins is that the gains from public infrastructure investments as a means to increase the net returns to agricultural production accrue disproportionately to relatively remote rural households, who appear worse off by most welfare measures.

4. Focus on marketing costs related to bureaucracy, capital and transport

Marketing margins are large in African agriculture for a variety of reasons. Commodities are typically transacted multiple times, among a variety of agents, on their way from farm to table. The lack of vertical integration adds considerable transactions costs associated with search, quality control, and contract monitoring and enforcement (Platteau, 2000; Fafchamps, 2004). Reduction of these costs is a major driver behind vertical integration and coordination through contract farming arrangements and agribusiness land investments in Africa in recent years. While modern agricultural value chains remain small scale in African agriculture today, and for the foreseeable future, the direction of change is clear, even if the pace and inclusiveness remain highly uncertain (Barrett et al., 2010).

Information is another impediment, especially in traditional markets in remote locations, where private information networks are used extensively and at relatively low marginal cost, but commonly rely heavily on social connections based on ethnicity,

race or religion and thus are commonly quite exclusive and potentially collusive. NGOs and the state can help by promoting auctions, public agricultural market information systems and other institutions and services that level the informational playing field. But, as with vertical coordination and integration problems that add to marketing costs, the private sector appears to be solving these problems on its own. In particular, rapid advances in information and communications technologies – especially mobile telephones – are rapidly changing information flow within agricultural marketing systems, helping to rapidly erase spatial arbitrage opportunities and enabling small producers and traders to fetch higher prices for the commodities they sell (Jensen, 2007; Aker, 2010). There thus seems relatively little value added from donors or governments intervening in information services.

By contrast, the big costs within African agricultural marketing channels – and the places where government and donors and NGOs can make a difference – concern bureaucratic delays, access to and the cost of working capital, and access to and the cost of transport. These are priority areas for attention.

Freund and Rocha (2010) carefully document the significant adverse impact of customs, documentation, port and transit delays on African exports. Many of the bureaucratic problems that were serious impediments during the parastatal marketing era continue, discouraging the private sector from stepping up to fully replace the state in agricultural marketing (Kherallah et al., 2000).

The marketing costs that have attracted most attention are those associated with transport. This is a problem at multiple levels. At the household level, ownership of bicycles or motorized transport commonly exerts a significant positive effect on both market participation and sales volumes conditional on participation (Omamo, 1998; Heltberg and Tarp, 2002; Renkow et al., 2004; Cadot et al., 2006; Boughton et al., 2007). At the community scale, transport costs from local market to the nearest city often consume 25-75% of the destination market price, commonly making spatial arbitrage unprofitable and leaving rural markets isolated (Moser et al., 2009). Recent estimates of the marginal returns to transport improvement range from 16% in rural Ethiopia (Dercon et al., 2008) to nearly 50% in rural Madagascar (Jacoby and Minten, 2009). The costs of moving from local, small volume transport to larger-scale motorized transport commonly create mobility barriers that

impede microenterprise growth in the agricultural sector and protect larger firms against competition (Barrett, 1997).

A major reason for transport bottlenecks is the lumpiness of investment in lorries and limited access to commercial credit within the agricultural sector. Microfinance institutions typically limit lending to volumes far too small to permit investment in expensive equipment such as vehicles. So farmers and traders typically must rely on their own savings or on subsidized lending by state-run banks to finance vehicle purchase. And, for good reason, there is relatively little state-subsidized agricultural lending in Africa today. The result is very high marginal returns to capital in agriculture: greater than 60% in Ghana according to Udry and Anagol (2006). At the household scale, this commonly leads to the “sell low, buy high” phenomenon wherein poor farmers commonly sell agricultural commodities at a low post-harvest price and then buy back the same commodity later, when prices spike during the lean season, using commodity markets to obviate seasonal credit constraints, with de facto interest rates on seasonal quasi-credit (i.e., the seasonal price increases) commonly in the 40-75% range (Stephens and Barrett, 2011).

Bureaucratic, transport and capital costs remain major impediments to firm investment and expansion in African agriculture. Interventions aimed at crowding in private investment within the sector would do well to focus on these bottleneck areas of high cost where the private sector does not seem to be rapidly addressing the problem on its own. Making capital and transport more readily accessible, especially to poorer farmers and traders, can pay very high dividends in terms of productivity growth and poverty reduction in Africa.

5. Asset poverty limits market participation

Historically, when policy analysts have focused on policies for promoting smallholder market participation, they have emphasized primarily macroeconomic (e.g., trade or exchange rate) or meso-scale (e.g., roads, farmer groups) policies. But the growing empirical evidence points strongly to microeconomic factors – especially households’ private asset endowments – as key determinants of market participation, even controlling for public goods and policies (Heltberg and Tarp, 2002; Cadot et al., 2006; Boughton et al., 2008; Barrett, 2008; Bellemare et al., 2010). Net crop sales – both for food crops and cash crops – tend to rise steadily and statistically significantly with farm households’ land holdings and other productive agricultural

assets (e.g., equipment, irrigation, livestock). Analogously, areas blessed with greater agro-ecological and infrastructural assets tend to attract larger-scale buyers and thus producers in those areas are far more likely to receive attractive contract offers from modern value chains than are growers in less favored lands (Reardon et al., 2009; Barrett et al., 2010). These patterns can help reinforce geographic poverty traps, as better endowed regions and households more easily enter higher-return marketing channels, reinforcing their initial advantages, while less well-endowed regions and households commonly cannot generate the surpluses nor access higher-return markets necessary to generate agriculture-led growth.

Even the probability of a household being autarkic – i.e., neither a buyer nor seller – increases steadily with land holdings in the lower half of most land distributions, signaling that the most asset poor households cannot even afford food self-sufficiency; they must work off-farm to earn cash wages with which to purchase food to supplement their own meager output. Autarky is not the domain of the poorest, but rather an option only for those with adequate resources to disengage from the market when transactions costs and the risk associated with commercial exchange prove too great.

A key implication of the ubiquitous, strong relation between household asset holdings and market participation – and its meso-scale analog of community or regional scale endowments and value chain participation – is that macroeconomic policies may prove ineffective in the absence of interventions to equip producers (and traders) with minimum necessary asset holdings to enable them to partake of emerging market opportunities. Market development may require a preparatory focus on promoting asset accumulation so as to endogenously induce market deepening.

6. The overwhelming majority of Africa's poor are net food buyers

Following directly from the previous point, the asset poor are typically unable to generate a marketable surplus of food commodities. Thus the poor are overwhelmingly net food buyers, not net sellers in Africa (Weber et al., 1988; Barrett, 2008). This empirical regularity is commonly forgotten. The fact that the poor overwhelmingly reside in rural areas and work in agriculture (see point 2 above) commonly leads policymakers, the media and non-specialist scholars to infer incorrectly that, because the poor farm, they must therefore be net food

sellers who benefit from higher food crop prices. Not true.

Furthermore, the strong association between poverty and net food buyer status is being reinforced due to urbanization, higher fertility rates among poorer women, and intergenerational farm splitting.

The clear, strong implication is that pro-poor market development interventions should focus first and foremost on achieving efficiencies that sustainably reduce real food prices and that reduce the prospect of price spikes that can be calamitous to the poor. Those who already spend half or more of their income on food cannot withstand a doubling (or worse) of food prices without suffering nutrient deprivation and the associated potential health consequences. By contrast, although a ten percent reduction in food prices due to efficiency gains in value chains has only negligible (<1% of budget share) effect on the best-off decile of the income distribution, it can have a significant (>5% of budget share) effect on the poorest quartile, enabling discretionary investment in children's education and health, or savings to accumulate productive assets to help household escape persistent poverty. Because the poor are net buyers, the consumer side effects of agricultural markets bear special attention, although they rarely receive it. This is perfectly analogous to technological improvements to increase agricultural productivity, the gains from which have historically accrued primarily to poor consumers in the form of lower prices – far more so than to net seller farmers in the form of higher profits – although very few people in the agricultural research or development policy communities recognize and acknowledge this fact (David and Otsuka, 1994; Evenson and Gollin, 2003; Minten and Barrett, 2008).

7. Uninsured risk is a major problem

One reason that capital constraints loom large and the apparent marginal returns to capital investment in agricultural market development in Africa is that investors face considerable uninsured risk. Greater risk drives up the expected returns necessary to induce investment. Agriculture is the riskier sector in any economy, due to the many biophysical shocks that buffet the production process and the long lags between investments in inputs and sale of outputs.

Agricultural price risk looms large, especially for net producers. There are, as yet, relatively few effective means of hedging against price risk. Futures and options markets are woefully underdeveloped on the continent. The primary vehicle growers

are using now is contract farming with agro-exporters or supermarket chains, which indeed appear to stabilize prices and incomes for farmers (Barrett et al., 2010; Bellemare, 2010).

Especially since the 2007-08 global food price crisis, governments are again seriously exploring commodity price stabilization options. While there is clearly demand for commodity price stabilization – for example, Bellemare et al. (2010) estimate Ethiopian farming households' willingness to pay at 6-32% of income, on average – the welfare gains are highly concentrated among net sellers of coffee because that commodity's price is most volatile of the major commodities grown in the country, and because net sellers – the upper 40% of the income distribution – are most exposed to price risk. Thus price stabilization can be a distributionally regressive policy.

The best mechanism for reducing price variability is spatiotemporal market integration to dissipate demand or supply shocks across space and time. When sufficient storage exists to absorb bumper harvests and meet regular demand outside of the harvest season, and intra- or international trade can readily evacuate surpluses or import commodity to meet shortfalls, price variability is sharply reduced (Barrett, 1999). The state of agricultural market integration and price transmission is discussed in the next point.

Asset risk poses an even bigger problem than price risk because, as discussed under point 5 above, asset poverty is perhaps the primary impediment to market participation and development in African agriculture. Quite apart from the risk of collapse into poverty traps posed by asset loss (Barrett et al., 2007), asset risk also impedes credit access for farmers, traders, millers, etc., as lenders become reluctant to lend against collateral that is vulnerable to loss and borrowers become reluctant to put essential productive assets at risk of foreclosure (Boucher et al., 2008). Combined with the problem of correlated default risk that is pervasive in agriculture – a financial institution's borrowers are likely to suffer repayment problems at the same time due to common production or price shocks – asset risk limits trader access to credit to invest in expanding employment and equipment holdings (Fafchamps, 2004).

There is great need to develop improved and more widely accessible mechanisms for risk reduction and risk transfer so as to encourage greater investment in market development and increased access to credit for such investment. But beware a

primary focus on government-led price stabilization schemes as these may not attend to the more important (asset) risk nor are they likely targeted effectively to poorer participants in agricultural value chains.

8. Agricultural spot markets generally work reasonably efficiently

As the preceding point emphasized, reasonably efficient market integration is essential to stabilize prices. Over the past generation, market-oriented reforms and advances in transport infrastructure and, especially, in information and communications technologies have enhanced the speed and extent of price transmission across space (Abdulai, 2007). In most places, markets seem to work reasonably competitively and efficiently, transmitting price shocks across spatially distinct markets quickly, once one accounts properly for changing marketing costs (Badiane and Shively, 1998; Fafchamps et al., 2005; Fafchamps and Vargas Hill, 2008; Aker, 2010; Stephens et al., 2010).

But even though markets transmit prices reasonably effectively across space, the high costs of commerce, especially transport (see points 3 and 4, above), nonetheless frequently lead to market segmentation as an efficient equilibrium (Moser et al., 2009). In these spatial pockets where high marketing costs isolate local markets from global or regional trading patterns, price volatility can be high and competition among traders low. This commonly leads to high average trading profits, especially in capital-intensive long-haul transport and inter-seasonal bulk storage, as well as in high-risk areas (Barrett, 1997; Moser et al., 2009).

Private intermediaries respond promptly to emergent profit opportunities in African agricultural markets and by so doing, help stabilize prices for both growers and consumers. But the high costs of commerce continue to impede full market integration within and among countries on the continent. Public investment in improved infrastructure and physical security, as well as reduced bureaucratic impediments to trade, can help enhance market integration in African agriculture.

9. Agricultural marketing systems are changing rapidly

Much attention is being paid to the emergence of supermarkets, restaurant chains and agro-exporters operating under contract, as well as to foreign direct investment in African agricultural lands. While these new ventures in vertical coordination through contracting and integration through direct investment are

beginning to shift market power downstream, traditional spot markets remain dominant in African agriculture and are likely to remain so for many years to come (Reardon and Timmer, 2007). But at the margin, farmers and traders need to adopt to an upgrading and increased harmonization of grades and standards, which now increasingly differentiate value chains offering higher and more stable prices from conventional wet markets offering lesser returns (Reardon and Timmer, 2007; Swinnen, 2007; Reardon et al., 2009; Barrett et al., 2010). The clear implication is a growing need for world-class management skills, which poses serious challenges given the declining state of and rapidly growing demands on higher education systems in Africa. Private universities and non-degree management training institutes have been booming across the continent over the past decade and may yet help to meet much of this need, although most of these efforts are based in major metropolitan areas and targeted at sectors other than agriculture. Initiatives such as the African Economic Research Consortium's collaborative masters program in agricultural and applied economics (<http://www.agricultureconomics.net/home/home.asp?00=1>) need reinforcement and expansion to accommodate rapidly growing demand for and returns to management skills in agricultural markets.

What we need to learn

The preceding section enumerated nine different points on which a sufficient mass of solid empirical evidence has emerged as to provide clear direction to donors, governments, NGOs and firms seeking to advance market development in African agriculture. Although researchers and policymakers long neglected the direct study of markets and marketing arrangements in African agriculture, scholars working on these issues – especially over the past decade – have built up a reasonable stock of knowledge about essential points that can usefully inform policymaking and investment patterns in this area.

These key points of existing knowledge are nonetheless, unfortunately, fairly general. They offer relatively little specific guidance for choice among specific intervention options. That is partly because no one-size-fits-all solutions exist; best bet interventions depend heavily on crucial contextual and design details. But the relative dearth of hard empirical evidence to guide specific market development interventions also speaks to the need to probe more rigorously within the black box of African agricultural markets. Toward this end, this section briefly

raises six key questions on which, the author believes, research on African agricultural market development could mostly usefully focus in the coming few years, so as to better inform development programming in this area.

1. Who gains from new marketing arrangements and how much?

Given the rapid change taking place in African agricultural value chains (see point 9, above), who gains from these changes? How much? Should governments, donors and NGOs promote contract-farming schemes? If so, what designs maximize the poverty reduction effects of such interventions? To this point, we know very little about the distribution of gains from contract farming or foreign direct investment in African agriculture. The handful of empirical studies in the peer-reviewed literature has faced significant methodological difficulties in establishing the causal impacts of modern value chain participation on farmer well being (Reardon et al., 2009; Barrett et al., 2010). So the degree to which participating smallholders benefit remains somewhat uncertain. Further, there are strong reasons to suspect that many of the investments NGOs or governments make in an effort to promote smallholder access to modern value chains wind up benefitting mainly the downstream buyers, rather than small farmers (Barrett et al., 2010). It is important to establish more firmly what sorts of interventions actually deliver benefits to intended beneficiaries. While there is much suggestive evidence in both the grey and peer-reviewed literatures of benefits to farm workers (whose wages or days of employment increase with supplier labor demand), to non-participant producers (who benefit from farmer-to-farmer spillover of private extension advice), or to consumers (who enjoy improved food quality), such findings remain rather casual and scattered and the magnitudes of such changes remain unclear (Reardon et al., 2009). Without knowing more concretely who gains from new agricultural marketing arrangements, how much, and how those benefits depend on the structure of contracting and supporting investments it is difficult to know how much such schemes should be promoted by development practitioners, if at all.

2. How large and widespread are efficiency losses and inequities due to market power?

We know relatively little about the competitive behavior of firms within African agricultural marketing channels (Fafchamps, 2004). Remoteness and working capital constraints often lead to imperfect competition. For example, in rural Madagascar, 6-29%

of farmers face only one buyer and there exist significant profits to long haul, intra-national spatial arbitrage (Barrett, 1997; Moser et al., 2009). More generally, however, very little solid empirical evidence exists on firm entry, exit and competitive behavior in African agricultural markets. This makes it difficult to confront widespread popular demonization of traders as parasitic and exploitative. Moreover, if there really is significant market power within agricultural value chains, there is insufficient information to guide anti-trust policy for African agricultural market development or to establish how big a problem it is, i.e., the extent of inefficiency losses and distributional inequities. Given this informational vacuum, anti-trust efforts have, perhaps appropriately, remained largely off the policy radar to date. These issues will need to be confronted, however, especially if the pace of vertical coordination and integration within African agricultural value chains accelerates.

3. What most effectively and sustainably stimulates access to finance?

Since insufficient access to investible capital and excessive exposure to uninsured risk are serious impediments to market development in African agriculture (see points 4 and 7, above), resolving those problems is obviously a priority. But how can development practitioners best stimulate more broad-based, sustainable access to the credit and insurance needed to expand marketing operations and enhance agricultural productivity throughout the value chain? We simply lack evidence to answer that question with confidence. Lots of good ideas are being piloted in various places: index insurance schemes, some linked to credit and some not; credit guarantees, some of them linked to warehouse receipts, others backed by donors; credit reporting bureaus and identity-based credentialing; etc. But few of these efforts have careful evaluation designs built into the pilot efforts, and none appear to bundle multiple intervention types together so that we might be able to generate hard evidence on the comparative performance of different product designs within a common setting. In order to elicit external private capital to support such ventures, the research community must develop solid evidence on returns to such ventures, both in terms of firm profits and poverty reduction impacts.

4. What are the relative benefit/cost ratios of different direct institutional interventions?

Just as there has been a flurry of recent activity around financial innovations for African agricultural market development, so has there been considerable effort invested in institution

building: farmer organizations, information systems, commodity exchanges, etc. The peer-reviewed literature is remarkably lacking, however, in evidence of significant returns to such interventions. Given the high marginal returns to scarce (private or public) capital in African agricultural markets, it is imperative that the research community begins rigorously establishing the returns to different sorts of institution building efforts. Furthermore, as was just discussed with respect to financial innovations, the most valuable evidence will be explicit comparisons with respect to the performance of different interventions so as to help prioritize resource allocation among intuitively appealing, but largely untested, strategies. Particular attention needs to be paid to rigorously identifying how returns – especially to the poor – vary with other context-specific attributes, as it is likely that the absolute and relative returns to different interventions will vary in predictable ways. We in the research community need to begin identifying those conditional orderings so as to better inform ongoing decision making by public and private sector investors.

5. How do returns to different public and private goods vary across sites?

Many of the context-specific attributes that predictably affect the returns to alternative financial or institutional innovations vary across space. There is no reason to expect that what is most needed or effective in one place will be similarly needed or effective in another. Indeed, there may be striking variation in the returns to alternative interventions across space (Fan and Chan-Kang, 2004; Lang et al., 2010). Donors, governments and NGOs must get in the habit of asking what interventions offer the highest returns in a given site – if they have a menu of options open to them – or where one should expect the highest returns to a given intervention (e.g., a water or livestock NGO). While poverty mapping methods that identify where the poor are most concentrated have become mainstreamed over the past decade, methods for the geographic targeting of alternative interventions remain in their infancy (Lang et al., 2010). Far more research attention needs to be devoted to developing feasible methods for rigorously identifying the optimal geographic targeting or subsector prioritization of agricultural and rural development investments and to testing the external validity of existing findings to establish which empirical results can be generalized and which cannot.

6. How do returns to market development compare to returns to technology development?

Just as it is essential to develop a more spatially disaggregated understanding of where different interventions are most likely to yield substantial returns – in terms of increased economic surplus, reduced poverty, or both – so is it desirable to improve our understanding at coarser scales of the basic entry points for reducing poverty and promoting agricultural development in Africa. In particular, the international agricultural research community has long emphasized biochemical and mechanical technological approaches to stimulating productivity growth and reducing hunger and poverty and the vast majority of agricultural research expenditures flow to those areas of inquiry. How do the returns to innovation in marketing institutions, in market-oriented infrastructure, and to markets (e.g., anti-trust, grades and standards) policies compare to the returns to innovations in animal and plant genetic material? We simply do not know and thus have difficulty making well-informed research resource allocation decisions.

It is conceivable that market development will proceed endogenously – and quickly – as improved production technologies stimulate the emergence of significant marketable surpluses in breadbasket – or even traditionally less productive – regions of Africa. Say's Law in economics holds that supply creates its own demand and that may well prove true. But it is equally conceivable that improved access to higher-return urban and international markets could stimulate more rapid farmer innovation and uptake of on-the-shelf production technologies. We presently lack methods appropriate to convincingly answer the question: which path offers the greatest time-discounted returns on investment, in terms of economic or agricultural productivity growth, poverty reduction or natural resources conservation? Greater attention to ex ante impact assessment for research prioritization within the global, regional and national agricultural research communities is essential. Rates of return in agricultural development investment are well known to be high (World Bank, 2007); but in what specific areas are they highest and for whom?

Conclusions

The significant challenges of pro-poor market development in African agriculture are belatedly attracting significant attention by donors, governments, NGOs and researchers. This is a welcome advance, but much remains to be done. Populist politicians throughout the continent continue to resort unhelpfully to demonization of traders and other market intermediaries when food market function falters. Yet commerce is essential to unlock the potential of African agriculture and to open up opportunities for Africa's poor, especially in rural areas. The breadth and depth of poverty in Africa, its concentration in rural areas, and the continent's continued heavy dependence on agriculture necessitate a focus on agricultural productivity growth and commercial expansion in order to effectively reduce poverty over the coming generation.

Thankfully, a growing body of rigorous empirical evidence has been emerging over the past decade to guide policy, program and project investments at broad scale, if decision makers will internalize these essential points. This paper enumerated nine such essential truths that should influence the design of market development interventions in African agriculture.

But we still know little about crucial issues, especially the comparative returns to alternative interventions and investments, and about how those returns vary across space and time. The development community needs to invest more in ex ante impact assessment to inform prioritization among the wide array of candidate interventions. We need to take more seriously than has been the norm the need for rigor in evaluation design, replacing casual ex post case studies with the use of clever techniques to control for placement and selection effects that presently confound. This renewed commitment to research on market development interventions needs to be led from Africa, underscoring the need to develop and maintain analytical capacity in the continent's universities and independent research institutes for rigorous and independent policy and program analysis. Africa should not have to rely on Northern universities and research institutes to guide its essential investments and policy reforms. Market development is essential for African agricultural development and poverty reduction; we need to continue to deploy the most creative and critical minds to build the necessary evidence base to guide interventions in this domain over the coming generation.

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Markets and dynamic (agricultural) development

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efficient markets for different agricultural products and supply chains and for different and changing stakeholders in those supply chains.

Abstract

This paper sets out a conceptual framework for viewing and analyzing livelihood development as a dynamic process of “hanging in” (protecting livelihoods), “stepping up” (improving livelihoods) and “stepping out” (changing livelihood activities and structures). This process occurs among different actors and at different scales across different sectors, and it involves changes in the relative stocks and functions of different resources, assets or “capitals” (with these functions being defined in terms of “provisioning”, “supporting” and “regulating”). Changing relationships between and among livelihoods and resources involve a variety of transformations and transformation processes.

A major benefit from this framework’s view of development is recognition of the importance in rapid pro-poor development of coordinated change and exchange across different scales, sectors, actors, dimensions and processes. This involves development both (i) of coordinated exchanges across multiple elements and (ii) of mechanisms for coordination (not just of exchange, but across all processes).

Markets provide one very important mechanism of coordinated exchange. “Gift exchange” (between individuals, groups, organizations and their representatives) and “hierarchies” (formal and informal private, communal and state organizations) provide other mechanisms. There are also multiple hybrids between these three primary forms of exchange. All the three forms of exchange, and different hybrids, are important in both more and less “developed” economies, in different forms and playing different complementary and competitive roles.

The need for coordinated change occurs at different levels and can lead to multiple poverty traps, with micro-, meso- and macro-traps reinforcing each other in constraining agricultural and other development in poor rural areas. Increasing staple food productivity is both particularly important in pro-poor growth and particularly constrained by these traps as they affect the complementary development of input, finance and output markets and supporting services. State, private and civil society organizations need to work together performing complementary roles in the development of accessible and

Introduction

This paper sets out a conceptual framework for viewing and analyzing development as a dynamic, multi-dimensional, multi-scale process and explores the implications of this for agricultural and market development. The paper begins by describing development as a dynamic process of “hanging in” (protecting livelihoods), “stepping up” (improving livelihoods) and “stepping out” (changing livelihood activities and structures). The core message from this is the need for different types and scales of coordination in economic development. Different types of coordination failure and poverty trap are described and the implications of this for state, private and civil society actors considered.

Dynamic development: hanging in, stepping up and stepping out

Dorward et al. (2009a) suggest that people pursue livelihoods with three aspirations – to “hang in” (surviving, maintaining basic living standards), to “step up” (improving what they do), and to “step out” (doing new things). They propose that these are fairly universal aspirations that are expressed in different ways and livelihood strategies and patterns according to people’s individual situations and perceptions and their social, economic, cultural, institutional, technical, agro-ecological and other contexts. This conceptualization puts dynamic aspirations and change (including intergenerational change) at the core of understanding livelihoods and development, and is particularly relevant to understanding structural change in agricultural and rural development as poor rural economies grow, and to understanding interactions between agro-ecological and market constraints and opportunities (Dorward et al., 2009a; Dorward, 2007).

The insights from this are further elaborated and formalized by Dorward (2009a), who suggests that they may be applied not only to individual or household livelihoods but also to

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other scales of human activity – from small informal groups to large formal organizations, and from local communities to municipalities, regions and nation states. At the same time the widely recognized links between livelihood aspirations and assets or capitals are explicitly introduced, recognizing five types of capital – human, natural, social, physical and financial⁴ (Conway and Champers, 1992; Carney, 1908). This multi-scale conceptualization of livelihoods and capitals introduces different types of transformation involved in development, linking “livelihood” development to different types of capital and their management at different scales, and consequently brings to the fore the importance of coordinated change across different scales of analysis (for example stepping up and stepping out require markets providing inputs and finance and markets for expanded and new products – as well as access to these markets – and these markets themselves depend on changes in other livelihoods and wider transformations; similarly changes in livelihoods involve and require changes in the nature and

balance of different capitals and their control and management at various scales).

Figure 1 extends the conceptualization of Dorward (2009a) by developing the analysis of capitals, and then following through the implications of this elsewhere in the conceptualization. Drawing on the Millennium Ecosystem Assessment identification of ecosystem services (Millennium Ecosystem Assessment, 2005) and generalizing this across services provided by the four other types of capital, assets or resources, we identify three “capital functions”: “supporting”, “provisioning” and “regulating”⁵. This recognizes the importance of these services or functions as supplied by, for example, physical capital (an important part of the functions provided by infrastructure are often to regulate physical environments and to support communication) or social capital (with a major function of institutions being the regulation of individuals’ and groups’ behaviors – a pertinent point following the 2008 financial crash). Recognition of the general

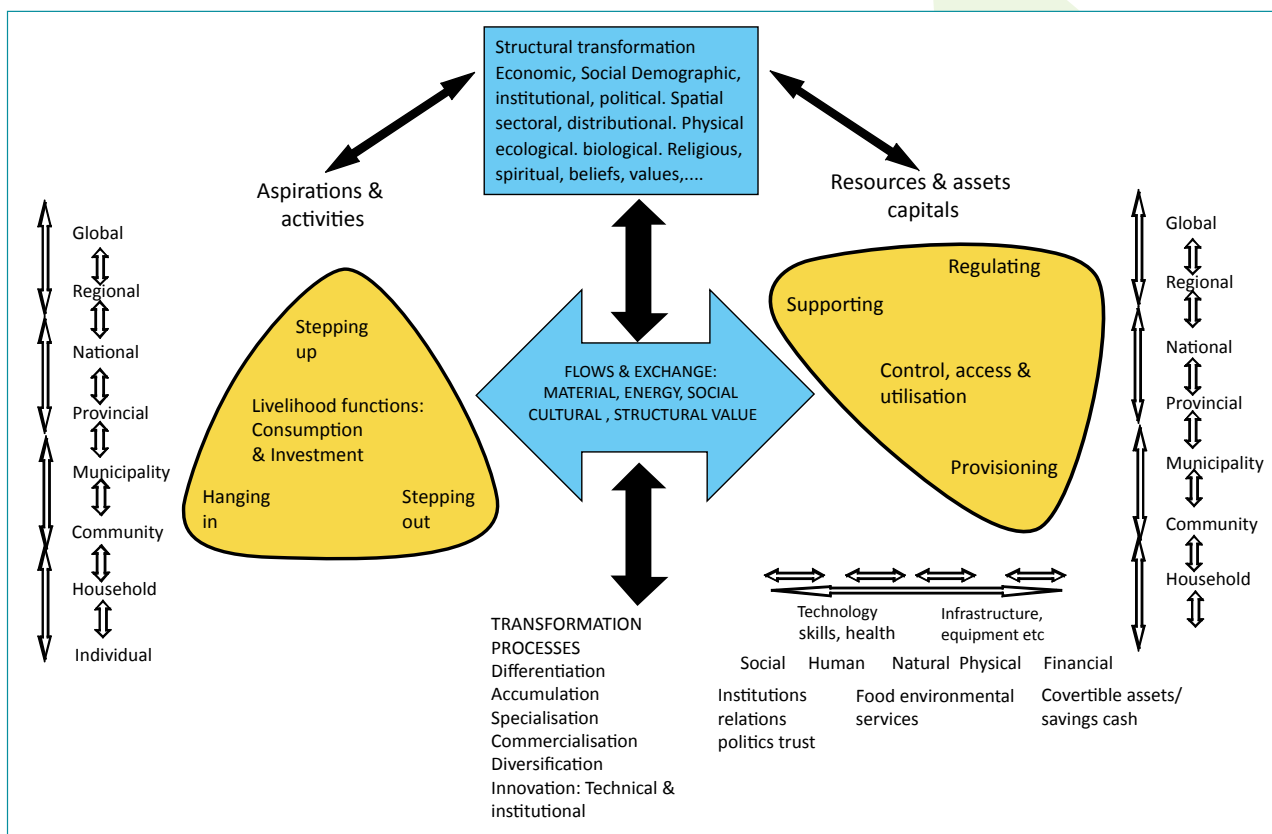


Figure 1. Dynamic development: hanging in, stepping up and stepping out

⁴Financial capital should, strictly speaking, be considered a specific form of social capital as it is entirely created as a result of social interactions and (generally national and global) institutions. However its importance to organizations, groups and individuals means that it is commonly and (at most scales of analysis) usefully considered a distinct fifth type of capital.
⁵The fourth type of service identified in the MEA, “cultural services”, is not explicitly included here. Valuable though it is in the MEA to highlight this separately, it is also possible to see culture as another (important) dimension (of aspiration, with links to social and human capital), where different types of capital provide supporting, regulating and provisioning services – alongside other aspirational dimensions (such as economic welfare, health, education, food security), each with links to other types of capital.

relevance of supporting, provisioning and regulating across all types of capital has value in both highlighting the importance of these functions for other types of capital, apart from natural capital (though of course it is not suggested that all forms of capital always fulfill all three functions), and in applying a common framework for both natural and other forms of capital. This more holistic view of capitals and capital functions adds depth and richness to consideration of different scales of analysis (as the balance between capital functions varies with scales of analysis, with increasing importance of externalities at smaller units of analysis, and hence of complementary regulation at higher units of analysis) and of the nature of transformations and transformation processes involved in and necessary for different types of development.

What are the critical features of this conceptual framework to help us consider “markets and dynamic (agricultural) development”? In addition to the benefits of its emphasis on multi-scale, dynamic and structural change, it is also people centered, focusing on people’s aspirations, but recognizing too that people have multiple aspirations, that these change, and that different people interact within and between different social, economic, political and other groupings. Key processes of change (and stasis) involve changing and multiple balances between hanging in, stepping up, and stepping out, with a variety of transformations, exchanges and flows (some of which involve markets).

As we apply this to agricultural development and markets, it is helpful to also consider the way that agriculture can play two potential roles in wider economic growth, driving growth (increasing basic productivity and earnings) and/or supporting growth processes by multiplying and spreading the benefits of growth drivers through an economy (Dorward et al., 2003; Poulton and Dorward, 2003). The opportunities for and demands from agriculture in driving and supporting growth vary between countries and between different areas within countries, depending upon other growth opportunities and upon agro-ecological, market and other conditions. In most poor rural areas with low agricultural productivity, increasing staple crop

productivity needs to play a critical and dominant role in driving growth (as it raises land and labor productivity of large amounts of land and labor devoted to staple food production and improves food security with greater food availability and lower food prices, thus increasing real incomes with both supply and demand stimuli to diversification into horticultural and livestock production and consumption and into non-farm services and products). Production of agricultural export products can also contribute to these processes, while the most important role for increased productivity in horticulture and livestock will be to meet growth in domestic demand as a result of increasing incomes arising from other growth drivers⁶.

The final major feature of development stressed by the conceptual framework and relevant to agricultural markets and development is the need for coordination. It is clear that, in the interdependency of this multi-scale, multi-actor, multi-dimensional and multi-process, there needs to be some form of coordination between changes across scales, actors, dimensions and processes. This may be directed or evolve (through intrinsic feedback loops). The evolutionary process will often be slow and its outcomes uncertain – it may be inequitable and may lead to unsustainable dead-ends – and unsatisfactory in a wide variety of ways. Directed coordination (“effort or measures designed to make players...act in a common or complementary way or toward a common goal”, Poulton et al., 2004: p. 521), on the other hand, raises other questions regarding the intent of coordination (who directs coordination towards what goals, how are these goals decided, and whose benefits and gains are prioritized?) and the capacity for coordination (what information, knowledge, understanding and power is needed to effectively plan and implement coordination in such complex systems? Where can such information, knowledge, understanding and power be found?)⁷. These questions, of course, interact, as intent and capacity (power) are not unrelated.

⁶Benefits to the poor from intensification of non-staple productivity vary with opportunities to increase land and labor incomes in production (directly and indirectly), in upstream and downstream employment and other multipliers, in consumption multipliers associated with expenditure patterns of different producers, with nutritional benefits (lower prices of horticultural and livestock products may improve diets), and with non-staple production systems’ contributions to improved access to input and financial services, to infrastructure, and to sustained demand and prices for increased production.

⁷There are important parallels between “development coordination” as considered here and debates about evolution. This may also be conceptualized as involving multi-scale, multi-actor, multi-dimensional and multi-process structural transformations with individuals, species and eco-systems “hanging in”, “stepping up” and “stepping out”. Coordination has also been at the heart of questions about the need for a “clock-maker” actively coordinating evolutionary processes – questions that can be resolved by consideration of very long periods of time, with evolutionary blind alleys. Time, blind alleys, and survival of the fittest are not, however, compatible with the urgent moral, humanitarian and political needs for equitable and sustainable pro-poor development.

Coordinated exchange and markets

Markets have been the focus of much attention in economics and development. Fundamentally markets are seen as an efficient mechanism for exchange, coordination and allocation of many resources, goods and services, and thus promote essential processes of specialization and economies of scale in economic activity. DFID (2000) identifies three principle mechanisms by which markets can benefit the poor: by facilitating access to human, financial, social, physical and natural assets; by improving the returns on their assets; and by meeting consumption needs. Markets can also contribute to wider growth (by promoting more efficient resource allocation and use), to empowerment (by stimulating local organization), to equality of opportunity, and to security (for example, in access to food).

Dorward et al. (2003) also argue that the livelihoods of most poor people are directly dependent on their involvement in a range of markets as private agents or as employees (and are indirectly dependent on the wider economy for the demand and supply of goods and services); that major current and historical poverty reduction processes have depended on equitable private sector economic growth (although we also note later the importance of actions by other stakeholders – such as Community Based Organizations and the state – in market development); and that poor people themselves often identify problems with markets as critical to their livelihoods (but these problems may concern both the absence of markets and the effects of markets). However markets also often fail, they can pose threats as well as opportunities, and they may not be the only or always best form of coordinated exchange.

Three principle types of market failure need to be recognized:

- First, for some “public goods and services” it is not possible to restrict use or enjoyment only to particular people who pay for them, as there is then no incentive for users to pay for these goods and services and thus no incentive for their provision. Such market failures are widespread in both developed and less developed economies and can be overcome by some form of collective action, often involving the state.
- Second, where institutions are weak or over-regulated then the transaction costs⁸ and risks from engaging in markets

may be very high – so high as to make it unprofitable – and market failure follows. Overcoming this type of market failure may require more than the conventional promotion of liberalized competitive markets. A more imaginative approach is needed, rooted in a stronger understanding of the importance and nature of institutional development in economic growth, with market development being one part of that institutional development.

- Third, markets may fail for the poor when they are unable to access them, or can only access them on very unfavorable terms, due to lack of resources, active discrimination, or lack of information or power.

Expanded market access can also pose real threats to the livelihoods of poor people. Competition with outside producers, for example, is a two-edged sword that while increasing efficiency and lowering prices for poor consumers, can also expose poor producers to increased competition in the supply of goods and services to local markets, and drive them out of production. Alternatively improved access to outside markets may raise local prices, benefiting local producers but harming poor consumers. Market development may also reflect and reinforce unequal power relations (DFID, 2000) and these may allow elites to capture new market opportunities in activities that were previously undertaken by the poor. Finally, markets can be highly unstable, with sudden changes in supply, demand and prices. Over reliance on markets can lead to increased vulnerability, though this depends upon the relative instability of market alternatives.

Finally, we note that there are alternatives to market mechanisms for coordinated exchange (apart from subsistence or autarchic self reliance), in particular coordinated exchange may occur as gift exchange, within “command and control” hierarchies, and in hybrid forms of contractual arrangements involving elements of gift, hierarchy and market exchange. It is helpful to describe these three main mechanisms in more detail (Dorward and Kydd, 2005a).

Gift exchange involves deliberately imprecise mutual obligations based on shared values stressing reciprocity and the collective good. Although economic development involves a decline in the relative importance of gift exchange, it continues to be

⁸We recognize two broad types of transaction costs: costs incurred to protect parties against risks of opportunism or cheating in a transaction, and costs incurred in meeting licensing and other requirements of regulatory agencies and their officials.

very important (as shown, for example, by recognition of the importance of social capital in determining peoples' ability to participate in and benefit from a wide range of economic and social activities). Gift exchange also continues to be important in more developed market economies in, for example, corporate hospitality and other elements of social interaction in business relationships.

Hierarchies' "command and control" resource allocation is the mechanism by which states, government organizations, parastatal agencies, most NGOs and most private firms operate. In modern economies, hierarchies coexist with markets and indeed use markets to transact with each other and final consumers.

Markets involve transactions that are voluntary (in a narrow sense with both sides having to perceive gains from trade) and precise (as regards quantity, quality, space and time in exchange). Markets can facilitate competition (spurring gains in quality and production efficiency), and normally require money (as a medium for exchange and for savings, loans and investment). Market forms vary enormously in structure, scope and governance, from complex global derivative and futures markets to petty trading.

Gift exchange, hierarchies and market arrangements differ not only in the nature of the arrangements between exchanging parties. As noted above, they also differ in the costs they incur or, in the terminology of the conceptual framework in Figure 1, in the nature of the capital required for their support and regulation. All require incentives and penalties supporting congruent behavior and discouraging free riding, but gift exchange requires strong social interaction and shared values among social groups, hierarchies require specific incentive structures and information systems promoting particular behaviors, while markets require much wider macroeconomic management to maintain the value of money, with legal, contractual and enforcement systems. The fixed costs of market support systems will generally be higher than those of gift exchange and hierarchy systems, but often are much lower per unit because the volume of exchange can be much larger. It is, however, also difficult and unwise to attempt to separate these too much – markets and hierarchies are often strengthened by social interactions and norms, gift exchange and markets can benefit from specific incentive structures and information

systems, and gift exchange and hierarchies also require economic stability and consistent legal and enforcement systems.

Related support and regulatory requirements of gift, hierarchy and market exchange complement the importance of hybrid forms of exchange – which include contract farming, sharecropping and other forms of interlocking where farmers transact with a counter-party in more than one market with instructions concerning the timing and performance of agricultural operations and/or patron-client and other social relationships under which one (more wealthy) party undertakes to provide the other (poorer) party with some form of social security. Long-term contracts between firms or individuals and supplier credit arrangements and franchise systems may also be seen as hybrids between market and hierarchy forms of exchange, and are often strengthened by elements of (limited) gift exchange relationships.

An appreciation of the co-existence and multiple forms and hybrids of gift exchange, hierarchy and markets is important in considering agricultural market systems, as each type of exchange has strengths and weaknesses, and hence advantages and disadvantages under different situations – indeed the term "market system" commonly describes system of coordination and exchange involving combinations of gift, market and hierarchy mechanisms. Promotion of effective, efficient and accessible coordination and exchange in agricultural market systems therefore requires consideration of which types and hybrids of mechanism may be more appropriate in particular situations. We therefore consider now the particular constraints (and opportunities) facing coordination in pro-poor agricultural growth in poor rural areas.

Poverty traps and coordination challenges

We now distinguish between three important and related levels of coordination failure and poverty trap operating at micro-, meso- and macro-scales.

At a micro-level, poor producers suffer from low incomes, limited resources, low productivity and vulnerability. These can be mutually reinforcing – low incomes lead to limited resources which lead to low productivity which leads to low incomes, and all these contribute to vulnerability (high exposure and sensitivity) to climatic, market, health, social and other shocks (see for example Chambers, 1983; Carter and Barrett, 2006).

To escape from such traps, poor producers need simultaneous access to mutually reinforcing services that address each of these problems. For increased productivity, farmers need access to technical production information and market and business information related to new production methods. They also require access to any inputs needed (seasonal inputs, land, and labor), as well as to finance for purchasing such inputs and perhaps for increasing their labor use, and/or to alternative enterprise or employment alternatives (this requires low cost and reliable access to output markets, and information about the behavior of those markets). They also need some form of insurance or social protection against price, weather, health and other adverse shocks. Some technologies may need access to particular production or processing equipment or services. Access to these services may require communications and other infrastructure. Access to the different information, items and services needed for increased productivity needs to be coordinated in that the absence of just one of these may prevent adoption of increased production methods and/or significant reduction of production or economic benefits from adoption.

This micro-level coordinated access to resources and services is needed not just by producers but also by the potential suppliers of such services. These suppliers face major difficulties and risks in providing services in poor rural areas; difficulties associated with diffuse, small producers; poor transport and other communications (though the spread of mobile phones

is leading to dramatic improvements here); highly seasonal activities, prices and risks; high costs of finance; risks of government interventions; and weak institutions for establishing and enforcing contracts. Thus, for example, input suppliers need access to finance, inputs, transport, storage facilities, etc., together with reliable information about prices and probable demand for inputs, if they are to identify investment opportunities in such circumstances. Produce traders have a similar set of information, service and capital demands, while technical and business extension services need financial, human, physical and informational resources. Each set of actors in a supply chain (farmers and service providers) therefore requires access to complementary resources, services and information and must coordinate their own access to and use of these. The more complex a production system, in terms of its different resource, service and information needs, the greater the micro-level coordination and management challenges and risks involved, and the greater the number of other actors with which each actor needs to coordinate.

This leads to a major meso-level coordination challenge, across the different actors: essentially each actor needs to be able to rely on and coordinate with other actors if they are going to overcome their own micro-level coordination challenges. It is helpful here to distinguish between three types of meso-level coordination: vertical coordination along a supply chain, horizontal coordination between competitors performing

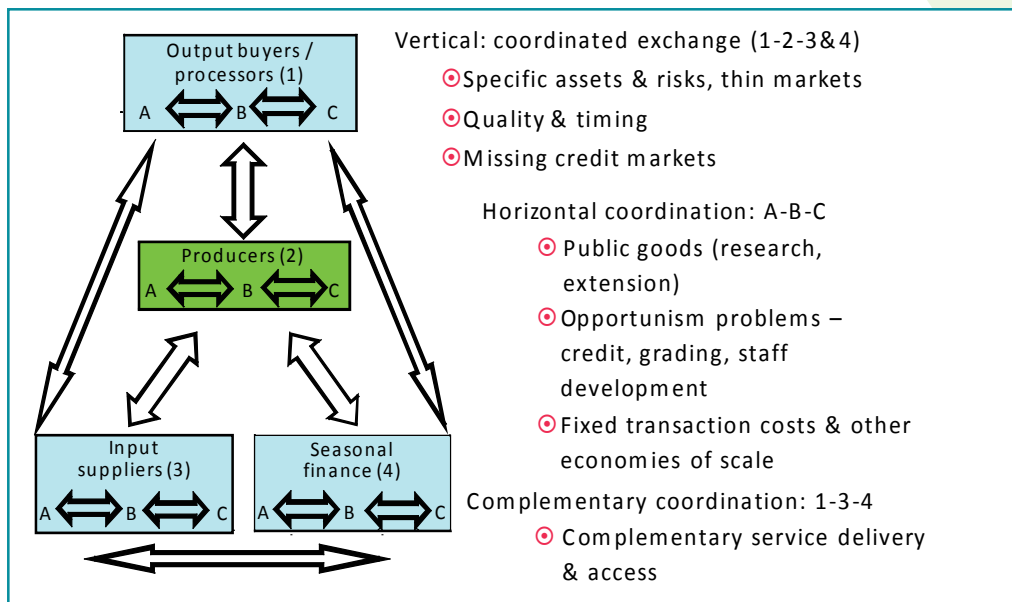


Figure 2. Vertical, horizontal and complementary coordination

the same function in a supply chain, and complementary coordination between providers of complementary services in a supply chain. The nature of and relationship between these different types of coordination are illustrated in Figure 2.

The challenges in meso-level coordination increase with:

- The complexity and number of factors and actors involved in the micro-level challenges facing each actor, and hence along the supply chain as a whole;
- The absence of existing actors and relationships between them in a supply chain or related supply chain;
- The value of new investments at risk for any actor (specific assets) and the potential losses incurred in the event of a coordination failure;
- Lack of trust, of strong institutions or of large potential gains encouraging actors to cooperate and discouraging actors from behaving in opportunistic ways for short term personal gain; and
- Particular informational or production features of goods, services and processes (examples include problems posed by the need for critical timing of delivery of particular goods or services, such as seeds or fertilizers, or information difficulties regarding particular attributes of actors or goods or services, such as seed or fertilizer quality or credit borrowers' repayment intentions).

Thus where flourishing markets exist (with large numbers of players, good information and established norms of behavior) then markets can provide an effective coordination mechanism for goods and services with private good characteristics (where investments in the production or delivery of these goods and services yield major direct benefits to the actors making such investments). Problems arise, however, where such markets do not already exist. Vertical, horizontal and complementary coordination may then be developed within firms – indeed, this is what large firms do. This is not possible with many small farms, although firms can provide vertical and complementary coordination around small farms, particularly if farmer organizations can provide horizontal coordination. Unfortunately the incentives for large firms to provide such coordination are normally weak in dispersed, risky and low value staple food crops markets.

As a result the development of more intensive high productivity staple food crop systems may suffer from a meso-level low equilibrium trap (Barrett, 2008; Dorward and Kydd, 2004; Dorward et al., 2009b).

These difficulties, however, differ between different innovations and different crop types. Thus increasing root crop productivity based initially on improved planting material may not pose as many meso-level coordination challenges as cereal crop intensification involving investments in inorganic and seed input supply systems, knowledge intensive production innovations, and significant seasonal capital investments by input suppliers and farmers. Risks in root crop productivity innovations are also lower not just as a result of their lower seasonal investment requirements, but also because the ability to store the crop in the ground reduces market and price risks for farmers.

Meso-level coordination problems can also be more easily overcome with some non-staple products, where higher potential returns in supply chains and barriers to entry (frequently in processing or in marketing) can provide (i) incentives for commercial companies to invest in complementary coordination mechanisms, and (ii) incentives for farmers to work together in groups in accessing coordinated services. Contract farming and interlocking transactions can be effective meso-level coordination mechanisms where there are limited numbers of produce buyers and/or long-term stable incentives for farmers to work together in groups to access complementary finance, input and output market services. Such arrangements can exist in a wide variety of different production systems (cotton, tea, sugar, milk, tobacco and coffee to name a few) and in a wide variety of forms (for example, in contract farming and in different forms of contracts that interlock land, labor, input, output, insurance and finance markets with each other and with access to other services such as transport, health, food security and extension services). There can also be important spillover and dynamic benefits from such arrangements:

- Such interlocking arrangements often involve direct arrangements for the financing and purchase of inputs for staple food crop production by participating non-staple producers (see for example Chirwa and Kydd, 2005) or, with fungibility, help farmers to afford input purchases for staple crop cultivation (see for example Govereh et al., 1999, Jayne et al., 2004);

- Development of farmer organizations that facilitate coordination of production, input access and marketing services can work for tradable non-staple products, but staples produced alongside may also benefit from these services (see for example Chirwa et al., 2007);
- Local growth driver linkages (as described earlier) can lead to a general growth in economic activity with increased density of economic activity reducing transaction costs and risks;
- Roads and communications infrastructure developed for non-staple markets will also benefit other economic activities, including staple foods markets (see for example Govere et al., 1999); and
- Similar thickening of input and financial markets and services for non-staple producers may provide sufficient market activity to begin to overcome meso-level coordination problems for staple food crops.

Recent growth in fertilizer use on maize production by smallholder farmers in Kenya appears to be due, in part, to such processes (Ariga et al., 2006; Minde et al., 2008).

Third, macro-level of coordination is concerned with the need for coordination of policies and investment in public goods and services in order to support the meso-level coordination needed for individual entrepreneurs', or the actors' micro-level coordination. This is concerned with targeting and sequencing of provision of wider conditions needed for meso-level coordination between actors, and may involve meso- and micro-level action by the state and state agencies.

Examples of specific macro-level coordination include policies and investments in road infrastructure; in agricultural research and extension service development; and in input subsidy and price stabilization policies. These, however, also have to be coordinated with wider policies regarding macro-economic and fiscal management, private sector development, tax and legal frameworks for businesses and cooperatives, education, and social protection. Macro-level coordination is both particularly important and particularly challenging in situations where markets are poorly developed, governments have restricted human and other resources, and information and governance systems are weak. Indeed, there is both a paradox and a trap here – a paradox that it is in situations where coordination resources are most limited (at all three micro, meso and macro

scales of coordination) that coordination is both most needed and most challenging. Challenges arise from the need for policy (i) to both drive and evolve with a number of structural changes and transitions in developing rural economies (for example from being food deficit to food surplus, from an emphasis on staple foods to high-value crops, from dominance of the farm to non-farm economy, from state to private investment, from non-market to market coordination, and from an unskilled to a skilled labor economy); (ii) to cope with considerable complexity; (iii) to combine the management of transitions with the provision of stability and the development of trust; and (iv) to manage limited financial, human and administrative resources in the context of (often perverse) political, bureaucratic, and donor incentives and interests. These challenges lead to a trap if they prevent macro-coordination and thus lock poor rural economies in long-term underdevelopment.

Particular input market issues with staple food crop intensification

A particular set of coordination issues arises with input markets and staple food crop intensification, to which we now briefly turn.

The price/productivity tightrope

The challenge of the “price/productivity tightrope” relates to a policy dilemma in staple food intensification because:

- 1) Producers need high returns from investment in new technologies in order to provide them with incentives to invest in productivity increasing technologies;
- 2) High returns need high food prices and/or low input prices and/or high output/input ratios; but
- 3) Poor consumers need low prices for food security, for welfare, and to raise real incomes to drive and support growth.

This is a particular problem for cereal intensification, due to the higher investments needed in inputs, as compared with root crop intensification which, initially at any rate, requires a relatively low-cost switch to improved varieties through a one-time adoption of new planting materials. To encourage cereal intensification, therefore, policy needs to tread a fine line between providing attractive incentives to producers to adopt new technologies on the one hand and on the other keeping cereal prices low enough (with prices preferably declining in real

terms over time) such that staple foods are readily accessible to poor consumers. High input prices raise particular problems here.

The logic of the food tightrope problem leads to the identification of the following broad approaches in dealing with it:

- 1) Raising physical productivity of inputs – through adaptation of technologies and farmers learning how to manage them, and when (and when not) to use them;
- 2) Reducing the costs of inputs by increasing efficiencies in (for example) fertilizer or seed production and/or delivery systems;
- 3) Reducing farmers' input costs through input subsidies;
- 4) Reducing the price margin between farm-gate sales and consumer purchase by increasing efficiencies in (for example) grain purchasing, storage and transport;
- 5) Reducing the price margin between farm-gate sales and consumer purchases by subsidizing farm gate sales and/or consumer purchases; and
- 6) Raising the incomes of poor consumers through social protection subsidies (for example safety nets or targeted welfare payments).

In the long run, raising technical and economic efficiency (points 1, 2 and 4 above), should provide the main solution to the food price tightrope problem, together with higher consumer incomes (as a result of economic growth).

In the short run, however, the food price tightrope can be a major constraint to development in poor rural economies. Governments have tried to address this through different combinations of input subsidies, output price subsidies for farmers and for consumers, and social protection to raise the incomes of the poor. Coordination of these policies is a challenging but important example of the macro-level coordination discussed above.

Improved input productivity requires improved research and extension services providing farmers with affordable and profitable recommendations on improved soil fertility management (involving both organic and inorganic fertilizers). It is also important that transport and fertilizer import industries

are encouraged to increase efficiencies in input supply systems. Direct general food price subsidies for consumers have proved to be very expensive and difficult to manage in the past, although targeted consumer subsidies (for example, through food for work and food transfers) and targeted income support are increasingly common. These could be described as part of general moves in subsidies that involve switches from general to “smart” subsidies and from loosely defined narrow objectives to tightly defined broader objectives. A similar pattern may be observed with regard to input subsidies, which we discuss briefly below in the context of wider input market development.

Input markets

Constraints on increased input use can be usefully considered in terms of supply and demand constraints. Fertilizer supply problems, for example, include high transport costs to landlocked countries and within rural areas, long lead times in placing orders, uncertainty regarding government interventions and farmer demand, small markets, limited access to working capital, and exchange rate risk. These problems are exacerbated by recent dramatic but short-lived increases in oil and fertilizer prices, and shortages of fertilizer. Many similar problems are faced in seed supply, though they arise in very different ways.

Fertilizer demand problems include low profitability of high cost inputs, significant output price and weather risks, problems of affordability (given high fertilizer prices relative to the incomes of poor farmers), and ineffective fertilizer use with consequent low physical grain to nutrient responses. The latter are related to poor extension information and application methods and timing, low/variable output prices, lack of financial services, late and unreliable deliveries, inappropriate formulations, low yield potential crop varieties, lack of complementary soil fertility management practices and, at times, poor rainfall. There are many similar demand problems with seeds, though there are probably bigger issues with farmers' concerns about seed characteristics other than yield (for example drought and pest resistance, storage and eating qualities) and about seed quality (in terms of germination and varietal characteristics).

Improving access to input markets may therefore be promoted through investments in improved transport infrastructure and management; in farmer and regional coordination of purchases; in exploitation of linkages and spillovers from non-staple to staple input markets; in coordinated, stable, transparent and consistent government action on technology, public goods

(transport infrastructure, extension), and input and output markets; in improved farm access to seasonal finance (discussed below); in macro-economic stability; in risk management systems (for both suppliers and farmers); in irrigation; and (in specific situations) in smart input subsidies.

Input subsidies can rapidly (but partially) address or help with many, but not all, of the supply and demand problems described above. They most immediately and importantly increase profitability of on-farm use and, if sufficiently large, can bring down the price sufficiently to also address the affordability problem⁹. However there should be long term goals that input subsidies (with building of roads, of research, and of farmers' technical and business skills) should, over time, lead to improved efficiency of input supply systems and of input use, and to economic structural changes. These together should then lead over time to profitable use of unsubsidized inputs at acceptable prices so that subsidies can be reduced and withdrawn.

A major conclusion from successful and unsuccessful experience with input subsidies is that they can make very significant contributions to food security, poverty reduction and economic growth, but alongside their potential benefits are also major potential pitfalls (see, for example, SOAS, 2008; Minde et al., 2008; Dorward, 2009b). Thus their benefits depend upon an effective basic input technology (in terms of its potential to raise yields of marketable produce), good program design and implementation, and indirect subsidy impacts on staple prices, the rural economy and wages. These in turn require prior and complementary investment in public goods (roads, agricultural research and extension, market development infrastructure), complementary policy and service coordination (regarding, for example, policies to encourage stable prices, social protection, private sector involvement and development, good fiscal management and a clear national development strategy), political commitment to the implementation and goals of the program, and the financial and organizational resources for coordinated implementation. Poor design and implementation can lead not only to lack of realized benefits, but very large costs and the undermining of longer-term private sector development.

Critical issues regarding design and implementation concern:

- 1) Program scale (cost, subsidy volume and subsidy rate);
- 2) The basic input supply system (the timing and processes for determining input requirements and for importation);
- 3) Input distribution networks (determination of approved subsidized input selling agents);
- 4) Beneficiary targeting;
- 5) Voucher (or other entitlement) system and distribution to beneficiaries;
- 6) Voucher redemption and input purchase by beneficiaries;
- 7) Voucher redemption by input sellers;
- 8) Financial systems as regards margins and payments for goods and services; and
- 9) Performance monitoring and audit systems (including incentives for good performance and penalties for poor performance or fraud).

Many of these issues are strongly interrelated, so that particular design and implementation features have implications (and pose different advantages and disadvantages) across different issues. There is considerable urgency in the need to improve the effectiveness of input subsidies as there are increasing political pressures for governments to use them and increasing costs that threaten their profitability and affordability.

Where input subsidies can play an important role in improving access to and use of inputs, then governments, farmers, agro-dealers, fertilizer importers and distributors and seed companies need to work together to investigate, develop and implement good practices in input subsidy programs. This should involve a program of innovative action research, evaluation, shared lesson learning, and capacity building, and should work at different levels. The following initiatives are needed:

- Cross country reviews of emerging input subsidy experience;
- Clear identification of situations where particular subsidy approaches can and cannot be beneficial;

⁹Given limited financial market development (for both credit and insurance), cash-constrained poor households may be unable to afford inputs at planting time even if economic analysis shows that use of those inputs would be profitable over the course of the production season.

- Improved integration of input subsidies with complementary policies;
- Guidelines for determining program scale: cost, volume, and subsidy rates; and
- Piloting of system innovations (targeting systems; voucher systems; remoteness incentives; audit systems and penalties; and systems for stakeholder engagement, development of trust and commitment, and performance targets and monitoring).

Seasonal input finance¹⁰

Agricultural intensification, involving adoption of new technology embodied in purchased inputs, requires capital. Small farm households are rarely able to save enough to fund significant intensification, while only a minority (normally among the better off) have access to sufficient non-farm income sources for this purpose. Therefore, credit has long been recognized as a priority to support agricultural intensification (Feder et al., 1985). While there have been and continue to be successful models for delivery of seasonal finance to non-staple producers where complementary coordination problems can be resolved (as discussed earlier), state-supported and subsidized agricultural credit programs in staple crop production are widely perceived to have failed, as they were fiscally unsustainable due to both their subsidy component and repayment problems¹¹. However, despite the subsequent success of hugely innovative microfinance organizations in providing financial services to poor clients (often much poorer than the average recipient of previous agricultural credit programs), the modern microfinance industry in Africa is a predominantly (peri) urban phenomenon and only fairly recently has it begun to address the huge gap in rural financial service provision. Rather than developing a better model for seasonal credit provision to poor agricultural producers than the previous, state-supported and subsidized agricultural credit programs, microfinance has largely abandoned agriculture.

We identify five reasons why, left entirely to market forces, future progress in seasonal credit provision for smallholder agriculture is likely to be slow:

- 1) The price/productivity tightrope – The dilemma was posed earlier that, with high global fertilizer prices, fertilizer use

may only be profitable at maize prices that are damaging for the livelihoods and food security of large numbers of poor people. This problem is intensified if interest charges are also added to the price of fertilizer. Consequently credit for fertilizer application on maize by surplus producers is only likely to be viable with lower fertilizer prices, lower import costs, and more efficient use of fertilizer to gain higher grain returns to fertilizer application.

- 2) High transaction costs – Transaction costs associated with any (financial) service provision in rural Africa are high primarily as a result of (i) high costs in connecting with clients due to low population densities and poor infrastructure and (ii) small transaction sizes where clients are very poor (as many of the costs associated with a financial transaction are fixed, irrespective of transaction value whereas the revenue for the financial institution is the interest payment, which is a function of transaction value). Thus, Johnson et al. (2004) conceptualize a “frontier” of rural service provision, whereby little financial service provision is occurring in areas where both the population density is less than 300 persons per km² and the poverty rate exceeds 40% of the local population¹². This excludes much of rural Africa.
- 3) Seasonal agriculture – This poses problems for conventional microfinance models as borrowers with highly seasonal incomes can only make very small payments at regular intervals, leaving most of their loan (perhaps all the principal and some of the interest) to be repaid at harvest time. Disbursing and collecting all loans at once removes one mechanism for ensuring loan repayment, which is to provide members of a borrower group with staggered access to loans, with some repaying their loans first before others are allowed to take theirs out. (Dorward et al., 1998; Morduch, 1999). Both these features increase lending risks as, in a Grameen-style model, regular repayments signal that all is well with loan servicing while staggered loans and repayments provide group repayment incentives which can be undermined under conditions of covariant risk (Stiglitz, 1990; Besley and Coate, 1995).
- 4) High repayment risks – These arise from (i) the widespread culture of “strategic default” (Poulton et al., 1998) that

¹⁰This section draws heavily on material from Poulton and Dorward (2008) and Dorward, Poulton and Chirwa (2008)

¹¹Furthermore the subsidy component rarely benefited poor households, as the majority of loans were given to well-connected, wealthy borrowers (Adams and Vogel 1986; Yaron 1992)

¹²Their case studies were undertaken in Kenya, which has a relatively strong and innovative microfinance industry.

loans are, after all, really gifts (encouraged by a history of poorly managed government and donor credit programs with, in places, irresponsible political opportunism in newly democratic systems) and (ii) the combination of high climatic variability and low levels of irrigation in Africa, which mean that even many well-intentioned borrowers may struggle to repay loans in bad seasons.

- 5) Subsistence consumption – When farmers are growing staples partly for their own consumption, they will not get cash income for that part of the crop that they consume, and this may limit their ability to repay any production loan unless they have other sources of cash income.

Given the multiple obstacles to seasonal credit provision in African agriculture, it is not surprising that microfinance has made little headway in seasonal finance in agriculture. In these circumstances we should expect most shifts in the lending “frontier” to be incremental, addressing one obstacle at a time. We can, for example, expect a restricted focus on larger, more

commercialized smallholder farmers in more productive and accessible areas, perhaps with significant non-farm incomes, and for production of higher priced crops (not basic staples)¹³. Even so, there will still be significant challenges, with loan sizes still being small by international standards as a result of small farm sizes, even among larger smallholder farms (Poulton et al., 2008).

Such challenges may be addressed by one of the major strengths of the microfinance industry, its international expertise and commercial dynamism and creativity in addressing problems such as those outlined above. Poulton and Dorward (2008) review four innovations in financial service provision and assess their potential to reduce the costs of rural lending: (i) so-called “branchless banking”, involving mobile phone technology in the provision of financial services and the use of agents to deliver basic services to customers at lower costs than banks themselves can do; (ii) cost savings from transferring the current functions of loan agents to (presumably less well trained) agents; (iii) the use of group contact persons instead of the loan agent meeting directly with each individual borrower during the process of

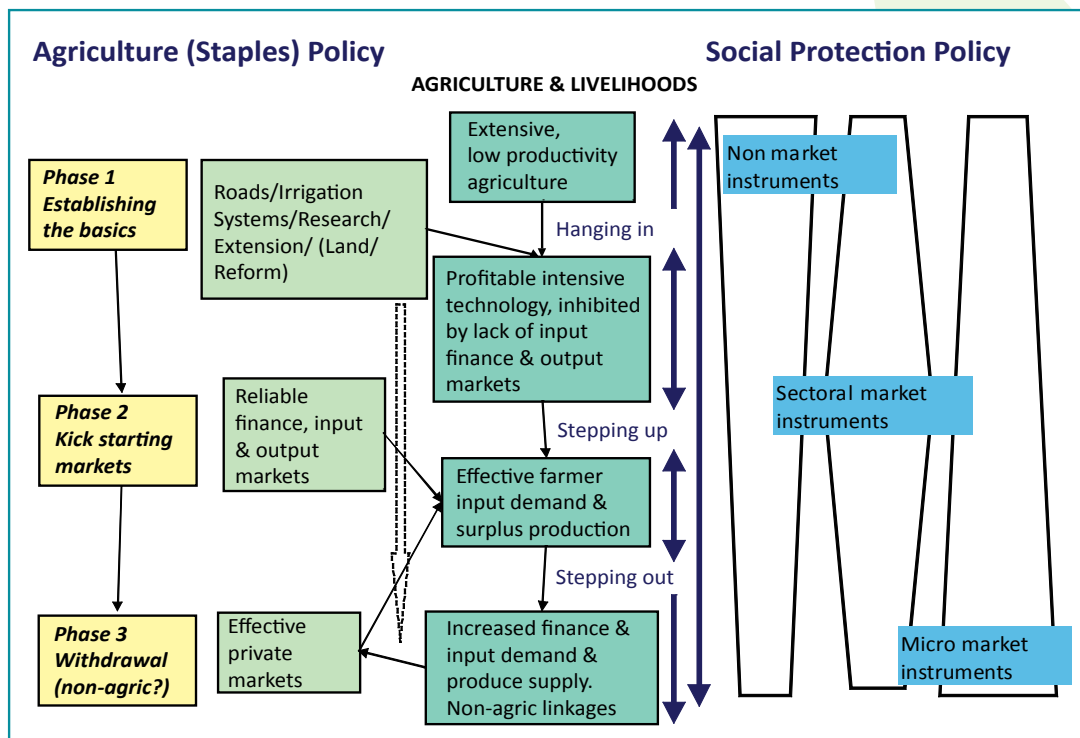


Figure 3. Phasing of agriculture and social protection policy (adapted from Dorward et al., 2006)

¹³For example in western Kenya the microfinance organization SAGA has successfully launched a so-called “Mkulima Loan” product targeted at two groups of smallholder borrowers: vegetable producers selling to Kisumu markets (i.e., quite strongly commercialized with limited seasonality) and rice farmers on a large irrigation scheme (geographically concentrated with good communications, a high degree of commercialization and low weather risk).

loan administration; and (iv) the use of bibliometric information (incorporated into smart cards) to enhance the quality of records regarding borrower repayment rates. They conclude that, though the use of such innovations may gradually become more common within rural lending in Africa, a period of (risky) experimentation will be required first. They therefore suggest that use of a carefully designed ‘challenge fund’ to take on the risks of such experimentation could significantly speed up the development and implementation of these innovations, and thus advance the spread of improved access to seasonal finance amongst African smallholders.

Conclusions and recommendations

The core message from this paper is a call for much more thinking and action that recognizes and addresses the dynamic structural changes that are a central feature of development and particularly agricultural development. Understanding this is not complex, and it does not complicate the tasks of most actors, instead it provides a solid foundation for recognizing changing multi-stakeholder interests in agricultural development and changing opportunities and constraints for agriculture to contribute to pro-poor growth and development.

Strategic and policy analysis informed by this thinking does, however, face important challenges. These include the need to recognize that there are multiple scales and phases of analysis and action. These involve different constraints (and pre-conditions), different potential synergies and competition, and therefore different policy sequencing needs for countries and regions at different stages of development and with different levels of economic activity and welfare, for high and low potential and for more accessible and more remote areas or countries, for food and cash crops with different (high and low input) intensification potential, and with or without significant asset specificity in processing.

Particular attention needs to be paid to constraints to development in the “early stages” of growth in poor rural economies, as these constraints are alien to much of the theory and experience of dominant policy analysis and ideology. Here the major micro-, meso- and macro-coordination challenges require different and changing balances between gift, hierarchy and market exchange mechanisms and hybrids. Agricultural development needs first to “establish the basics” with reliable technology, and with access to education, land and low cost services. This can then provide a platform for sustained and “crowding in” investments to kick start markets with continued

Table 1: Changing policies for food security, poverty reduction and economic growth

Policy goals	Requirements for short/medium term achievement (policy purpose)	Requirements for medium/long term achievement (policy purpose)
<i>Food security:</i> Secure and affordable access to food	Increased food self-sufficiency (household and national) with food delivery and/or productivity enhancing safety nets and humanitarian response	Increased household and national food market access (low and stable cost, secure, timely) through wider entitlements with (mainly) market economy based safety nets and humanitarian response
<i>Poverty reduction:</i> Real incomes of the poor increased and more secure, through low food costs, higher returns to labour, and safety nets.	Safety nets to increase/secure real incomes and develop/protect assets (see above)	Broad based growth with opportunities and wages for unskilled rural labour, low food prices, and safety net and humanitarian response as above
<i>Rural economic growth:</i> Increased levels of local economic activity, with stable income opportunities supporting poverty reduction and food security	Short/medium term achievement not possible.	Macro-economic stability and low interest rates; growth in agricultural and non-agricultural sectors tightening labour markets and raising real incomes with stable/affordable food prices. Development of market economy.

Dorward and Kydd (2005b)

provision of technology and other public goods, coordination and “wise subsidies”. This requires private/public partnerships involving the state, the private sector, civil society, donors with state and market coordination, expertise and capital with complementary investments and activities. This in turn requires consistent, stable, flexible, transparent, clear and reliable policies from governments (and other actors) with clear exits and limits on state action and mutual accountability among all partners. Part of this process must involve coordination of agricultural and social protection policies. Figure 3 and Table 1 illustrate some of the policy transitions involved. Managing the many transitions and maintaining flexibility, while also maintaining trust and stability, is a major challenge, particularly in today’s increasingly globalised and unstable conditions.

There are, however, also durable principles. Some of these have been considered or alluded to above – for example, the need to match power with credible commitments, consistency and flexibility. This requires clear (but changing) definitions of state scope, clear governance and accountability systems, and investments to develop state and other actors’ capacities and systems, to match the demands made of them. There is a particular need for sound macro-economic management – not only to provide the basis for economic growth but also as a foundation for consistency and partnership. There should also be constant search for synergies – for example, between cash and food crop development, farm and non-farm development, productive and welfare investments, and between private and public interests and roles. Here the concepts of market facilitators and chain champions can be very useful and may allow less explicit state coordination and investment and more state emphasis on facilitating (not impeding) private and NGO coordination and investment. Despite (or indeed because of) the mixed record of farmer organizations, it is likely that capacity building in transparent and accountable farmer organizations will be a critical aid to coordination of market access, as will investment in MIS using mobile and other ICT technology. It is also important to invest in fora that promote dialogue and lesson learning within and across supply chains and countries, with action research. A supply chain approach, integrating producers, input and output market actors, and other service providers is critical to this and to wider policy development and investment. In all this the current challenges and interest in agriculture and agricultural markets present an opportunity that must be seized.

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Improving the performance of staple food markets to exploit the productive potential of smallholder agriculture

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Abstract

This study examines competing visions of the role of the state in staple food markets to promote smallholder food production and national food security. The study reviews experience over the past 40 years to identify what has worked, what hasn't, and why. Most of our review focuses on the staple grain sectors of eastern and southern Africa, because it is in these regions where the most important advances in seed technology and production intensification have been made over the past 4-5 decades and where "green revolutions" briefly flourished in the 1970s and 1980s before stalling out. We review the main lessons learned from the marketing policy experiences during and after these emerging green revolutions. The study also presents a brief conceptual framework to understand how inelastic demand affects price risk and the options for relaxing demand elasticity constraints on food production intensification. We conclude by presenting the policy options and fundamental public investments needed to revitalize food marketing systems to support broad-based integration of smallholders into staple value chains as a means to catalyze productivity growth and food security in the region.

What is the problem?

Broad-based agricultural productivity growth is likely to be a pre-condition for sustainable poverty reduction and improved living standards in most of Sub-Saharan Africa. On the surface, the challenge of raising farm productivity could appear to be a difficult but at least relatively straightforward one: use the power of crop science to generate improved farm technologies, put them into small farmers' hands, and provide them with the knowledge to get the most out of these technologies. Over the past decades, several highly committed and well-funded efforts to kick-start "green revolutions" in Africa have been thwarted by their inability to anticipate and address downstream issues of marketing and governance. Experiences from the "green revolution" in Asia attest that widespread market development plays an important role in the process of adoption of new technologies, productivity growth and transformation of

smallholder agriculture. Failure to develop viable input supply systems for sustained provision of productivity enhancing seed and fertilizer technologies and market outlets for absorbing surplus production have often contributed to failure of agricultural transformation to take root in Africa. For example, the Sasakawa/Global-2000 programs have demonstrated that when smallholder farmers have access to improved seed and fertilizer inputs and the know-how about complementary crop management practices, they can temporarily generate impressive yield gains leading to bumper harvests. But once the program withdraws, the hard questions arise: how will farmers continue to acquire the improved seed and fertilizer? Who will supply these critical inputs to them? Who will supply the credit to enable the poorest households to afford these inputs?

Even when the supply of key inputs can be sustained, the significant challenges related to storage and distribution of the surplus production become impediments to sustaining farm productivity growth, especially if aggregate supply expansion depresses prices in the market. This is particularly relevant in the case of staple food grains, which tend to have low demand elasticities and, under conditions of underdeveloped market infrastructure, fail to efficiently link surplus and deficit areas. The key question therefore becomes how to expand and sustain the demand for the surplus produce in such a way that depressed producer prices will not create disincentives for farmers to invest in new technology, or even worse withdraw from markets and gradually retreat back into the "safety" of semi-subsistence farming. This will require system-wide coordination of the food value chains to ensure that the important public and private investments are made to effectively link farmers to the wholesalers, processors, retailers and ultimately the consumer. This suggests that investments in farm productivity growth must go hand-in-hand with complementary investments to improve and enhance the physical and institutional infrastructure for effective functioning of both input and output markets in the food system.

Over the past several decades, the role of output markets in supporting grain productivity growth has become widely recognized, and various approaches have been tried in Africa with different levels of success. Such efforts have involved i) state-led approaches to stabilize prices and integrate input

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delivery, farm credit and output markets through controlled marketing systems; and ii) ostensible attempts to transfer critical marketing functions from the state to private traders, which in most cases have been marred by a lack of trust, cooperation and coordination between the private and public sectors. Neither of these approaches has produced sustainable farm productivity growth or greater commercialization of smallholder agriculture in Africa. There is an emerging consensus that the status quo food-marketing situation in most African countries is not going to catalyze small farm productivity growth, and that new approaches will need to be found quickly. While productivity growth is important for generating marketable surplus (Barrett, 2008), there is a growing realization that such productivity change cannot be sustained without effective market development that will fuel the process of transformation through forward and backward linkages in value chains extending all the way from the farmer to the consumer. In addition, lack of access to reliable markets continues to lock millions of smallholder farmers into semi-subsistence production. Better functioning markets and productivity growth could open new pathways to escape poverty and hunger. Time is of the essence. Population growth without income growth is exacerbating poverty and causing more frequent and severe food crises. There is indeed an urgency to the challenge of making staple food markets work for small farmers.

This paper represents a renewed effort to identify strategies and policies that can sustainably promote smallholder farmers' access to markets, reduce risks, and expand market demand, so as to sustain smallholders' incentives to invest in productivity enhancing seed, fertilizer and other technologies. Our aim is to identify what has worked, what has not, and why. Most of our review focuses on the staple grain sectors of eastern and southern Africa, because it is in these regions where the most important seed technology advances have been made over the past 4-5 decades and where "green revolutions" briefly flourished in the 1970s and 1980s before stalling out. The vast majority of the evidence-based analysis of output marketing to support small farmers' use of modern seeds and fertilizer technologies is also in these regions where some progress has (or had) been achieved.

The rest of the paper is structured as follows. The next section presents a brief conceptual framework to understand the market structure and analyze food markets with inelastic

demand to develop strategies for relaxing elasticity constraints and expanding demand. The third section provides a historical review of alternative approaches for system-wide organization of food marketing and highlights the main lessons learned from marketing policy experiences in Africa. The fourth section reviews current knowledge with specific grain marketing interventions that have been used in the past to stimulate demand and sustain price incentives in the face of supply expansion. We conclude in the last section by presenting the policy options and the first-order output marketing improvements needed to reorganize and revitalize the food marketing system in support of increased integration of smallholders into value chains as a means to catalyze productivity growth and pro-poor 'green revolution' in Africa.

The nature of the solution: a brief conceptual framework

Structure of grain production and marketing systems in Africa

Food staples in Africa are predominantly produced by smallholder producers, cultivating small parcels of land and often using traditional and labor-intensive methods. Unlike in Asia, the level of intensification of production using modern land-augmenting inputs – improved varieties/hybrids and fertilizer – and complementary irrigation is quite limited. The extent of commercialization and share of the produce marketed in different countries also varies across commodities. In high-potential areas of eastern and southern Africa, maize remains the main staple food crop produced and marketed by smallholders. In some high-potential areas (e.g., Ethiopia) wheat and rice are also grown, while barley and small cereals (e.g., teff) are important in the highland regions. In the lower potential and drought-prone areas, food crops like sorghum, millets, pulses, oilseeds and cassava are widely grown. The surplus produce in rural areas is procured through a network of rural assemblers and brokers who buy directly at the farm gate in small quantities, or from small rural markets, and pass it onto rural wholesalers. The product is subsequently aggregated and transported to other secondary and tertiary markets for selling to larger wholesalers, processors and/or exporters. There is lack of widely recognized and adopted quality grades and standards and units of measurement, which increases the costs of grain procurement and market transactions. Lack of assurance and reliability of transactions often requires personal relationships and trust among the trading parties, or personal supervision

of quality standards and trade commitments at different levels in the supply chain. Low-cost and traditional storage, grain handling, and packaging methods are practised and there is little change in the form or value of the commodity other than spatial movements and associated transport costs (Minot et al., 2008; Shiferaw et al., 2009).

Participation of smallholders in markets is determined by several factors, including their asset position (e.g., land, labor, and capital), access and proximity to markets, organizational capacity, and their ability to produce a marketable surplus at costs that will make selling at prevailing prices attractive. Available evidence from nationwide and large-scale farm household surveys for maize indicates that only a very small proportion of households buy and sell grain in the same year (Jayne et al., 2006). Small-scale farm households generally fall into one of the following four categories with respect to the grain market (Table 1):

Sellers of staple grains: Roughly 20 to 35% of the smallholder farms sell maize in a given year. Of course this figure will rise in good harvest years and fall in a drought year. However, there are two sub-groups within this category:

- A very small group of relatively large and well-equipped smallholder farmers with 4 to 20 hectares of land, usually in the most favorable agro-ecological areas (about 1 to 3% of the total rural farm population), accounting for 50% of the marketed output from the smallholder sector. These farms tend to sell between 1 and 50 tons of maize per farm in a given year.
- A much larger group of smallholder farms (20 to 30% of the total rural farm population) selling much smaller quantities of grain, usually between 50 and 200 kilograms per farm. These households tend to be slightly better off than households that buy grain, but the differences are not very great in absolute terms. These households, especially the larger smallholder farmers, clearly benefit from higher grain prices, and have tended to advocate for the continuation of marketing boards procuring their crop at fixed support prices.

Buyers of staple grains: These rural households generally make up 50-70% of the rural population, higher in drought years and lower in good production years. These households are generally poorer and have smaller farm sizes and asset holdings than the median rural household. They are directly hurt by higher mean grain prices.

Households buying and selling grain within the same year: In all of the nationwide surveys, relatively few households both buy and sell maize (Table 1). Only about 5 to 15% of the rural population buys and sells maize in the same year. Many of these are relatively large and food secure farms that sell grain and buy back lesser amounts of processed meal. About 3 to 8% are relatively poor households that make distress sales of grain after harvest only to buy back larger later in the season.

Households neither buying nor selling staples: These households make up a small proportion of the rural population in areas where maize is the dominant staple crop. The Zambia results are different in this case because cassava is the main staple in northern Zambia, and because of this, a sizable fraction of the rural population at the national level is autarkic with respect to maize.

Grain marketing policies and market development will have differential effects on these different types of small-scale producers. For example, reducing marketing costs will narrow the price band and make some farm households facing low production costs increase their surplus and sell more. With reduction in marketing costs and increased access to markets, farm households facing high production costs may also reduce subsistence production and become increasingly reliant on markets as net buyers of grain staples (de Janvry et al., 2001). The challenge for agricultural marketing policy in sub-Saharan Africa is to design options that stimulate and sustain investments in productivity enhancing technologies, remedy market imperfections and increase market access and participation, expand demand, and benefit small-scale producers and poor consumers. These issues are discussed below and in subsequent sections.

Table 1. Distribution of small-scale farm population according to their position in the staple grain market, selected countries.

Household category with respect to main staple grain:	Zambia (maize)	Mozambique (maize)	Kenya (maize)	Malawi (maize)	Ethiopia (maize and teff)
----- percent of rural farm population -----					
Sellers only:	19	13	18	7	13
1. top 50% of total sales*	2	2	2	1	2
2. bottom 50% of total sales**	17	11	16	6	11
3. Buyers only	33	51	55	56	60
4. Buy and sell (net buyers)	3	12***	7	5	13
5. Buy and sell (net sellers)	6		12	3	12
6. Neither buy nor sell	39	24	8	29	2
	100	100	100	100	100

Notes: *after ranking all households by quantity sold, this row shows the percentage of households in the smallholder sector accounting for the first 50 percent of total maize sale; **percentage of households accounting for the other 50 percent of total maize sales. ***The survey in Mozambique was not able to ascertain quantities of maize purchased therefore whether these households are net buyers or net sellers is unknown. Roughly 1/2 of the households in category 5 (who buy and sell in the same year) are relatively well-off households producing large maize surpluses and relatively buying small amounts of processed industrial maize meal.

Source: reproduced from Jayne, Nijhoff and Zulu (2006).

The elasticity of the demand function

One of the key characteristics of staple food crops is their low overall elasticity of demand; income growth and price changes often lead to a lower proportional increase in demand for food staples. When demand is inelastic, technology adoption and productivity growth often lead to declining producer prices without a proportional increase in demand. If prices fall much faster than demand, this may have negative welfare impacts on producers unless farmers compensate for this loss through lower production costs derived from adoption of new cost-saving technology. However, crop production expansion is difficult to sustain in the face of highly inelastic product demand, which causes precipitous price plunges when local markets are unable to absorb surplus output. Such price drops are a major cause of subsequent farm dis-adoption of improved technology (Vitale and Sanders, 2005). This was the experience of the Sasakawa-Global 2000 programs implemented in many African countries in the 1990s (Putterman, 1995; Howard et al., 2003; Alemu et al., 2008). Figure 1 shows this schematically. If farmers' initial adoption of productivity enhancing technology causes the food supply curve to shift from S^0 to S^1 , prices will drop from P^0 to P^1 if markets are unable to absorb the surplus due to inelastic demand (D^0). The actual quantity supplied increases marginally

from Q^0 to Q^1 . In this environment, markets are not able to support sustainable farm technology improvements. This could be the case when surplus producing regions are poorly linked to deficit (net importing) areas within a country because of poor market infrastructure or when a country is unable to export the surplus. Thin local markets in many rural areas in Africa get saturated quickly when many farmers attempt to sell their produce right after harvest to meet various financial obligations.

In contrast, Figure 2 shows a situation of elastic demand. When demand is elastic, the market can absorb greater quantities of product without depressing prices. If the demand for grain were more elastic (as shown in Figure 2), the same expansion of the food supply curve from S^0 to S^1 would cause a much smaller reduction in farm prices, and a much greater ability to increase actual quantities supplied by farmers (Q^0 to Q^2). A major challenge of output market development, therefore, is to make the demand for staple food much more elastic. A related challenge is how to expand the demand for grain to maintain strong incentives for farmers, but in a way that does not price poor consumers out of the market.

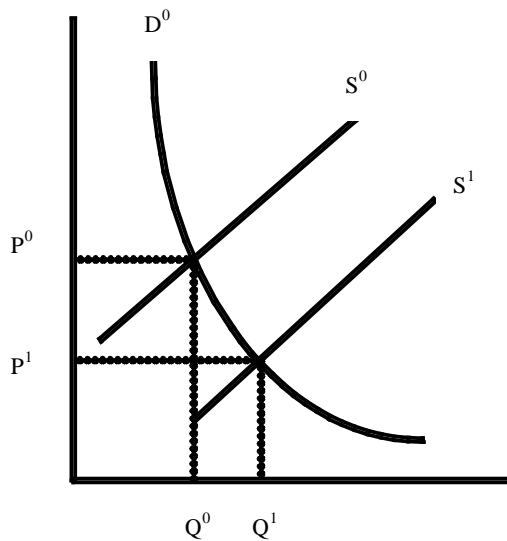


Figure 1. Supply expansion with inelastic demand

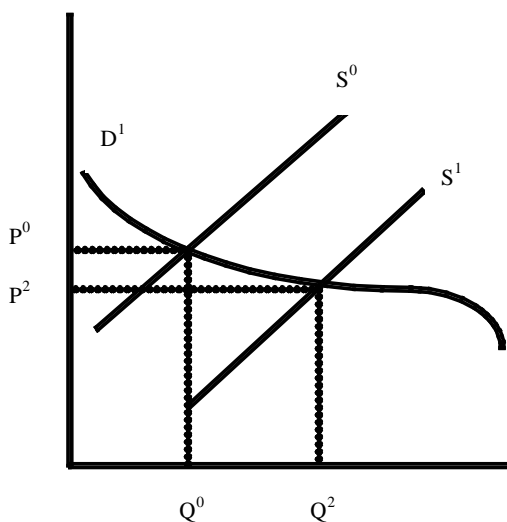


Figure 2. Supply expansion with elastic demand

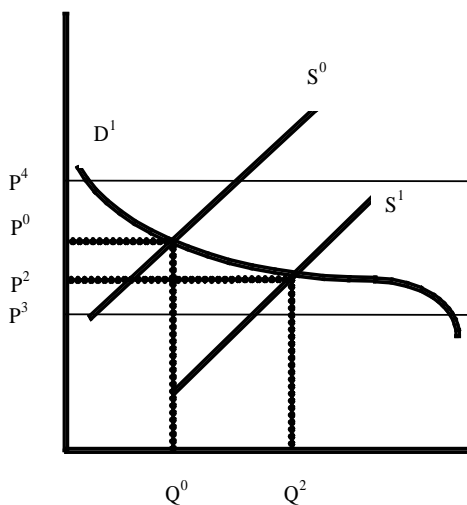


Figure 3. Supply expansion with elastic demand and trade linkages

A third scenario, shown in Figure 3, underscores the power of regional and international trade to stabilize food prices and support farm technology adoption. Figure 3 is similar to Figure 2, except that the magnitude of potential price fluctuations is truncated by trade possibilities. If a country's markets can be well integrated with surrounding countries, then if prices drop to a certain level (P^3), the country's surplus production will become competitive in regional or international markets, providing a vent for surplus production at a level equal to the price in international markets minus transport costs (P^3). Likewise, if prices rise to a certain point (P^4), surpluses in other countries can be brought into the country at a cost equivalent to the price of grain in the surplus country plus transport costs (P^4). However, the theoretical price stabilizing effects of trade can only be realized in practice if markets work well, which depends on getting the incentives right for traders to operate.

Factors affecting the elasticity and stability of demand

Fortunately, it is possible to alter the shape of the demand curve that small farmers face. The demand for staple grain crops can be made more elastic, and shifted outward, through market-facilitating public investments and policy choices and by nurturing important marketing institutions.

- 1) **Physical infrastructure:** The size of the market is determined by marketing costs. Transport costs are generally the largest single component of price differences between surplus and deficit areas (Gebremeskel, Jayne and Shaffer, 1998; Mittendorf, 1989). As transport costs decline, grain markets become more integrated and the overall size of the market expands for any particular farmer and demand becomes more elastic. This is analogous to the situation of a small country supplying product to the world market – the huge size of the world market relative to the small country's production makes the demand function that it faces perfectly elastic (flat). More generally, there is strong evidence that a country's level of infrastructural development is associated with its level of agricultural productivity (Antle, 1983).
- 2) **Regional trade:** Regional trade, in combination with good transport infrastructure between countries, has the potential to expand the size of the market, increase the elasticity of demand facing farmers, and reduce price instability. For non-tradable commodities where price shocks are

mainly generated by domestic events such as weather, the magnitude of the shock will largely determine the variability of domestic production. But local production shocks can be mitigated by regional trade, which tend to stabilize markets by linking together areas with covariate production (Koester, 1986). The size of a country matters. Larger countries typically have more diverse regional climatic conditions that reduce systemic risks at the country level. Regional trade has a greater potential to stabilize food prices when consumers can easily substitute one food type for another (such as maize and cassava in parts of southern Africa; wheat and rice in other areas), where cropping patterns are diverse, where production in different parts of the region are not highly correlated, and where the costs of transportation are low (Minot and Delgado, 2002; Byerlee, Myers and Jayne, 2005).

3) Streamlining regulations and trade barriers: Many African countries impose import tariffs on staple foods coming from neighboring countries. Other countries frequently resort to export bans. These trade barriers often vary unpredictably, and so make it risky for trading firms to invest in developing durable marketing networks across regions. Customs clearance procedures are often cumbersome. For example, permits to legally import grain into Kenya are available only in Nairobi (Nyameino, Kagira and Njukia, 2003). Traders wanting to move product from northern Mozambique to southern Malawi need to get export permits in Quelimane at the coast in northeast Mozambique (Tschirley, Abdula and Weber, 2005). These regulatory barriers impose transaction costs on traders that result in lower demand and lower prices for farmers (and higher prices for consumers). Streamlining the regulatory processes for regional trade can reduce downside price instability that often depresses farmer incentives to sustain their use of productivity enhancing cash inputs.

4) Rural financial markets to improve traders' capacity to absorb surplus production: While the importance of small farmer credit in promoting the uptake of improved farm technology is well recognized, the role of trader finance is also crucial. A major source of inelastic demand in traditional food markets is the constrained supply of trader

finance (Coulter and Shepherd, 1995). Market institutions such as warehouse receipt systems can inject needed liquidity into grain marketing systems and thus allow the system to better absorb surplus production in good years. But the development of these market institutions will depend on supportive government policies. So far, fledgling attempts to develop warehouse receipt systems and other innovative sources of trader finance in staple food assembly and wholesaling markets (e.g., Ghana and Zambia) have floundered due to direct government operations in markets that have been incompatible with the development of these institutions.

- 5) Policies toward subsidized imports and food aid:** While local farmers are generally well served by regional trade, their interests can be undermined by subsidized food imports, particularly if this alters long run food consumption patterns. For example, large processing companies in urban areas are often able to acquire subsidized wheat and rice from international sources, which over time influences urban consumption habits. With few exceptions, most smallholder areas are not suited to wheat and rice production. The importation of subsidized wheat and rice undermines long-term demand and prices for the main staple grains, roots and tuber crops that small African farmers produce. For example, in India the demand for sorghum and millets – crops widely grown in drought-prone areas – has declined mainly due to public procurement and distribution systems that subsidize rice and wheat (Ryan and Spencer, 2001). In West Africa, the demand for subsidized rice and wheat has also increased, especially in urban areas, in many cases displacing consumption of traditional cereals (Vitale and Sanders, 2005). Similarly, inappropriate uses of imported food aid (e.g., the sale of imported food aid by NGOs during periods of local production surplus)⁴ are likely to depress small farmers' uptake of improved farm technology over time (Tschirley et al., 2004; Dorosh, Dradri and Haggblade, 2007)⁵.
- 6) Diversification of food consumption patterns:** When food consumption patterns become more diversified, markets become more interlinked and stable than in cases where

⁴Many NGOs derive part of their annual operating budget by "monetizing" (selling onto local markets) food aid received from donor countries like the United States. In this way, a certain amount of food assistance to Africa is uninfluenced by weather and local supply conditions, and it is this component that has the greatest potential to disrupt local markets and affect small farmers' incentives.

⁵There is not a clear consensus on this point. Abdulai, Barrett and Hoddinott (2005), for example, contend that food assistance programs usually have not adversely affected small farmers' production incentives and may actually help them by generating community assets through public works projects.

one commodity dominates food consumption patterns. Especially in eastern and southern Africa, food production and consumption patterns have changed markedly over the past decade. The former dominance of white maize has given way to more diversified food systems. In many rural areas of Malawi, Zambia and Tanzania, cassava cultivation has increased dramatically. The increasing role of cassava, a drought-tolerant crop that can be stored in the ground, provides new potential to stabilize food consumption in the face of maize production shortfalls (Nweke, Spencer and Lynam, 2002). The availability of other drought-tolerant crops (e.g., cassava, sorghum, millets, pigeon pea) that are less prone than maize to extreme production fluctuations provides some relief in the degree to which maize supplies can fluctuate from year to year without seriously aggravating food insecurity. While not necessarily affecting the elasticity of demand for any particular food commodity, diversification of consumption and interdependence of demand for alternative staple foods tends to increase overall food supplies and therefore contribute to stability of food markets and prices over time.

7) Generating alternative sources of demand for grain:

Future projections indicate that the demand for livestock products, fruits and vegetables will increase as income grows and urbanization increases (Delgado et al., 1999). The population of Sub-Saharan Africa is currently undergoing dramatic changes in settlement patterns; about half of the population (projected to reach 1.2 billion) is likely to move to urban areas by 2020 (World Bank, 1996). The resulting high demand for poultry and milk products will induce greater derived demand for use of cereal grain as livestock feed. If supply can be increased, this could expand the total demand for coarse cereals and reduce the upward pressure on prices of other staple crops (e.g., maize). In addition, food and energy markets will become increasingly integrated in the future with the development of the bio-fuels industry. A local bio-fuels industry could become an important means of stabilizing downside price risk for small farmers, by offering a floor price in periods of excess supply. This would essentially make the demand for grain perfectly elastic at a certain floor price. The rise of a local bio-fuels industry will also create greater interplay between sugar and grain markets over time, which could contribute to price stability and less variable demand for smallholder staple crops.

8) Storage and processing: Recent studies in Africa have shown increased consumption demand for wheat and rice and other ready-to-use or processed products in urban areas. Urban consumption surveys in Nairobi, Maputo, and the Umtata area of eastern Cape, South Africa, attest to the rising importance of wheat and rice products in food consumption patterns (Muyanga et al., 2005; Tschirley, Abdula and Weber, 2005; Traub, 2005). One of the reasons for the declining demand for traditional staple crops is the high opportunity cost of time in food preparation for the family, which tends to shift consumption demand to alternative crops like rice which have relatively low processing costs or labor-saving processed products (e.g., breakfast cereals, bread, flour, pasta, etc). This indicates that with increasing urbanization and income growth, African consumers are likely to demand more processed and easy-to-prepare food products. A key strategy for increasing the demand for traditional staples grown by African farmers would therefore require increased investment in processing, packaging and storage systems that will improve the competitiveness and demand for these crops while also adding value and generating economic surplus.

9) Development of world food markets: Until recently, the world market for white maize was thinly traded and hence small absolute changes in import demand in southern Africa had the potential to influence world prices. The rationale for some level of stockholding is more compelling in such cases. However, in recent years, the white maize market has become much more heavily traded due to the effect of the North American Free Trade Agreement (NAFTA), which since 1997 has induced a large white maize supply response in the USA and other countries (USDA, 2010). These developments have mitigated the potential for white maize prices and supplies to become tight when the southern Africa region experiences a drought, and thus reduces the rationale for keeping large government stockpiles of white maize to stabilize supplies (Tschirley et al., 2004). Even considering the potential for high food import bills in years of world price spikes, prior analysis taking into account volatile world market prices in the 1970s (which were higher in real terms than world food prices in the most recent 2007-08 crisis) consistently showed that the costs associated with maintaining large national buffer stocks year in and year out are almost always greater than relying primarily on trade to fill residual food requirements.

To briefly summarize, staple food value chains that support sustainable farm productivity growth will have the following characteristics. First, transportation costs will be much lower than they are now. Much of the price instability problem, in particular the inability of markets to absorb increased output without huge price drops, is because the size of the market is severely limited by high transport costs. Well-functioning value chains will benefit from much greater public investment in roads, rail and port facilities. Second, small farmers will have greater access to seasonal finance to afford the cash inputs needed to intensify their food production, which has implications for rural financial institutions. Third, well-functioning marketing systems rely on accurate crop forecasts that enable market actors and governments to plan their decisions in advance based on accurate public information. Fourth, alternative downstream markets for grain will arise (either domestic or external) to act as shock absorbers by absorbing increased output in good years and reducing quantities demanded in short years. Fifth, a transparent price discovery process will support farm productivity growth by i) developing risk shifting tools and price monitoring systems that traders can use to stabilize returns to both themselves and to farmers, ii) providing feedback to policy makers as to how markets are performing, and iii) providing transparent decision rules for government intervention. The main challenge now is how to bring into fruition these important price-stabilizing and market-expanding benefits to stimulate the sustainable adoption of improved farm technologies by small African farmers. Concrete proposals to move toward achieving this vision are identified in the fourth and fifth sections of this paper.

Experiences with alternative approaches to system-wide organization of food marketing system

The market-strengthening and stabilizing approaches specified above can be achieved through a variety of public and/or private sector approaches to market development. There is widespread agreement in the literature that the state has a crucial role to play in developing strong output markets in Africa. However, there are major controversies as to what exactly these critical government roles are, and how they should be implemented. Identifying promising interventions or programs to defend output prices in the face of output supply expansion must be

considered within the overall system-wide value chain, e.g., how can specific interventions be made to function compatibly with other stages of the value chain.

A major insight from commodity value chain analysis (Taylor, 2005; Kaplinski and Morris, 2001) and the earlier industrial organization and commodity sub-sector literature of the 1970s, 1980s, and 1990s is that risks, uncertainties and lack of profitability at one stage of the system will impede incentives for investment at other stages of the system, depressing overall performance of the value chain.⁶ Much in the same way as the human spine and central nervous system transmit signals and coordinate the movements of the entire body, the wholesaling stage of the food system plays a similar coordinating role in food value chains. It is at the wholesale level where i) almost all of the seasonal storage takes place downstream from the farm, ii) most of the demand for financing grain purchases from farmers originates from, and iii) long-distance spatial arbitrage opportunities are identified to reallocate supplies from surplus to deficit areas and link farmers and assemblers with processors, retailers and consumers in distant areas. Moreover, certain kinds of programs with the potential to encourage small farm input use and productivity, e.g., warehouse receipt systems, hedging tools, etc., can only be functional within a system where the price discovery process is perceived to be based on market forces and not likely to be fundamentally altered by unpredictable government operations, and where enough volume goes through commercial trading channels to make these institutions viable (Coulter, 2005; Coulter and Onumah, 2002). The literature on food sub-sectors and value chains stresses that efforts to promote performance at either end of the value chain (e.g., assembly or storage investments at the village-level, or retail market development) can be stymied by poor performance at the crucial middle stages of the system (Shaffer et al., 1983). Therefore, a major challenge to making food markets function for the benefit of small farmers (and farm technology adoption in particular) is to achieve greater clarity as to the appropriate public and private roles in developing the wholesaling stage of food value chains – the backbone of the staple food marketing systems in almost all countries.

⁶For example, see Marion et al., 1979; Shaffer, 1980; Shaffer et al., 1983; Mueller, 1983; Marion and NC 117 Committee, 1986. Even earlier insights from the economics/business management literature (e.g., Drucker, 1958) stress the symbiotic relationships between production and marketing.

This section reviews the broad lessons from experience over the past 40 years with alternative general approaches to organizing food output markets (with a focus on the wholesaling stage) to encourage small farm technology adoption and productivity growth for the basic staples.

State-led systems

In recent years, parallels have been drawn between the food marketing systems of Asian countries at the time of their “green revolutions” and the marketing systems that may best achieve similar farm productivity growth in Africa (Sachs, 2005; Dorward et al., 2004). Others have pointed to the fledgling “green revolutions” experienced in eastern Africa, that appear to have been snuffed out after the state-led marketing boards (which operated mainly at wholesale level) were downsized. The experiences of countries like Kenya, Zimbabwe, Zambia, Malawi and Tanzania during the 1970s and 1980s demonstrate that a state-led controlled marketing approach can stimulate the adoption of improved grain seed technologies and complementary inputs to achieve impressive production growth (Byerlee and Eicher, 1997; Smale and Jayne, 2003). These experiences also demonstrate that the main challenge of these state-led approaches is not so much how to initiate farm productivity growth, but how to sustain it if the costs of the programs escalate and contribute to fiscal crises (Jayne and Jones, 1997; Kherallah et al., 2002; Gulati and Narayanan, 2003; Rashid, Cummings and Gulati, 2005; Avalos-Sartorio, 2006). In light of recent developments in much of Africa testing the return of the “development state”, this section reviews the main conclusions from the state-led approach to agricultural development of the 1970s and 1980s.

Starting at Independence in the 1960s and 1970s, a prominent goal of government policy in much of eastern and southern Africa was to promote smallholder welfare, using staple food production incentives as the main vehicle. This goal was achieved with great success in the 1970s and 1980s. Two main ingredients drove this production growth: input and crop marketing policies, broadly defined, and improved seed breakthroughs.⁷ The key features of the marketing policies were i) expansion of state crop buying stations in smallholder areas, ii) direct state control over grain supplies and pricing, iii) heavy subsidization of fertilizer

to encourage its use by small farmers, iv) efforts to stabilize and subsidize urban consumer prices without reliance on imports, and v) shifting the massive costs of these government investments and subsidies onto the Treasury. The expansion of state market infrastructure in smallholder areas facilitated the disbursement of credit and subsidized inputs to smallholders by allied state agencies designed to recoup loans through farmer sales to the marketing boards (Rohrbach 1989; Howard 1994; Putterman 1995). Smallholder maize yields and production grew impressively during the 1970s and 1980s.⁸

The state-led support for smallholder maize intensification during the 1970s and 1980s appears to have shifted production patterns away from other crops to maize, as well as supported an overall increase in cropped area (Smale and Jayne, 2003; Zulu et al., 2000). In Zambia, by 1990, maize accounted for 76% of the total value of smallholder crop production (Figure 4).

The “smallholder green revolutions” achieved temporarily in the 1980s in parts of the region (Eicher, 1995; Byerlee and Heisey, 1997) featured state-led investments in input delivery, credit disbursement, and major expansion of state crop buying stations. Throughout the 1980s and up to the initial reforms, official producer prices exceeded export parity prices in the major production regions of Kenya, South Africa and Zimbabwe, typically exporters during this period (Jansen and Muir, 1994; Wright and Nieuwoudt, 1993; Smale and Jayne, 2003). In almost all countries, a large proportion of smallholders benefited from the transport subsidies inherent in the boards’ pan-territorial pricing structure (Bryceson 1993; Howard 1994; Odhiambo and Wilcock, 1990). While currency overvaluation did introduce an often substantial indirect tax on food producers, especially in Tanzania and Zambia (Jansen and Muir 1994), this was largely offset by the package of state investments designed to increase food production incentives (primarily input subsidies, concessional credit, and investments in state crop buying stations, research, and extension).

These pricing and market support policies clearly encouraged the adoption of newly available hybrid maize seeds and stimulated the growth in smallholder grain area and yields during the 1970s in Tanzania and Kenya, and during the 1980s in Zimbabwe

⁷It is widely agreed that without the advent of new yield-enhancing maize seeds, the state-led marketing investments by themselves would have had a much smaller impact on smallholders’ productivity and incomes (e.g., Rohrbach, 1989).

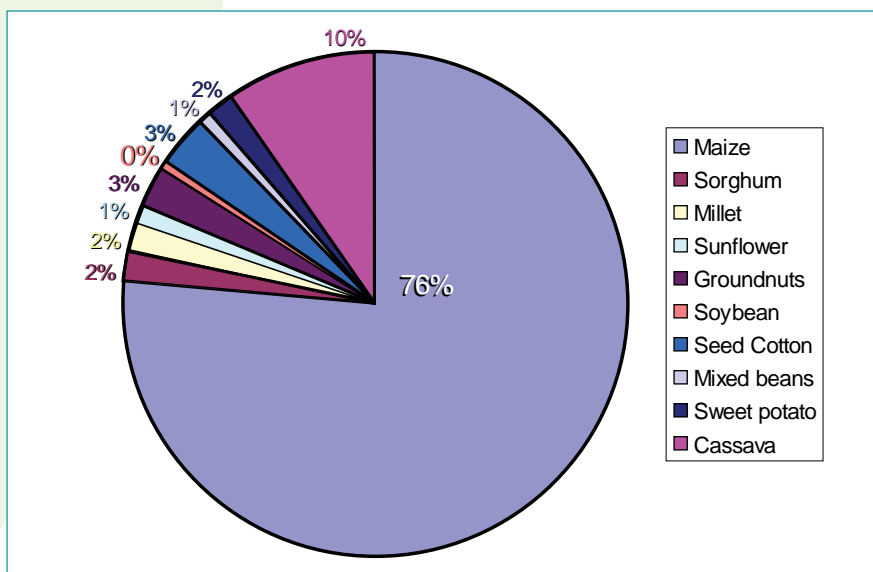
⁸The timing of these state investments was as follows: expansion of marketing board buying stations in smallholder areas (Zimbabwe 1980-1986; Zambia 1983-1989; Kenya 1980-1982; Malawi 1974-1985; Tanzania 1974-1979); expansion of state credit disbursed to smallholders (Zimbabwe 1980-86; Zambia 1983-88; Kenya 1975-1983); explicit or implicit subsidies on inputs (Zimbabwe 1980-91; Zambia 1971-1991; Malawi 1980-94). For details, see Jayne and Jones (1997).

and Zambia (Putterman, 1995; Jabara, 1984; Rohrbach, 1989; Howard, 1994). Per capita smallholder grain production in Zimbabwe and Zambia increased by 51% and 47% in the 10 years of heavy state intervention between the late 1970s and the late 1980s. In Kenya and Tanzania, per capita grain production rose 30% and 69% between the 1970-74 and 1980-84 periods.⁹

However, herein lay the groundwork for subsequent unsustainability. As the marketing board floor prices for grain were successful in promoting smallholder input use and production, especially in remote outlying areas, production began to exceed domestic demand requirements, and the costs of accumulating grain in public silos rose dramatically. Often the cost of growing and transporting the grain to urban areas exceeded the economic value of the crop.¹⁰ Strategic stocks sometimes rose to massive levels (especially in Zimbabwe, Malawi and Kenya), and often had to be exported at a loss to avoid the even greater financing costs of long-term storage and quality deterioration (Buccola and Sukume, 1988; Pinckney, 1993). Furthermore, marketing board operational inefficiency varied across countries, but adversely affected farmers' incentives to sustain their use of the improved input technologies in many countries (World Bank, 1981; Bates, 1989; Kaplinski and Morris, 2001; Amani and Maro, 1992).

Howard (1994) provides a detailed analysis of the rate of return to the maize seed research and marketing policies of the 1970s and 1980s in Zambia. Her analysis explicitly includes the costs of a full range of investments leading to hybrid maize adoption by smallholder farmers. Marketing costs accounted for roughly 59% of the total costs of all investments, in contrast to the seed research investments, which were only 3% of the total. Extension and other service provision programs accounted for the remaining 38%. The rate of return on maize research was favorable when the costs of marketing were not included. After the costs of all related investments (seed and agronomic research, extension, and marketing), however, the average rate of return to maize promotion in Zambia was negative over the 1987-91 period.

As the fiscal costs of state operations in support of smallholder food production mounted, and contributed to overall fiscal crises in these countries, donors changed course and declined to continue underwriting these costs. Continued donor lending and budget support to African governments began to be "conditional" on addressing the major sources of treasury deficits, and in many countries, food-marketing policies were indeed one of the main sources of fiscal crisis. After first supporting investments in African marketing boards during the 1960s and 1970s, donors now changed course and argued for



Source: Post-Harvest Surveys, 1990/91, Central Statistical Office, Lusaka.

Figure 4. Shares of crop production value of major crops produced by smallholder farmers in Zambia, 1990/91

⁹Jabara (1984) demonstrates that despite falling real food prices in Kenya during the 1970s, the profitability of grain production actually increased due to farm productivity growth achieved in part through state investments in agriculture. For detailed analyses of the effects of these state interventions on maize technology adoption, see Rohrbach (1989) and Howard (1994).

¹⁰Pan-territorial pricing was particularly burdensome, especially in Tanzania, Zambia and Zimbabwe, since it raised the share of grain delivered to the boards by smallholders in remote (but often agronomically high-potential) areas where transport costs were high (Bryceson, 1993; GMB, 1991).

their withdrawal. Several factors shaped this change. Donors lost patience with phased and partial reform programs that were increasingly seen as propping up costly and otherwise corrupt and unsustainable pricing and marketing policies rather than facilitating reforms (Jones, 1994). In addition, political economy models (e.g., Bates, 1981) suggested that state interventions in agricultural markets, while ostensibly designed for rural development or to correct for market failures, were in fact designed to serve the interests of a dominant elite composed of bureaucrats, urban consumers, and industry. Land allocation was a tool for meting out political patronage and loyalty, and as influential elites acquired big farms, they developed strong individual incentives for a state marketing apparatus that would ensure high prices and subsidized inputs for their farm activities.

By the early 1990s, governments such as Kenya, Zimbabwe, Malawi, Zambia and Tanzania had no choice other than to cut back on state marketing services because i) they could no longer sustain these expenditures in the face of mounting budget deficits, and ii) international lenders (mainly the World Bank and IMF) were unwilling to provide additional loans without guarantees that governments would address the sources of the deficits – with public maize and fertilizer marketing programs being major sources. In Zimbabwe, even though 17 additional permanent buying stations were established between 1985 and 1992, the number of seasonal rural buying stations declined from 135 in 1985 to 42 in 1989 to 9 in 1991. Disbursement of government credit to smallholders declined steadily from a peak of Z\$ 195 million in 1987 to under Z\$ 40 million in 1994 (in constant 1994 Z\$). Fertilizer purchased by smallholders has also stagnated in some countries after 1993 when major maize policy reforms occurred.¹¹ In Zambia, grain area, fertilizer use, hybrid seed purchases, and production have all declined since the late 1980s due to a combination of lower real producer prices, higher real fertilizer prices, deteriorating state marketing services, and a reduction in available state credit. Fertilizer nutrient use, which peaked in 1986/87 at 88,000 tons, declined to less than 60,000 in 1994/95. Hybrid maize seed purchases declined from 15,000 tons in 1989/90 to 4,799 in 1994/95. In Malawi, the use of hybrid maize and fertilizer expanded rapidly in the early 1990s, but then plummeted after 1994 due to the collapse of the agricultural credit system.

While the post-independence model of service provision to smallholders appears to have had important successes in boosting grain production and incomes in some rural areas, by the mid-1980s major problems had emerged in all the countries that propelled the grain marketing systems toward reform. Future discussions about state-led marketing approaches to support smallholder input intensification and productivity must address these problems:

- 1) Cost containment of marketing board activities:** How can the state-led systems be designed to keep costs within sustainable levels? The major issues are: i) the more the state directly operates in markets, the more it tends to crowd out potential private sector activity, thus forcing the state to handle marketing tasks of the entire system; ii) how to defend producer incentives over time, especially if state activity is successful in stimulating farm input and production growth and finds itself accumulating expensive grain stocks; iii) related to ii, how to absorb and find economically viable uses of surplus crop output; iv) how to minimize the potential for marketing boards to be used in politicized ways that impose additional costs and inefficiencies on the state and often on both farmers and consumers (Sahley et al., 2005; Jayne et al., 2002); and v) how to avoid the treasury costs of state fertilizer and maize marketing operations that led to their implosion during the 1980s. Maize marketing and input subsidy programs were so large that they contributed to macroeconomic instability and hyperinflation in Zambia (Jansen and Muir, 1994), and to a lesser extent in Tanzania and Kenya (Amani and Maro, 1992; Odhiambo and Wilcock, 1990). Zambia's National Agricultural Marketing Board's operating losses were roughly 17% of total government budgets in the late 1980s (Howard and Mungoma, 1997).
- 2) Credit systems:** While it is sometimes stated that small farmers' access to input credit for fertilizer and seed was caused by the transition to "liberalization" and the contraction of state marketing board activities (e.g., Dorward et al., 2004), studies at the time show that state systems of farm input credit were already in serious difficulty due to massive credit non-repayment. In Zimbabwe, almost 80% of smallholder recipients of state credit were in arrears in 1990 (Chimedza, 1994). In Zambia, which continued fertilizer

¹¹Kenya is a major exception to this (see <http://www.aec.msu.edu/agecon/fs2/kenya/pb07.pdf>).

and seed credit programs until 1999, repayment rates never exceeded 43% and were generally in the 20-30% range (MACO/ACF/FSRP, 2002). The state systems for seed and fertilizer delivery and crop payment became increasingly unreliable over time, especially in Zambia, Tanzania and Kenya, (Howard 1994; Amani and Maro, 1992; Westlake, 1994).

- 3) **Pan-territorial and pan-seasonal pricing:** Uniform pricing has the effect of depressing the scope for private trade, and forces the state into performing most of the marketing functions at wholesale level. Pan-territorial pricing also encourages farmers near urban demand centers (and who are implicitly taxed through pan-territorial pricing) to resort to parallel markets (as occurred in Tanzania, Kenya, and Zambia during the 1980s) and/or switch to other, uncontrolled crops (as in Zimbabwe and South Africa in the late 1980s and early 1990s). Declining volumes through the state marketing channels further exacerbated the boards' trading losses.
- 4) **Suppression of informal marketing channels:** Empirical evidence from the 1980s and 1990s found that the controlled marketing systems suppressed or imposed additional costs on parallel trading and processing channels that often served the interests of both producers and consumers more effectively than the official state apparatus (Odhiambo and Wilcock, 1990; Putterman, 1995; Mukumbu, 1992; Rubey, 1995; Jayne and Chisvo, 1991).

The prevailing grain wholesaling systems, circa 2009

Despite the conventional perception that food markets have been "liberalized", many African governments, particularly in eastern and southern Africa but also in parts of West Africa, continue to intervene heavily in food markets. The stated purpose of most government operations in markets is to stabilize food prices and supplies. Governments pursue price stabilization objectives through two main routes: i) marketing board operations and ii) discretionary trade policy instruments, such as export bans and import tariff rates. A defining feature of the marketing environment in the "liberalization period" in most of eastern and southern Africa has been the tremendous unpredictability and frequent change of direction

in governments' role in the market. In this shifting policy environment, the private sector's response in most countries has been muted, especially at the critical wholesaling stage (storage, linkages between farm assembly and wholesaling/processing stages, and long-distance trade, including regional trade).

Marketing board operations – Marketing board operations have generally been more modest in recent years than during the pre-control period. However, they continue to be major actors in their countries' maize markets. Using data provided by the national marketing boards between 1995 and 2004, the boards' annual purchases have fluctuated from an estimated 15-57% of the domestic marketed maize output in Kenya, 3-32% in Malawi, and 12-53% in Zambia (Jayne, Nijhoff and Zulu, 2006). These figures understate the boards' full impact on markets because they do not count their often sizeable maize imports and subsequent release onto domestic markets. Because the boards are typically the largest single player in the market and often behave unpredictably, their operations can create major risks and trading losses for other actors in the market. In countries such as Malawi, Zambia, Zimbabwe and Kenya, the marketing boards' involvement appears to have risen in recent years, as budget support from governments has shifted somewhat over the past decade from "conditionality" agreements to minimally tied or untied budget support.¹²

Discretionary use of trade policy instruments – In addition to direct involvement in crop purchasing and sale at controlled prices, governments influence markets and marketing participants' behavior through discretionary trade policy instruments, such as export bans, changes in import tariff rates, and government import programs.

Available evidence since 1990 indicates that governments' attempts to stabilize food prices in some cases has made food prices more stable (e.g., for Kenya, see Jayne, Myers and Nyoro, 2006), or more often, more volatile (Rubey, 2004; Tschirley et al., 2004; Nijhoff et al., 2003). The latter cases are exemplified by the Government of Malawi's response to an anticipated maize production shortfall in the 2001/02 season. Malawi faced a modest maize production deficit for its 2001 harvest, 8% below the country's 10-year mean. In September 2001, the grain trading parastatal, ADMARC, announced a fixed price for maize

¹²Conditionality agreements typically identified specific policy reforms or actions that governments would commit themselves to doing in exchange for receiving loans from international lenders. Untied loans are financial injections directly to the Ministry of Finance without specific strings attached as to how the funds are to be spent.

to be sold at its distribution centers and announced its intention to import maize from South Africa to defend this price (Rubey, 2004). Because ADMARC's selling price was considerably lower than the landed cost of importing maize, private traders had little incentive to import maize in this environment. However, the government imports arrived late and were not sufficient to meet demand. As a result, ADMARC depots began to experience stock-outs, and prices soared (Rubey, 2004). When it became clear that ADMARC's supplies were insufficient to last the full season, private traders scrambled to import, but for several months much of rural Malawi experienced grain shortages and prices were reportedly as high as US\$ 450 per ton in early 2002. The late-to-arrive ADMARC imports arrived during the good 2002 harvest. For financial reasons, ADMARC had to work down its stocks to free up resources, and these releases onto the market in a good production year produced 16 months of continuously declining maize prices, to the detriment of producers' incentives to intensify their maize production (Tschirley et al., 2004; Rubey, 2005). This case illustrates that well-intentioned but poorly implemented government actions can exacerbate food price instability rather than reduce it.

Similar problems arise due to uncertainty about when and whether governments will alter their import duties in response to a short crop. Traders that mobilize imports early face financial losses if the duty is later waived and competing firms (or the government parastatal) can import more cheaply. When governments create uncertainty over import tariff rates during a poor crop season, the result is commonly a temporary under-provision of imports, which can then result in shortages where local prices exceed import parity levels for periods of time (Nijhoff et al., 2003). Analysts not familiar with the details of these situations often erroneously interpret them as evidence that markets fail and that the private sector is weak, leading to a rationale for continued direct government involvement in marketing.

Since the early 1990s when the liberalization process began, the marketing boards in Malawi, Kenya, Zambia and Zimbabwe have frequently imported maize in volumes that are large compared to the size of the market, and sold at prices considerably below the cost of commercial importation. The expected return to private storage in this policy environment is considerably lower than what it would be if prices were allowed to fluctuate between import and export parity. This has impeded private investment

in storage, particularly at the wholesale level. Because governments often attempt to truncate the distribution of food prices at both the upper and lower ends, stockholding is risky and there are no assurances that normal intra-seasonal price rises will occur due to the uncertainty over government action. Moreover, most of the silo capacity in countries such as Kenya, Malawi and Zambia remains in public sector hands. The potential for selling parastatal storage facilities at concessionary prices as part of some future privatization plan acts as a deterrent to new commercial investment in storage (Kopicki, 2005). While some analysts point to the large intra-seasonal price variability observed in countries such as Malawi and Zambia as indicators of weak private sector capacity and the limitations of market liberalization, the market environment in most of the region does not provide a meaningful counterfactual to assess the private sector's capacity to engage in inter-seasonal storage.

In countries where government involvement in food markets is seen as part of a transitional phase towards full market reform, predictable and transparent rules governing state involvement in the markets would reduce market risks and enable greater coordination between private and public decisions in the market. The phenomenon of subsidized government intervention in the market, or the threat of it, leading to private sector inaction, is one of the greatest problems currently plaguing the food marketing systems in the region. Effective coordination between the private and public sector would require greater consultation and transparency with regard to changes in parastatal purchase and sale prices, import and export decisions, and stock release triggers (concrete proposals are discussed in the fourth section of this paper). As stated by Oygard et al. (2003), "unless some very predictable and credible management rules can be established for the reserve, private agents will be reluctant to hold stocks, out of a fear that the reserve will be sold out at unpredictable times at subsidized prices, undercutting the value of their stored commodity."

This approach does not imply that government need be impassive. The big problem is to avoid swamping the whole system with government stock releases or relief aid that is uncoordinated with what the private sector is doing.

Governance and markets – A complicating factor in supporting the development of food marketing systems to promote small farmer productivity growth is that food markets are politically sensitive. Elections can be won or lost through policy tools to

reward some farmers with higher prices and reward others with lower prices, and this is hardly unique to developing countries (Bates, 1981; Bates and Krueger, 1993; Bratton and Mattes, 2003; Sahley et al., 2005). The issue of how to stabilize food markets is transcended by issues of governance. The transition to multi-party electoral processes over the past decade may have intensified the politicized nature of food prices in some cases as political parties compete to show how they will deliver benefits to the public in times of need (Toye, 1992; Sahley et al., 2005). This kind of environment, in which political struggles are played out in food marketing and trade policies, create major challenges for developing a market environment that provides adequate scope and incentive for private trade. A comprehensive framework for addressing the challenge of making markets work better for smallholder farmers requires a political economy approach. A political economy approach is required to move beyond analysis that attributes failure to implement reforms and encourage market-based risk transfer mechanisms to insufficient “political will”. Likewise, a political economy approach is required to convincingly demonstrate how past failures of state intervention in markets can be overcome so as to address small farmers’ real needs for sustainably using improved seed and fertilizer.

A major challenge is how to move away from a situation where leaders feel they have to be seen as “doing something” by taking populist stances that may entrench dependence on food or fertilizer handouts in response to instability related food crises, but which do little to alleviate poverty or hunger in the longer run, and how to create constituencies for policies that are believed to promote market stability and small farm incentives to sustainably use improved seed and inputs, but which may not necessarily provide short-term patronage benefits. Possible policy options are discussed in the sixth section of this paper.

Experiences with specific market-oriented mechanisms to defend output price incentives in the face of supply expansion

This section summarizes the review by Byerlee, Myers and Jayne (2006) on specific marketing interventions and approaches to encourage the sustained adoption of productivity enhancing green revolution inputs by small farmers. There are three potential types of such policy responses. The first type – piloting and facilitating the adoption of market-based risk management instruments – is consistent with creating

space for private markets and transitioning to a market-based system, while retaining an important public goods provisioning role for governments. The second type, including strategic reserves, involves a strong role for government in the management of national food systems. Focusing on market-based risk management instruments might best be viewed as long-run investments that require the sustained development of marketing institutions, and which can eventually be fully consistent with long-run market development. Strategic reserves might best be viewed as short-run measures designed to achieve specific short-run food security objectives that, depending on how they are implemented, may be in conflict with transitioning to a market-based system.

There are many different types of market-based instruments that are either being used, or potentially could be used, to manage food system risks in developing countries. Similarly, there are many different participants in the food system that could potentially benefit from using these instruments, ranging from individuals, households, and firms engaged in producing, storing, processing, and trading food commodities to public marketing agencies participating in and regulating food markets. Table 2 summarizes the major types of market-based risk management instruments and also suggests the degree to which different potential users might find the instruments useful.

Because public and private sector use of futures and options markets are unlikely to coexist very easily, governments are going to have to make a choice between centralized control of procurement and hedging activities and a decentralized approach that encourages more private sector participation. The latter approach has significant advantages and is more consistent with the long-run emergence and development of market-based institutions. However, extensive decentralized use of futures and options contracts is not going to emerge rapidly or spontaneously. Growth will require public investments in education and capacity building, as well as institutional innovations that facilitate indirect use of these instruments by smaller scale farmers and traders.

One final point about futures and options hedging is that, even when relevant markets are available, they only allow risk reduction over the short run and are generally not useful for hedging annual income fluctuations over long time periods (Gardner, 1989; Lence and Hayenga, 2001). This is a limitation

in terms of the degree of risk reduction that is possible, but has the benefit of forcing market participants to continue to be responsive to longer-run changes in prices, which is desirable from an economic efficiency perspective.

Index-based weather insurance is a class of financial derivatives written against deviations from a threshold rainfall or temperature indices constructed from objective weather records measured at secure weather station locations throughout a country. Index-based weather derivatives are quite common in developed countries where contracts are primarily focused on heating-degree and/or cooling-degree-days in major cities, and are used by firms whose returns depend heavily on the weather (e.g., electricity generation). They are less common in developing countries. Weather insurance is not focused directly on managing price risks, at least for the micro-level product for farmers. In fact, when producers are receiving payouts on their

Similar to the case of futures, options, and warehouse receipt systems, the growth and development of index-based weather insurance will require public investment in developing both insurance products and the institutions to support viable insurance markets. This is another example of long-term institution and capacity building that is consistent with long-run market development.

In our assessment, commodity linked finance and village cereal banks are relatively far down on the list of institutional innovations options with the potential to cost-effectively address the problems of food price instability and market development.

Relying on a market-based approach to managing food system risks has a number of distinct advantages. From a policy perspective, a market-based approach to risk management should not require large persistent budgetary outlays as has occurred historically with price stabilization schemes. Perhaps

Table 2. Market-based risk management instruments and their potential users

Potential user	Potential for risk management instrument				
	Credit markets	Warehouse receipts	Futures and options	Weather index insurance	Commodity-linked finance
Small-scale farmer	High	High	Low	Moderate	Low
Small-scale trader or processor	High	High	Low	Low	Low
Larger-scale farmer	High	High	Moderate	High	Low
Larger-scale trader or processor	High	High	High	Low	Moderate
Consuming households	High	Low	Low	Low	Low
Public food/strategic reserve agency	High	Moderate	Moderate	Moderate	Moderate

rainfall insurance then yields should be low and prices generally higher (but with incomes low due to reduced yields). In this way the insurance acts more like an income safety net for producers rather than price insurance. The weakness of the index-based weather insurance approach is that returns to individual farmers or traders (or the food prices paid by individual consumers) may not be strongly correlated with the weather index and hence the insurance payout. While index-based weather insurance may not be attractive to all food sector participants in all situations, these contracts do have considerable potential in managing risks and providing a safety net in times of climatic stress.

the most important advantage of using market-based risk management instruments is that in general they facilitate and enhance the role of the private sector in the food system rather than displace it. The use of market-based risk management can improve price discovery, enhance market efficiency, and improve price transparency and information dissemination throughout the marketing channel.

Despite the apparent potential for using market-based instruments to manage food sector risks, there has been little use to date of these instruments in low-income countries for a number of reasons. Contract enforcement may be difficult

for food staples in times of local shortage. The small size of farms and traders serving the traditional food sector in these countries, as well as poorly developed financial markets, also limit the liquidity required for successful trading. Few of these countries have the market intelligence systems, grades and standards systems, communication systems, storage and marketing infrastructure, and experience and education to use these markets effectively. Basis risk is another major impediment to both futures and options trading and index-based weather insurance.

One of the most serious impediments to innovation and development of risk management markets for food sectors in many countries is continuing discretionary state interventions in food markets. The discretionary nature of policy interventions reduces or destroys the incentive to participate in market-based risk management mechanisms because there is no incentive to manage risk when prices are being effectively stabilized via policy, and because such policies tend to disconnect local prices from world prices, which reduces the hedging potential of global markets. Furthermore, if government interventions are discretionary and difficult to predict, then they can add another layer of risk that individuals and firms may find difficult to hedge using available market-based risk management instruments.

Competing visions of staple food market development

In much of eastern and southern Africa, food markets continue to be plagued by a high degree of uncertainty and *ad hoc* government entry into and retreat from markets, despite official policy pronouncements that are largely inconsistent with actual state behavior. These inconsistencies give rise to problems of credible commitment regarding governments' policy statements, and hence create risks and costs for private traders. The high degree of policy uncertainty and control over trade impedes private investment to develop access to markets and services for smallholder farmers.

Many countries in eastern and southern Africa have continued highly discretionary market and trade interventions of various types, and hence an empirical assessment of these countries' food market performance since the 1990s reflects, not the impacts of unfettered liberalized market, but rather the mixed policy environment of legalized private trade within the context of continued strong government operations in food markets.

There is widespread agreement that this food marketing policy environment, however it is characterized, has not effectively supported agricultural productivity growth for the millions of small farmers in the region.

Local banks also tend to withdraw from lending to the sector and allocate most of their investment capital to relatively safe and high-interest government bonds. In these ways, there is still a great deal of sectoral reform to be gained in Africa, not necessarily to liberalize private trade but to unencumber it from the risks and high costs posed by unpredictable government actions in food markets.

Three competing models have dominated policy discussions in Africa over the past decade regarding the appropriate role of the state in staple food markets (Figure 5):

Model 1 – State role confined to provision of public goods to strengthen markets: This approach relies on the private sector to carry out the main direct marketing functions, i.e., purchase/assembly from farmers, wholesaling, storage, transport, milling and retailing. The role of the state is confined to provision of public goods: market rules and regulations, physical infrastructure, regulatory oversight of finance, market information, investment in new technology, organizing farmers into groups for means of reducing costs and risks of accessing finance, inputs and marketing. This position is close to the “Washington Consensus”, which is now generally out of favor.

Model 2 – Rules-based state interventions to stabilize market activity: This approach also relies on markets to carry out most of the direct food marketing functions, but the role of the state is expanded to include direct marketing operations, especially in the arrangement of imports, the management of food buffer stocks, and the release of stocks onto markets when prices exceed a publicized ceiling price. The rationale for state operations is based on the premise that markets fail in some respects and direct rules-based state operations are necessary maintain food prices within reasonable bounds. The defining feature of Model 2 is that there is pre-commitment: the rules governing state operations are determined in advance, publicized, and followed in a non-discretionary manner. This approach appears to be favored by many technical analysts.

Model 3 – Discretionary state intervention to provide the state with maximum flexibility to achieve policy objectives: The defining feature of this model compared to Model 2 is that

state operations are not confined to pre-committed rules that would constrain the state's ability to intervene only when these intervention criteria are met. Most governments in eastern and southern Africa are essentially following Model 3 and have done so from the start of the liberalization process. In practice, Model 3 has provided a highly unpredictable and discretionary approach to grain trade policy – commonly imposing export and import bans, variable import tariffs, issuing government tenders for the importation of subsidized grain, and selling their grain stocks to domestic buyers at prices that are unannounced in advance and often far below the costs of procuring it.

There are very few examples of Model 1 for staple foods to examine in Africa or perhaps anywhere for that matter. The rationale for Model 2 is that well-executed parastatal price stabilization operations can, in theory, put an upper bound on food prices and also protect against downside price risk by defending floor and ceiling prices through stock accumulation and release onto markets. Successful implementation of Model 2 requires that marketing boards possess a great deal of technical and management skill.

The weaknesses of Model 2 are that i) given the long history of ad hoc state intervention in food markets, it is not clear whether Model 2 can be regarded as a credible policy; and ii)

given constraints on available government funds for agriculture, spending on expensive government operations in food markets reduces the amount that can be spent on public investments that could potentially earn a higher social return.

Despite being the most common approach for the role of government in food markets, Model 3 is clearly vulnerable to lack of trust, cooperation and coordination between the private and public sectors. A discretionary approach to government operations creates great risks for the private sector and tends to impede it from performing functions that it would otherwise do more confidently under Models 1 and 2. The poor performance that results from this high degree of uncertainty and lack of coordination is often attributed to market failure, but a strong case can be made that the more central and underlying causes are chronic under-investment in public goods and a lack of credible commitment in the policy environment, leading to low levels of trust and coordination among public and private sector actors in the staple food systems.

Although price stabilization could, in theory, have important benefits for producers and poor consumers, along the lines of Model 2, these benefits do not appear to have been successfully achieved because they have been pursued more along the lines of Model 3, i.e., unpredictable and untimely changes in import

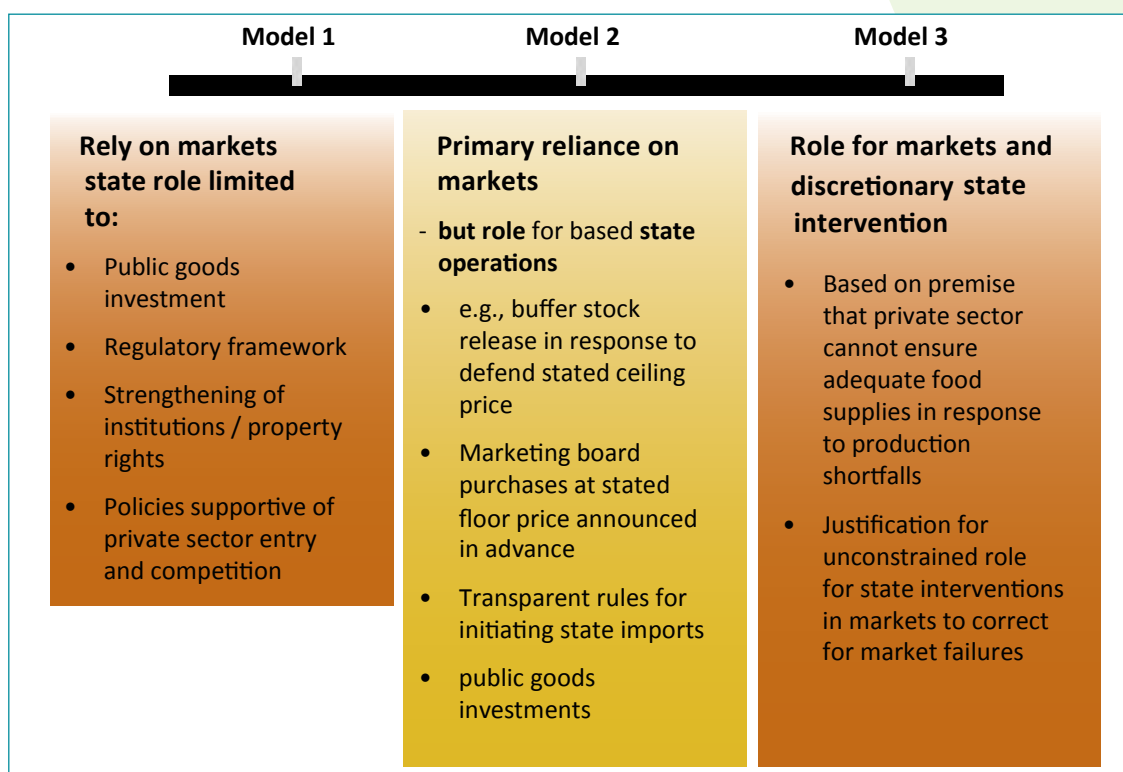


Figure 5. Competing visions of staple food market development

tariff rates, ad hoc restrictions on private importation, etc. In fact, price instability appears to be greatest in the countries where governments continue to rely heavily on marketing boards and discretionary trade policies to stabilize prices and supplies (Chapoto and Jayne, 2009). Maize price instability in countries like Malawi and Zambia are extremely high despite the persistence of these government operations. In contrast, the operations of Kenya's maize parastatal have reduced price instability (Jayne, Myers and Nyoro, 2008). While it is difficult to estimate the counterfactual – that is, the level and instability of food prices that would have prevailed over the past 15 years in the absence of these government operations – there are strong indications that at least some aspects of government interventions in food markets have exacerbated rather than reduced price instability for both producers and consumers.

Conclusions and implications for green revolution strategies

The potential productivity gains achievable from improved crop science are enormous. However, there is a general consensus that the existing food marketing policy environment in most of Africa is not encouraging – and in many ways discouraging – the growth in farm productivity required to raise living standards and reduce poverty. One of the region's major development challenges is to identify and put into place the policies, institutions and investments that will enable agricultural marketing systems to catalyze productivity growth on the millions of smallholder farms in the region.

A major insight from commodity value chain analysis and the earlier industrial organization and commodity sub-sector literature of the 1970s, 1980s and 1990s is that risks, uncertainties and lack of profitability at one stage of the system will impede incentives for investment at other stages of the system, depressing overall performance of the value chain. In particular, efforts to promote performance at either end of the value chain (e.g., assembly or storage investments at village-level, or retail market development) can be stymied by poor performance at the crucial middle stages of the system (Shaffer et al., 1983). It is at the wholesale level where i) almost all of the seasonal storage takes place downstream from the farm; ii) most of the demand for financing grain purchases from farmers originates; and iii) long-distance spatial arbitrage opportunities

are identified to reallocate supplies from surplus to deficit areas and link farmers and assemblers with processors, retailers and consumers in distant areas.

It is useful to distinguish between “first-order” marketing improvements – which are fundamental pre-conditions for farm productivity growth to occur – and “second-order” improvements, which will support small farmer productivity growth as long as the fundamental first-order issues are meaningfully addressed, but which will have only limited impacts if they are not. The fundamental first-order improvements revolve around getting the critical middle stages of staple food value chains moving – the wholesaling and processing stages. A competitive wholesaling stage of the value chain tends to give rise to greater investment at the first-buyer (assembly) stage who buy direct from farmers. Wholesalers are also an important source of financing and contracting that enables assemblers to more aggressively compete for farm surpluses early in the season when prices are low. These kinds of developments help to reduce the magnitude of price gluts.

However, if the policy environment remains highly risky and uncertain, and if governments use their scarce resources in ways that do not provide greater profit incentives for the private sector, then there will be very limited scope for further investment in the wholesaling and assembly stages to provide smallholder farmers with the access to markets that they need. A highly uncertain policy environment full of risk will also scare off bank financing for needed investment in the sector. This path will lead to frustration over the private sector's apparent unwillingness to invest in support of smallholder agriculture. On the other hand, if the public sector defines its role clearly and implements these roles transparently and consistently, and also uses its scarce resources to invest in public goods that provide new profitable opportunities for private sector investment, then this approach is likely to result in much greater private sector investment in support of smallholder agriculture. Private capital tends to seek out profitable opportunities with tolerable exposure to risk. If the conditions are created for profitable private investment, the private sector has generally been able to respond. Private sector investment patterns and the supply of bank financing for private investment are largely outcomes of public sector behavior – policy choices, the integrity of institutions, and the ways funds are spent through the treasury.

Specific options to support productivity growth on African farms include the following:

- 1) A more transparent and consultative framework for public-private sector dialogue**, one that moves towards greater coordination and predictability in government behavior. The current policy environment in many African countries since the early 1990s features parallel systems in which the government and private sector both operate directly in food markets. The unpredictable and highly discretionary nature of government policy in grain markets has impeded private sector investment and commitment to value chain development, retarding overall progress toward economic growth and poverty reduction. If the future remains highly uncertain with respect to the role of government in the market, evidence has shown that there will continue to be an under-provision of investment in seasonal storage, transport and logistical networking, information systems and commodity exchanges, market risk-shifting mechanisms such as forward and future contracting, financing innovations like warehouse receipt systems, industry led processes for resolving contract problems, and other critical investments at the wholesaling stage that influence the overall development of the value chain (Coulter, 2005; Jayne, Nijhoff and Zulu, 2006; Kherallah et al., 2002; McPherson, 2002; Goldsmith, 2002). Greater predictability, consultation and trust between the public and private sectors could pull millions of smallholder farmers out of poverty and start economy wide growth processes.
- 2) Public good investments to support the development of food markets.** Markets require investments in public goods to function effectively – roads, rail systems, port facilities, solid regulatory frameworks to support the development of transport, communication, and financial services, crop science and farm extension services to help farmers increase surplus production and fuel market expansion. Much of the problem with food price instability and the price slumps that often accompany output supply expansion is inelastic demand, i.e., small changes in output have large effects on price levels. Governments can play a critical role to support small farmer productivity growth by supporting the development of well-performing markets through public goods investments.

- 3) Public good investments in physical transport infrastructure**, coupled with a policy environment to nurture regional trade and integrate smallholder farmers into regional and global markets can make the demand for grain more elastic, thereby enabling food markets to better absorb supply expansion caused by farm productivity growth.
- 4) Recognize the role of producer organizations.** Under the conditions of incomplete markets and institutional gaps that limit commercialization of smallholder production, innovations in producer organization and collective action institutions can play an important role for African farmers. Producer organizations can play multiple roles in dynamic markets: i) increase market access through aggregation and collective marketing which enhance scale economies and reduce marketing costs for small producers; ii) improve access to rural finance and key inputs (e.g., seeds and fertilizer) at affordable prices; and iii) provide voice and representation to promote the interests of small producers in policy discussions. Given the unsuccessful experiences of producer cooperatives in the past – which often suffered from weak management, disincentives of relatively good farmers to remain in the organization, and heavy interference by governments – producer organizations need to be designed and promoted carefully and require supportive policies for their success. The role of the government would be to provide the appropriate legal and regulatory frameworks for proper functioning of farmer organizations and provide financial support to cover the initial transaction costs that prevent farmers from organizing themselves. The support provided for facilitating the establishment of these rural institutions should be commensurate with the public goods role of producer organizations in enhancing coordination and performance of rural markets (Kydd and Dorward, 2004; Shiferaw et al., 2009). Producer organizations aiming to improve market access for small producers need to be managed professionally as agri-business enterprises, free from rent-seeking behavior and irrational interventions by governments. Farmer organizations should complement the functions of the private sector and not replace it.
- 5) Regional trade.** In combination with good transport infrastructure between countries, regional trade has the potential to expand the size of the market, increase the

elasticity of demand facing farmers, and reduce price instability. For non-tradable commodities where price shocks are generated by domestic events such as weather, the magnitude of the shock will be closely related to the variability of domestic production. But local production shocks can be mitigated by regional trade, which tends to stabilize markets by linking together areas with covariate production. The size of a country matters – larger countries typically have more diverse regional climatic conditions that reduce systemic risks at the country level.

6) Streamlining regulations and trade barriers. Many African countries impose import tariffs on staple foods coming from neighboring countries. Other countries frequently resort to export bans. These trade barriers often vary unpredictably, and so make it risky for trading firms to invest in developing durable marketing networks across regions. Customs clearance procedures are often cumbersome. For example, permits to legally import grain into Kenya are available only in Nairobi (Nyameino, Kagira and Njuki, 2003). Traders wanting to move product from northern Mozambique to southern Malawi need to get export permit in Quelimane (Tschirley, Abdula and Weber, 2005). These regulatory barriers impose transaction costs on traders that result in lower demand and lower prices for farmers (and higher prices for consumers). Streamlining the regulatory processes for regional trade can reduce downside price instability that often depresses farmer incentives to sustain their use of productivity enhancing cash inputs.

7) Turning some grain marketing board silos and go-downs into storage leasing operations. The current situation is characterized by a general shortage of storage space for grain, especially in urban areas, but little incentive for investment in commercial storage. Further study could identify the potential for farmer groups or traders to rent out storage space under 10-15 year leases. Leases of this time length are generally required to allow traders (the renter) to recoup the costs of the required rehabilitation investments to make the silos operational again. In countries such as Kenya, Zambia and Malawi, most of the marketing board silos were built in the 1970s and are in need of rehabilitation. Greater storage facilities, coupled with better financing arrangements, could help the commercialized grain marketing system to defend against downside price risk.

8) Support the development of rural financial markets to improve traders' capacity to absorb surplus production.

While the importance of small farmer credit in promoting the uptake of improved farm technology is well recognized, the role of trader finance is also crucial. A major source of inelastic demand in traditional food markets is the constrained supply of trader finance (Coulter and Shepherd, 1995). Market institutions such as warehouse receipt systems can inject needed liquidity into grain marketing systems and thus allow the system to better absorb surplus production in good years. But the development of these market institutions will depend on supportive government policies. So far, fledgling attempts to develop warehouse receipt systems and other innovative sources of trader finance in staple food assembly and wholesaling markets (e.g., Ghana and Zambia) have floundered due to direct government operations in markets that have been incompatible with the development of these institutions.

9) Resolving the future uncertainty of marketing boards' role in grain markets. There is something of a "catch-22" with regard to the development of new (or rehabilitation of existing) storage facilities in many African countries, despite the critical need for additional usable storage space in many areas. Most of the grain silo space in countries such as Kenya, Zambia, Zimbabwe, Malawi and Tanzania remains in the hands of government parastatals or cooperatives. Taking Kenya as an example, and despite the fact that additional usable storage facilities are a major contributory problem to output price slumps during good harvest years, there is a lack of clarity about whether and how the NCPB's assets are to be sold off or transferred to private firms under a comprehensive NCPB restructuring process. This uncertainty impedes the incentives for new private investment in grain storage (Kopicki, 2005). It is possible that NCPB assets could be sold at discounted prices to politically well-connected firms or individuals starting up new marketing firms. Their subsidized cost structure would put other competing firms (which might otherwise consider paying full commercial costs for investments in storage) at a competitive disadvantage. Private investment in capital-intensive storage and other dedicated marketing assets could be rendered unprofitable if the NCPB were to re-enter the market in a big way in the future, buying at above-market prices, selling at below-market prices, and covering its trading losses through

the treasury. In this way, the uncertainty with regard to future maize marketing policy in Kenya is clearly impeding the development of the maize marketing system in a way that could over time allow it to reduce downside price risks for small farmers. Greater policy stability and future predictability of the policy and institutional environment are hence major priorities for supporting smallholder productivity growth.

10) New roles for marketing boards. If marketing board operations are to continue as part of a transition strategy, market stability could be facilitated by changing the boards' longstanding practice of setting pan-seasonal buying and selling prices (prices that are constant throughout the marketing year). By offering pan-seasonal prices, the boards eliminate incentives for farmers to store grain after harvest or to invest in storage facilities. It also reduces the incentives of wholesalers and millers to invest in adequate storage facilities, since they can buy from the boards at the same price throughout the year. And, even though food prices in wholesale markets fluctuate freely since the liberalization process began, the behavior of these markets is influenced greatly by marketing board pricing, which continue to be pan-seasonal.

11) Work with WFP and bilateral food aid donors to develop mutually beneficial policies towards food aid (and subsidized non-commercial imports). While local farmers are generally well served by regional trade, their interests can be undermined by subsidized food imports, particularly if this alters long run food consumption patterns. For example, large processing companies in urban areas are often able to acquire subsidized wheat and rice from international sources, which over time influences urban consumption habits. With few exceptions, most smallholder areas are not suited to wheat and rice production. The importation of subsidized wheat and rice undermines long-term demand and prices for the main staple grains, roots and tuber crops that small African farmers produce. Similarly, inappropriate uses of imported food aid (e.g., the sale of imported food aid by NGOs during periods of local production surplus) are likely to depress small farmers' uptake of improved farm technology over time (Tschirley et al., 2004; Dorosh, Dradri and Haggblade, 2007).

12) Consider developing specific risk-management marketing arrangements where feasible. The development of futures and options contracts in well-developed commodity markets could have some clear advantages for managing food price risks in low-income countries. However, such market-based risk-management tools are not likely to develop without active public policy support and more predictable government operations in markets. Direct trading of market-based risk management instruments by public food marketing agencies to hedge government liabilities is an option that could be adopted very quickly. However, this is a risky venture for the public sector. Not only does such trading require considerable information and analytical capacity but is subject to the same problems of inefficiency and rent seeking that have plagued direct public intervention in food markets in the past, especially when there is no credible commitment regarding how the gains will be spent (and the losses financed). An alternative approach would be to encourage private sector use of these markets by making long-run investments in the standard public goods relating to the enabling environment for finance and risk markets, including grades and standards, credit market development, communication systems, market intelligence systems, regulations, and support for locally or regionally-based commodity exchanges and insurance products. Perhaps most important, governments can provide a predictable policy environment that does not destroy the incentives for private individuals and firms to trade market-based risk management instruments.

Change is also needed among "rich country" governments. The prevailing international agricultural trade policy environment is both hypocritical and not supportive of African farmers. International donors try to convince African governments of the virtues of liberalization and open markets, but then subsidize their agriculture and restrict markets for African exports in the process (World Bank, 2000). These subsidies (and the food aid generated from them) affect the long-term competitiveness of African agricultural production.

There is widespread dissatisfaction among developing countries with the framework for international agricultural trade agreements. In particular, access to developed country markets has not been achieved to the promised extent, and many developing countries have experienced import surges following trade liberalization. Moreover, the Agreement on Agriculture

appears to have been designed largely with “developed country agriculture” in mind, as it institutionalizes the production- and trade-distorting practices employed by the most powerful countries. These countries now enjoy a unique privilege among WTO members, in the sense that the agreement gives them the legal right to continue to affect agricultural markets through their production and trade subsidies.

Each year, OECD countries provide roughly US\$ 50 billion per year in development assistance, while subsidizing their agricultural production by anywhere from US\$ 350 to US\$ 500 billion per year (McCalla, 2001). This is greater than the GDP of Sub-Saharan Africa (Wolgin, 2001). Some of these subsidies may help African countries, such as those that are net importers of grains. Recent OXFAM and IFPRI reports draw specific attention to the need for changes in developed country agricultural policies and a more level playing field in global agricultural trade agreements to raise agricultural growth and reduce poverty in Africa and other parts of the developing world. For developed country governments and their citizenry who are truly committed to making globalization work for poor people, most of whom are in agriculture, a more serious public discussion of agricultural protectionism in developed countries and its effects on global poverty will need to be forthcoming.

The real debate on globalization is, ultimately, not about the efficiency of markets, nor about the importance of modern technology. Rather, the debate is about the inequality of power (Sen, 2000). The future of the small farm in much of Africa will hinge on national and international negotiations regarding access to developing country markets for goods produced by African farmers and the international supply and price effects of multilateral trade agreements.

Lastly, an honest and open debate about the behavior both of donor organizations and governments in high-income countries that currently compromise the effectiveness of development assistance is needed. While these problems are thorny indeed, a more honest discussion is the first step toward tackling them. Failing to address them will simply prolong the problem. Given the general agreement that much larger financial commitments will be necessary to achieve a long-term growth path for African agriculture and its allied sectors, education and health, it will be crucial to develop the conditions for more effective absorption and use of development assistance. Reform is required both by donors and local governments, as well as in the international

trade environment. This will certainly require enlightened leadership on all fronts, honesty about incentive problems, and the political will to overcome them. In such a political environment, there would be reason to be strongly optimistic about the potential for the small African farmer.

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Key actors, major initiatives, and principal funding agencies in Africa's agricultural commodity markets

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Abstract

Anecdotal and empirical evidence from across Africa indicates that the continent's agricultural commodity markets do not in general function in ways likely to promote sustained agricultural development. Several initiatives in the private, public, and civil society sectors aim to improve conditions in these markets. This paper provides as comprehensive a summary of those initiatives as is possible based on published and grey literature sources. The aim is not to be fully definitive, but rather to provide a sense of the range, depth, and funding of these existing and proposed initiatives. First, the major current actors in Africa's food and agricultural markets are identified. The major funders of food and agricultural marketing initiatives are then considered. A range of initiatives in complementary sectors is also described. The picture that emerges is one of rich but uncoordinated diversity in both funding windows and operational initiatives.

Major current actors in Africa's food and agricultural markets

Private farmers, traders, processors, and consumers

The principal actors in Africa's food markets are the continent's millions of private farmers, traders, processors, and consumers. They vary greatly in size and scale of operation, ranging from tiny farms in the highlands of Rwanda and Burundi to large maize plantations in Zambia's Tonga Plateau; from itinerant hawkers peddling small cans of maize and beans at remote rural crossroads in Ethiopia's Ghibe Valley to the specialist Export Trading Company with far-flung operations in nine countries in eastern and southern Africa; from rudimentary cassava processing enterprises in rural homesteads across West Africa to the state-of-the-art facilities of Unga Mills of Kenya. Irrespective of their size and location, farmers are concerned with physical access to markets, with the riskiness of trade, and with the scope for increasing their shares of final prices. Traders and processors are concerned with costs of operation, and with accessing key trade-facilitating services, especially transport and finance.

Consumers (both individuals and firms) are concerned with price, quality, and convenience of purchased goods.

A number of large multi-national food companies have interests in Africa's food markets, including Archer Daniels Midland, Cadbury, Cargill, Del Monte, Nestle, and Unilever. Since the end of apartheid, South African food companies have gradually expanded their reach across the continent, most notably Bokomo, Maizena and Simba.

Food industry groupings

Most of these private farmers, traders, processors, and consumers operate individually, but many are members of national, regional, and international industry groupings. Most countries have national farmer associations with mandates to support farmers in a range of input and outputs markets. Examples include the Zambia National Farmers Union, the Uganda National Farmers Union, the All Farmers Association of Nigeria, and the Ghana National Association of Farmers and Fishermen. In the past, many of these farmer groups took the form of cooperative societies operating under official statutes that awarded governments majority holdings and thus control over key management decisions. Business principles were typically overwhelmed by political motives. Some farmer organizations still have such features. But with strong support from international bodies, such as the International Federation of Agricultural Producers (IFAP) and the Cooperative League of the USA (CLUSA), the new generation of associations has greater farmer ownership and control, and is therefore more commercially oriented. Many of these associations concentrate on cash crops, or on staple food crops produced by large farmers (e.g., the Kenya Cereal Growers Association). Those supporting smallholder staple food production and trade tend to be localized and multi-purpose.

Associations of food processors also exist in Africa, supported by such organizations as the International Association of Operative Millers. They are especially important in southern Africa. In South Africa, the National Association of Maize Millers and the Animal Feed Manufacturers Association and the National Chamber of Milling are strong representatives of the milling industry. Zimbabwe's Grain Millers Association and Malawi's Grain Traders and Processors Association play similar roles.

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The East African Grains Council, covering Kenya, Tanzania and Uganda, was recently launched as an industry led initiative to prepare, disseminate and promote exchange of information on matters affecting the regional grain trade (further detail on this initiative is provided below under “regional initiatives”).

Consumer organizations exist in all but a few African countries. They are especially strong in Kenya, Mauritania, South Africa, Tanzania and Zimbabwe. With support from Consumers International, these groups undertake advocacy on a range of consumer rights issues, most notably food safety. With liberalization of trade in food and agricultural products outpacing the capacity of food standards authorities in many countries to enact and enforce adequate standards, these organizations advocate for the need to ensure the enactment and enforcement of minimum standards applicable to food sourced on both domestic and international markets.

Public sector agencies

Market liberalization in Africa highlighted major capacity gaps in the continent’s private sector (Kherallah et al., 2002). Given these limits, the political implications of national food security, and the key role that markets can play in determining food availability, access, and quality, few governments are inactive in food markets. Publicly controlled food marketing agencies exist across the continent. These bodies exercise varying degrees of compulsion over producers, traders, and processors. They are typically charged with stabilizing prices by purchasing and selling food on market. They also manage strategic food reserves, which can be substantial. For instance, Kenya’s strategic grain reserve stood at 540,000 mt in late 2007, equivalent to 20% of average maize harvests since 2002, and representing a market value of over US\$ 92 million. Spending on Zambia’s food reserve agency accounted for 15% of the country’s public budget for agriculture in 2004-05.

Most governments have departments devoted to provision of agricultural marketing services. In many countries, a principal service provided is collection and reporting of agricultural market information, typically focusing on prices of key staples and major cash crops. Many agricultural extension agencies include agricultural marketing support among the services they endeavor to provide farmers.

Many local authorities in rural areas influence food marketing directly through fees charged to farmers and traders wishing to sell produce in government-owned and operated rural marketplaces.

Several governments are experimenting with novel food marketing arrangements. For instance, the Ethiopia government recently launched the Ethiopia Commodity Exchange. The exchange trades in six commodities: coffee, sesame, haricot beans, teff, wheat and maize, providing a marketplace where buyers and sellers can come together to trade and be assured of quality, delivery and payment. The exchange includes a trading floor in Addis Ababa, six warehouse delivery locations, and 20 electronic price tickers in major market towns.

International and national non-governmental organizations

Several international NGOs have interests and activities in Africa’s food markets. Prominent among these are NGOs that “monetize” food aid to generate cash resources to cover non-food costs or finance food security initiatives more generally. Examples include Catholic Relief Services, World Vision, Save the Children, Land O’ Lakes International Development, and, until recently, CARE. While monetized food is often a valuable, flexible resource that these NGOs have put to good use in combating poverty and hunger over the years, it is controversial because when untargeted (or “open”) it can depress food prices in local markets, distorting incentives of producers and consumers. Definitive evidence of such distortion is limited. Slightly over 4% of the food aid received by Africa in 2006 (166,000 mt) fell into the category that could be monetized.

A number of international NGOs and their local counterparts are also active in market development. Prominent among them are: the Cooperative League of the USA (CLUSA), which specializes in supporting the development of farmer enterprise groups; TechnoServe, which promotes rural business development; CARE, which has developed expertise in a number of areas related to market linkage development; and the Citizen’s Network for Foreign Affairs (CNFA), which works to support the emergence of commercial rural input supply networks. Further details about the activities of these and similar organizations are provided below (in the section on bilateral donors).

Regional initiatives²

Comprehensive African Agricultural Development Programme (CAADP) - CAADP has been endorsed by African Heads of State and Government as a vision for the restoration of agricultural growth, food security and rural development in Africa (NEPAD, 2004). A specific goal of CAADP is to attain an average annual growth rate of 6% in agriculture. To achieve this goal, CAADP aims to stimulate agriculture-led development that eliminates hunger and reduces poverty and food insecurity. More specifically, the NEPAD vision for Africa holds that, by 2015, Africa should:

- Attain food security;
- Improve agricultural productivity to attain a 6% annual growth rate;
- Develop dynamic regional and sub-regional agricultural markets;
- Integrate farmers and pastoralists into a market economy; and
- Achieve a more equitable distribution of wealth.

CAADP is a strategic framework to guide country development efforts and partnerships in the agricultural sector. Similar to the broader NEPAD agenda, it embodies the principles of peer review and dialogue that, when adequately followed and applied, will stimulate and broaden the adoption of best practices, facilitate benchmarking and mutual learning and, ultimately, raise the quality and consistency of country policies and strategies in the agricultural sector.

CAADP directs investment to the following four mutually reinforcing pillars:

- Pillar I: Extending the area under sustainable land management and reliable water control systems;
- Pillar II: Improving rural infrastructure and trade-related capacities for market access;
- Pillar III: Increasing food supply, reducing hunger and improving responses to food emergency crises; and
- Pillar IV: Improving agriculture research, technology dissemination and adoption.

CAADP Pillar II is most relevant to the AGRA Markets Program. Implementation of the Pillar will entail design, funding, and implementation of activities aiming to: (i) improve local infrastructure (transportation, storage, packaging and handling systems, retail facilities, information technology and overall supply chains) for better connections to markets by African farmers; (ii) improve transportation: road, rail, marine and air freight; (iii) improve competitiveness through sound trade policies at the national, regional and continental level; (iv) expand domestic and foreign direct investment in agriculture; (v) strengthen capacity to participate in trade negotiations and meet markets access requirements for world trade through improved quality, grades and standards; and (vi) strengthen agribusiness capacities.

The country level CAADP implementation process is primarily one of aligning national agricultural sector policies, strategies and investment programs with the CAADP principles and targets, in particular the 6% growth rate and 10% public expenditure share for the sector. The CAADP process is supposed to build on ongoing country efforts and be led by national governments and other stakeholders, with the necessary support from the RECs and the NEPAD Secretariat. In line with the NEPAD principles of ownership and accountability, the country CAADP process is initiated on a demand-driven basis, through consultation between RECs and their member countries. Country Round Tables (CRTs) and Regional Round Tables are the loci for these consultations. Resulting from these CRTs and RRTs are National Compacts comprising high-level agreements between governments, regional representatives and development partners for a focused implementation of CAADP within the respective country. CRTs are meant to detail programs and projects that address national priorities, and that the various partners can support. National Compacts are to include defined actions, commitments, partnerships and alliances and guide country policy and investment responses, planning of development assistance, public-private partnerships and business-to-business alliances to raise and sustain the necessary investments (NEPAD Secretariat, 2005).

²The reader will quickly note that there is considerable overlap between the various initiatives described in this section, especially when these initiatives operate in the same country. Country level overlap may vary, since not all of the initiatives operate in every country.

Alliance for Commodity Trade in Eastern and Southern Africa (ACTESA) - ACTESA is a multi-partner effort led by the Common Market for Eastern and Southern Africa (COMESA). The alliance aims to build regional cross-border partnerships and capacity that will strengthen innovative market institutions and link food-insecure smallholder farmers with growing national and regional markets for staple foods. The Alliance will broadly include commodities, such as staple grains (maize, sorghum, millet), staple roots and tubers (cassava, sweet potatoes), legumes and pulses (soy beans, pigeon peas, beans, groundnuts), bananas, seeds, fertilizer, and livestock and fisheries. The target beneficiaries are farming communities in selected areas that are drought prone, emerging from conflicts or otherwise vulnerable, and which are receiving support from food aid programs to improve their production systems.

The alliance will promote the premise that food aid assistance should be development oriented and should promote sustainability of food security among beneficiaries in the COMESA region. ACTESA will support and disseminate innovative mechanisms that will allow farmers to participate in markets in ways that will increase their food security and incomes. Improving market access will encourage these farmers to diversify production for sale, further increasing their incomes and spreading risks. Commodity producers (farmers) should be encouraged to become entrepreneurs who participate in commercialization and industrialization for value addition as they engage in market linkages. At the national and regional levels, improved market systems will increase availability of staple foods and affordable prices and promote regional market integration.

ACTESA recognizes that the growing structural food deficits in staple foods in many countries of Eastern and Southern Africa cannot continue indefinitely to be met by food aid. With CAADP, a unique opportunity exists for building regional consensus among countries and regional institutions around promising solutions to the constraints preventing the regional production and marketing of staple crops, livestock and livestock products. Through CAADP, key governments within COMESA have committed themselves to developing strategic plans for creating functional and competitive regional commodity markets. CAADP is mobilizing multiple stakeholders, including producers, policy makers, and emerging market institutions, around the need for market development as a key solution to food security constraints. Market institutions that support increased

commercialization of staples, such as commodity exchanges, trade facilitation services, warehouse receipts programs and grading and standards systems, are being developed in several COMESA countries.

COMESA, in collaboration with key partners, will capitalize on this opportunity to launch a rapid and broad transformational process focused on key markets with the goal of reducing food relief aid requirements for the Eastern and Southern Africa region through three interlocking strategic objectives:

- 1) Increasing farm incomes by engaging farmers with emerging market institutions to improve commercialization and profitability of staple productions;
- 2) Linking surplus areas to deficit areas by increasing regional trade of staple food commodities; and
- 3) Catalyzing industrialization through commercialization of smallholder producers in the value-chain.

Key program components include:

- 1) Launching a strategic alliance to build regional markets that serve the vulnerable;
- 2) Enhancing the capacity of farmer organizations to link producers to markets;
- 3) Building market institutions that serve the vulnerable;
- 4) Improving the enabling policy environment to facilitate markets; and
- 5) Promoting sustainability and food security.

Regional Agriculture Trade Expansion Support Program (RATES)- RATES is a USAID-funded program designed to increase value of agricultural trade within the East and Southern Africa region and between the region and the rest of the world. RATES focuses on developing commodity-specific regional trade initiatives through innovative private/public alliances and partnerships and works primarily through regional trade flow leaders, such as regional trade associations, national-level trade organizations, private companies and individual entrepreneurs. RATES is currently supporting activities in specialty coffee, maize and pulses, cotton/textiles and dairy.

Regional Agricultural Trade Intelligence Network (RATIN)-RATIN is USAID-funded initiative that brings together three similar but

previously unconnected food market information systems in Kenya and Uganda to create a unified regional system that allows dissemination and sharing of agricultural information, aiming to promote cooperation within the region. The major task of RATIN is to supply traders with improved early warning marketing and trade information that would lead to more efficient and competitive transactions in food trade between surplus and deficit regions in East Africa. The main activity of RATIN is regional trade analysis of maize, beans and rice.

East African Grain Council (EAGC) - The EAGC is a membership-based organization, registered in Kenya but also covering Tanzania and Uganda, dedicated to the task of improving the policy and trade environment for the betterment of the grain sector from producer to consumer. Formed in collaboration with the Ministries of Agriculture and Trade in the three countries, the EAGC expects to achieve this by creating long-term solutions that will address the various issues and constraints of the grain industry in the region. The EAGC will:

- 1) Promote a well-functioning regional grain supply chain, focusing on trade issues affecting all sectors of the chain, and building a platform for reducing constraints in regional grain trade;
- 2) Build cooperation, interaction, partnerships, alliances, networks and market linkages;
- 3) Collect market data, generate information exchange and share regional expertise;
- 4) Promote investment in structured marketing systems including warehouse receipts and commodity exchanges;
- 5) Act as main certification authority in structured systems; and provide commercial services as needed;
- 6) Recognize and support accepted principles of international codes of corporate conduct;
- 7) Facilitate awareness of new technologies; and
- 8) Represent the regional membership at national, regional and international forums, and lead advocacy and lobbying actions for best interests of Council members.

Initial funding for EAGC has been provided by USAID-Kenya. With funding support from DFID's Financial Sector Deepening Trust for Kenya, the EAGC is currently coordinating a pilot Warehouse Receipt System in Kenya.

Market Information Systems and Traders' Organizations project

(MISTOWA)- MISTOWA was a USAID funded project administered by the International Fertilizer Development Corporation (IFDC) that focused on removing key obstacles to trade in West Africa, including:

- 1) Lack of access to timely information on prices and market opportunities;
- 2) Inadequate business skills of producers and traders to respond to production and market opportunities; and
- 3) Unfavorable trading environments, including tariff and non-tariff barriers (e.g., harassments at the national borders).

Although the project targeted all 15 ECOWAS member countries, activities were carried out most intensively in Ghana, Nigeria, Mali, Burkina Faso, Senegal, Benin, Togo, Côte d'Ivoire and Niger, with significant though lesser involvement of key partners in Guinea, the Gambia and Sierra Leone.

MISTOWA developed a very successful private/public partnership with "Busylab", a private software company in Ghana, to create an electronic agribusiness information exchange platform (www.tradenet.biz). The platform offers access to real-time market information (prices, offers to buy and sell, and contacts) on over 300 products and from over 500 markets throughout West Africa. Information is accessible via the Internet, as well as through related SMS services. TradeNet, formally launched in Accra, Ghana, in late January 2007, has assisted over 2,000 users to buy more and sell better.

To assist users in accessing TradeNet and a variety of other market information and business services, MISTOWA assisted partners in establishing over 100 "Agribusiness Information Points" (ABIPs) in 13 countries throughout West Africa. ABIP managers use TradeNet to facilitate producers and traders developing profitable market linkages.

MISTOWA provided over US\$ 1 million in equipment grants (computers, ICT equipment and Internet connectivity) and over US\$ 600,000 in competitive grants to many of its direct partners to support activities, such as trade exchange visits, participation

at regional trade fairs, and additional ICT, MIS, and organizational development and management trainings.

By the end of the USAID-funded (3-year) project period, MISTOWA had reached its goal of achieving a 20% increase in intra-regional trade recorded by targeted collaborating trader organizations. In fact, these organizations reported a 26% increase in intra-regional trade in selected commodities. In addition, MISTOWA partners voluntarily reported nearly US\$ 52 million in intra-regional trade concluded, partly as a result of MISTOWA support (trade partners were identified on TradeNet, deals were negotiated at MISTOWA-sponsored events, and trades were concluded as a result of sponsored trade exchange visits). Funds invested through the project equaled US\$ 11 million.

USAID support for MISTOWA has ended, but IFDC is committed to further developing the tools and concepts developed under the project. IFDC has recently received additional support from the Hewlett Foundation to carry out activities for several months until additional funding is secured. Many international development donors have expressed their interest in collaborating with IFDC to continue MISTOWA-type activities, seeing the project through to full fruition.

Network of Market Information Systems of West Africa

(RESIMAO)-RESIMAO was created in 1999, under the aegis of a USAID-funded project in Mali. Members are national public Market Information Systems from seven francophone countries (Benin, Burkina Faso, Côte d'Ivoire, Guinea, Mali, Niger and Senegal). Primarily focusing on cereals and livestock, RESIMAO members monitor their own range of commodities according to the country's needs and specificity.

Network of Economic Operators in the Food Industry (ROESAO)-

ROESAO was created in 2001 with nine member countries (Burkina Faso, Benin, Côte d'Ivoire, Ghana, Guinea, Mali, Niger, Senegal and Togo). ROESAO is organized around five commodity chains: cereals, horticulture, livestock, fisheries, and shea nut/butter. The members are traders, processors, producers and transporters. Each member country has a national coordination office, supported at the regional level by a permanent secretariat.

Network of Chambers of Agriculture of West Africa (RECAO)-

RECAO was created in 2001 and consists of the national Chambers of Agriculture of Benin, Côte d'Ivoire, Guinea,

Mali and Togo. Niger and Burkina Faso have also recently joined. RECAO's objective is to be an interface between regional intergovernmental organizations, the public, and the private agricultural sector. Its activities include information and communication, training, studies, and policy advocacy. RECAO is mainly supported by the PRIECA-AO project. The seven existing National Chambers of Agriculture constitute the General Assembly. The National Chambers are subdivided into 57 regional chambers active at district level, and made up of elected members of community chambers. There is a permanent technical coordination unit, based in Bamako.

Network of Farmers' Organizations and Agricultural Producers of West Africa (ROPPA) -

ROPPA was created in 2000 and is the official lobbying body for smallholder family farmers 10 countries (Benin, Burkina Faso, Côte d'Ivoire, the Gambia, Guinea, Guinea Bissau, Mali, Niger, Togo and Senegal). ROPPA is relatively well funded and supported by several external donors and technical partners. ROPPA is structured at three different levels: (i) national platforms (CNOP: Cadres Nationaux de Concertation des Organisations Paysannes); (ii) apex organizations or federations of commodity-based or sector-based POs; (iii) POs and groups of POs that are members of these national apex or federations. The latter two form the core and operational group of organizations and producers involved in local, regional and international trade.

The Federation of African Agro-Input Trade Associations

(FACIA)-FACIA covers ECOWAS countries and brings together 27 national associations representing more than 5,000 businesses. FACIA's objective is to improve the regional agro-input market, via dissemination of market and other information.

Major funders of food and agricultural market development in Africa

National governments

In 2006, African governments accounted for more than 60% of total annual funds flowing to African agriculture, roughly US\$ 5.5 billion. This was more than twice the level of overseas development assistance and more than five times the combined level provided by private foundations and private firms (through foreign direct investment). If the sources of funding for food and agricultural marketing initiatives in Africa depart significantly from this distribution, they would do so in favor of national governments. For most external donors oppose the activities of the publicly funded food agencies that, as shown above, take up large shares of national budgets.

Multilateral donors

Food and agricultural market development has long been an objective of multilateral aid to Africa.

International Fund for Agricultural Development (IFAD)

IFAD has a long history of funding food and agricultural market development initiatives, typically through loans to relevant government agencies and projects. IFAD-financed projects and programs in support of market development seek to influence the rate at which market development takes place, facilitate and broaden market access to rural producers, and establish fair market relations. Many projects help smallholders build understanding of how markets work, how to gear their production to the demands of potential buyers, how to access markets, and how to relate more effectively with traders and processors. IFAD provides support for formation and operation of commercially oriented organizations (groups, associations, cooperatives), including training in key skills in agribusiness. IFAD also provides support for improved production, storage, packaging and processing methods. Many IFAD projects involve investment to create conditions for greater private-sector investment – e.g., improved market organization, market information systems, and storage and transportation infrastructure. Improvement of policy and regulatory environment is an important aim of most projects. Between 1999 and 2001, the proportion of IFAD-financed projects with objectives relating to markets averaged 38%, approximately US\$ 53 million globally, US\$ 21 million in Africa (IFAD, 2003).

The World Bank

The World Bank was the principal driving force behind the agricultural market liberalization wave that swept across Africa in the 1980s and 1990s. As noted above, the private sector did not always expand into gaps left by withdrawing public agencies, and even if they could, newly weakened public agencies would have been unable to fill their prior roles. In many cases, this resulted in overall lower competition and efficiency in marketing institutions. Transaction costs and risks facing farmers increased, as did margins for traders, with negative impacts on food security. This experience is reflected in current Bank lending impinging on food markets, which falls largely in the area of social protection, safety nets, and social transfers that seek to cushion the poor and vulnerable from shocks of various kinds, within the context of broader Poverty Reduction Strategies. Common safety net interventions include cash transfers,

food-related programs, price and other subsidies, and public works. Recent projects featuring agricultural activities have been undertaken in the following African countries: Ethiopia, Niger, Senegal, Malawi, Madagascar, and Uganda. At issue in many of these projects is how farmers and other participants in agricultural markets can better deal with price and weather risks. Ethiopia is illustrative of the evolving approach.

The Bank is a key donor to Ethiopia's "Productive Safety Net Programme" that seeks to improve the efficiency and productivity of transfers to food insecure households, thereby reducing household vulnerability, improving resilience and promoting sustainable community development. Specifically, the Programme aims to replace emergency responses to chronic food insecurity with a multi-annual, predictable resource framework to protect households from shedding assets and eroding their chance of escaping poverty in the longer-term. Households are provided with enough income (cash or food) to fill gaps in their food needs and thereby protect their household assets from depletion. Programme components include public works ("food-for-work" and "cash-for-work") and direct support (food and cash transfers). The reliability of markets to deliver affordable food to needy populations is a central factor in determining the choice of instrument. It is also a key factor defining the underlying vulnerability that the PNSP seeks to address.

In a related initiative, the Bank has been collaborating with the WFP, DFID and the Ethiopia government on a weather-based insurance pilot project, to provide monetary compensation to Ethiopian farmers and protect them against drought risk (much of which is expressed in food markets). The first phase in 2004-2006 demonstrated that Ethiopian rainfall data are accurate and timely enough to allow Ethiopian drought risk to be transferred to international re-insurance markets. Establishment of a US\$ 7.1 million insurance policy demonstrated the willingness of international markets to contract on the basis of the Ethiopian data. On the basis of these outcomes and of experience in the first phase, WFP, the World Bank and DFID started to develop a comprehensive drought-risk financing scheme for the 5 to 8 million Ethiopians subject to transitory food insecurity. The second phase aims to scale up the financing package to US\$ 135 million, comprising contingent funding from bilateral, multilateral and insurance sources. In early 2007, the World Bank

approved a US\$ 175 million safety-net operation for Ethiopia that includes a US\$ 25 million contingent grant based on the drought index designed by WFP.

European Union

The main thematic and sectoral areas covered by the European Commission's Directorate General for Development (DG DEV) include linking trade with development, regional integration and cooperation, support for macro-economic policies, promoting equitable access to social services, support for transport, promoting food security and sustainable rural development, and support for institutional capacity building. Support for integrated regional markets based on private sector development is a strong focus.

The European Development Fund (EDF) is the main instrument for providing Community aid for development cooperation. The tenth EDF covers the period from 2008 to 2013 and provides an overall budget of EUR 22.682 million. Of this amount, EUR 21.966 million is allocated to the ACP countries, most of which will go to Africa.

A key element in the EU strategy document for support to African agriculture, "Advancing African Agriculture," is trade facilitation, emphasizing quality assurance and improvement. This area of support will aim to strengthen Africa's ability to make markets work towards poverty reduction and recognize the crucial role of local and regional markets for agricultural produce. Proposed cooperation includes strengthening the ability to influence, establish and adhere to meaningful production and trade standards, in order to access or to continue accessing remunerative markets for agricultural produce and to guarantee product safety for consumers. Cooperation will focus on regional market strengthening, trade surveillance, alignment of classification systems and standards, strengthening institutions involved in testing and compliance and in negotiations on standards. As is the case with the World Bank and a number of bilateral donors, an additional area of cooperation for the EU will be in the area of reducing risks related to natural disasters and price shocks, with a focus on organizational questions and financial instruments. There will be cooperation on disaster preparedness, prevention and response; reduced risk farming methods; use of innovative financial risk management tools and continental and regional early warning systems. Cooperation will

include capacity building of key public and private organizations and improving access of African countries to international financial and insurance markets.

African Development Bank (AfDB)

Noting that a dynamic private sector holds the key to future agricultural and overall economic growth in Africa, the AfDB's lending for agricultural development aims to promote development of policy, institutional, and legal environments conducive to private sector development. Promoting agribusiness and assisting member countries to strengthen linkages between farmers and agro-industry in order to improve farmers' access to markets is critical for generating and sustaining economic growth. Strong linkages with agro-industry and an efficient marketing infrastructure contribute to improve value-added to agriculture, reduce post-harvest losses and, stimulate supply response. Over the last five years, the AfDB has extended lines of credit totaling US\$ 56 million to agricultural initiatives in Africa.

UN World Food Programme (WFP)

WFP is a major actor in Africa's food markets. In 2006, WFP procured more than 158,000 mt of food domestically in Ethiopia, representing a value of US\$ 37 million. In Uganda, WFP purchased 162,000 mt of food, valued at US\$ 41 million. In Kenya, the total for the year stood at US\$ 30 million, in South Africa at US\$ 29 million. For Africa as a whole, between 2001 and 2006, WFP procured US\$ 977 million worth of food in domestic markets. WFP is launching a set of pilot activities, primarily in Africa, to further explore programming and procurement modalities that have the best potential to stimulate agricultural and market development in a way that maximizes benefits to smallholder farmers. This effort is known as "Purchase for Progress" or P4P.

Working with national governments and alongside bilateral partners, UN agencies, NGOs, farmers, traders, processors and research institutions, P4P will help create a platform of demand for food staples grown by small farmers in countries where WFP has operations. The aim is to help reduce the risks they face and boost farmers' incentives to invest in technologies and practices to increase and improve production. WFP will ensure that its actions are not displacing or disadvantaging the private sector, but rather promote fair prices and trade practices. WFP has

³WFP's collaboration with the World Bank on the disaster risk insurance pilot is described above (under "World Bank").

received US\$ 10 million from the Howard Buffett Foundation for activities in Latin America, Liberia, Sierra Leone and Sudan, and a commitment of US\$ 66 million over five years from the Bill & Melinda Gates Foundation to implement P4P in 10 African countries (including Burkina Faso, Ethiopia, Kenya, Malawi, Mali, Mozambique, Rwanda, Tanzania, Uganda and Zambia).³

UN Food and Agriculture Organization (FAO)

In 1994, FAO launched the Special Programme for Food Security (SPFS) to assist developing countries (Low-Income Food-Deficit Countries in particular) improve their household and national food security. To date, 44 Africa countries have been involved in SPFS pilot field activities, of which 10 of which are being scaled up through national programs. Central pillars are national leadership and local community participation and empowerment. SPFS activities are funded through FAO's Trust Fund for Food Security and Food Safety to which several donors have committed funds. The Italian Government is the main donor, having contributed EUR 60 million out of EUR 100 million committed. Other significant donors include Libya, the OPEC Fund, and the Kingdom of Saudi Arabia, each having provided between US\$ 1 million and US\$ 2 million.

FAO's major contribution to food marketing in Africa is the technical expertise it can bring to bear on food marketing problems. FAO's Agricultural Marketing Programme assists governments with the formulation and implementation of projects to improve marketing policy, support services, farm-market linkages, training and infrastructure. It also organizes training programs on request. FAO's Agribusiness Management Programme, with a strong emphasis on capacity building and human resources development at different levels, produces training materials, in particular for small farmers and managers of agro-processing enterprises who need technical and managerial training, including for business planning. It also advises on policies and strategies to improve agri-business competitiveness, including fostering better coordination and linkages among business partners.

FAO's work in agri-business linkages concentrates on how to develop and reinforce equitable and efficient linkages between all players along the food value chain. The aim is to create an awareness of the importance of farm/agri-business linkages and to develop guidelines for policymakers and planners on how to

formulate strategic programs and overall strategies that would assist in building and maintaining successful farm/agri-business linkage programs. Business management support aims to help micro and small rural entrepreneurs develop analytical and cognitive skills to cope with decision-making and problem solving for their enterprises. Training materials are developed to provide practical advice and information on management aspects that help entrepreneurs or potential investors run a sustainable business. A fundamental aim is integration of production, packaging, transport and storage of marketable commodities and value-added products from the farm through to the consumer and to support entrepreneurs in rural and periurban agribusiness development.

FAO has developed detailed guidelines for upgrading rural markets as one way to improve access to marketing opportunities. These guidelines aim to assist community planners, rural engineers and agricultural extension units to formulate and implement relevant market-development plans. Detailed instructions are provided on how to: design markets that meet a community's social and economic needs; work with communities to identify their marketing problems and to choose a site for a new market; use appropriate and simple methods to survey and plan the site layout and to design market buildings; prepare a market-development proposal and make budget estimates; undertake simple social and economic feasibility studies; look for financing and construct the market; and manage, operate and maintain the market.

The Consultative Group on International Agricultural Research (CGIAR)

During the 37 years of its existence, it is estimated that CGIAR has expended more than US\$ 4 billion in Africa. CGIAR research in the region focuses on the full range of the system's global research portfolio, encompassing genetic improvement of food crops, ruminant livestock, trees and fish important to the poor, integrated natural resources management, biodiversity research, policy research and capacity building. In addition to work on genetic improvement, natural resource management, and biodiversity conservation, CGIAR efforts include research on promoting opportunities for economic development through agricultural diversification and high-value commodities and products, as well as improving policies and facilitating institutional innovation.⁴

⁴Note, however, that the economics research portfolio included a small portion on markets, in a few centers, not in the entire system.

Table 1: Examples of USAID recent support to agriculture in Uganda – 1993-2008

Project title	Objective	Implementer
Investments in developing export agriculture (IDEA)	Increase the production and sale of high- and low-value crops by promoting closer relations among ugandan producers, buyers, and exporters (US\$30 million, nine years)	Chemonics
Agricultural productivity enhancement project (APEP)	Expand rural economic opportunities and increase household income in the agricultural sector by increasing food and cash crop productivity and marketing.	Chemonics
Strengthening the competitiveness of private enterprise (SCOPE)	Assist private sector leaders in targeted sub sectors to identify markets and set market targets, develop market strategies and plans, and work with the range of private and public sector actors and resources needed to support achievement of targets.	Chemonics
Support for private enterprise experience and development (SPEED)	Increase access to financial services, create and expand agricultural and non-agricultural enterprises, and strengthen legal and regulatory frameworks for business development in the sme and microfinance sectors.	Chemonics
Productive resource investments for managing the environment/ western region (PRIME/WEST)	Protect biodiversity assets, increase productivity of the natural resource base, and increase the potential economic returns to communities	Development Alternatives Inc.

Bilateral donors

United States Agency for International Development (USAID) - USAID has long been a proactive supporter of private sector and agri-business development in Africa. It has financed programs promoting the development of a commercialized agricultural sector in many African countries, typically implemented by US development consulting firms such as TechnoServe, Chemonics, Land O’ Lakes International, ACDI/VOCA, Abt Associates, and Development Alternatives Inc. The case of USAID support to Ugandan agriculture is illustrative (Table 1).

USAID has also supported long-term research and policy advocacy related to African agri-business and food markets by several US universities through its Collaborative Research Support Programs (CRSPs), which combine research and agri-business support. There are currently four CRSPs in operation relevant to the AGRA Markets Program. They are: (i) sorghum, millet, and other grains; (ii) beans and cowpeas; (iii) peanuts; and (iv) livestock. USAID has also funded technical support and policy research on food markets by US universities, most notably by Michigan State University in southern and eastern Africa. At the regional level, USAID has supported design and implementation of a number of initiatives aimed at promoting regional trade in food commodities. Two of these, the RATES

program and the RATIN program, were described earlier (under “regional initiatives”).

Department for International Development (DFID)-Like the World Bank, DFID’s market-related aid is increasingly framed and packaged within social protection-related initiatives, where efforts to “make markets work for the poor” are bundled together with efforts to mitigate risks facing vulnerable populations. DFID’s point of departure is that risks facing the rural poor must be reduced if they are to engage effectively in markets. DFID is committed to significantly increasing spending on social protection in at least ten countries in Africa and Asia by 2009, supporting national programs and working with the UN and NGOs in fragile states.

Other bilateral donors-Other important bilateral donors with interests in Africa’s food markets include the Danish International Development Agency (DANIDA), the German development agency Deutsche Gesellschaft für Technische Zusammenarbeit (GTZ), and the Netherlands Development Organization (SNV).

Much of the food market-related assistance from these three donors features support for targeted capacity building at given points along food value chains. For instance, in Kenya GTZ recently funded construction of a biogas facility for a

community slaughterhouse, and organizational strengthening for a milk producers association. SNV is supporting the Zambia Government's implementation of smallholder-oriented grain and input marketing improvements in Zambia.

Other support from this group of donors aims to improve framework conditions facing the private sector. For instance, DANIDA is supporting a 5-year US\$ 30 million effort in Ghana that aims to catalyze a "Golden age of Business" through legal and judicial reform, strengthening the culture for business, business support instruments to SMEs, and improved access to markets.

Complementary funds

Africa Investment Climate Facility (ICF)

Based on the Report of the Commission for Africa, the UK is developing a number of new initiatives aimed at improving the climate for business in Africa. One of these is the ICF, which aims to help lower the cost of doing business in Africa and promote a better investment climate across the continent. The UK government will provide US\$ 30 million over three years to the Investment Climate Facility for Africa. Royal Dutch Shell PLC and Shell Foundation also announced that they would contribute a combined total of US\$ 2.5 million over five years, and Anglo American confirmed that they would also contribute US\$ 2.5 million over the same period.

Recommended by the Commission for Africa and supported by the G8 at Gleneagles, the ICF will help bring about more business-friendly policies, laws and regulations across the continent, and strengthen the institutions that enable these to be administered. It will help bring about a more effective dialogue on investment climate reform between governments and the business community. The ICF will support such projects as streamlining business registration and licensing systems, reforming customs administration and taxation and removing barriers to competition. The ICF will focus its programs mainly in the 24 African countries that have signed up to the Africa Peer Review Mechanism under NEPAD. Over its initial phase of three years, the ICF expects to support initiatives costing up to a total of US\$ 120 million. But over its full life of seven years the ICF expects to be able to facilitate in excess of US\$ 500 million of reform work. Activities funded under the ICF are likely to include: research and analysis; legislative review and reform; capacity building of institutions, such as land registries, company registries and commercial courts; pilot projects, such

as streamlined business registration systems; and facilitation of better public private dialogue.

Millennium Challenge Corporation (MCC)

The MCC provides two different kinds of monetary assistance: compact agreements and threshold agreements. A compact is a multi-year agreement between the Millennium Challenge Corporation and an eligible country to fund specific programs targeted at reducing poverty and stimulating economic growth. The Threshold Program is designed to assist countries that are on the "threshold," meaning they have not yet qualified for MCA Compact funding, but have demonstrated a significant commitment to improve their performance. Of MCC's 16 Millennium Challenge Compacts, totaling about US\$ 3.8 billion, 9 are with African countries, and many seek to improve agricultural market access (Table 2).

Africa Enterprise Challenge Fund (AECF)

DFID is also developing the AECF to catalyze the private sector to innovate and find profitable ways of improving market access for the poor, with a focus on rural areas. AECF will focus on stimulating innovation in agricultural markets and deepening access to financial services. It will push the frontiers of market access for the poor in sectors particularly important to the poor, namely finance and agriculture. The focus will be on (i) catalyzing local supply chains, creating effective demand for the produce of smallholder farmers, (ii) supporting firms who provide intermediary services to small farmers so that they may access new markets, and (iii) introducing new production methods and establishing local production processes where none existed before.

Emerging Africa Infrastructure Fund (EAIF)

EAIF was established in January 2002 and is currently a US\$ 365 million debt fund, which aims to address the lack of available long-term foreign currency debt finance for infrastructure projects in Sub-Saharan Africa. EAIF was initiated by the Private Infrastructure Development Group (PIDG), whose founding members are DFID, the Netherlands Ministry of Foreign Affairs, the Swiss State Secretariat for Economic Affairs, and the Swedish International Development Corporation Agency. These PIDG members provide equity to EAIF through the PIDG Trust.

While EAIF lends on commercial terms, it aims to support projects that promote economic growth and reduce poverty, benefit broad-based population groups, address issues of equity

Table 2: Grants to African countries under MCC compacts

Country	Areas supported
Benin	Improvements in physical and institutional infrastructures, access to land, access to financial services, access to justice, and access to markets. US\$ 307 million
Cape Verde	Improvements in the investment climate, reforming the financial sector, improving infrastructure, increasing agricultural productivity and incomes of the rural population. US\$ 110 million
Ghana	Commercialization of small-scale agriculture, transportation, water and sanitation, and electricity. US\$ 547 million
Lesotho	Water for industrial and domestic use, disease control, health care infrastructure, and human resources for health capacity, and reduction in barriers to foreign and local private sector investment. US\$ 363 million
Madagascar	Property rights to land, access credit and protect savings, training in agricultural production, management and marketing techniques. US\$ 110 million
Mali	Bamako-Sénou Airport, the Niger River Delta, for irrigated agriculture. US\$ 461 million
Morocco	Productivity and employment growth in high potential sectors including fruit trees, small-scale fisheries, and artisan crafts. US\$ 697.5 million Financial services and support for small business creation and growth.
Mozambique	Improved water systems, sanitation, access to markets, land tenure services, and agriculture. US\$ 507 million.
Tanzania	Transportation, energy, and water. US\$ 698 million

and participation, and promote social, economic and cultural rights. Investments with a term of up to 15 years can range from a minimum of US\$ 10 million (or equivalent) to a maximum of US\$ 36.5 million (or equivalent) for any one investment. Loans are provided without the need for political risk cover.

United Nations Industrial Development Organization (UNIDO)

Through the regional programs of the African Union's African Productive Capacity Initiative (APCI), UNIDO is promoting regional integration, harmonization and cooperation. APCI enhances integration of the regional economic communities for increased market access, remove barriers to trade and help the beneficiary countries to diversify their export base. It will contribute to reducing trade impediments, promoting the harmonization of industrial, trade and technology policies and helping to ensure conformity and compliance with industrial standards and environmental norms.

UNIDO's Agro-Industries support service module comprises a range of technical assistance interventions and know-how, which encompass the following key areas:

- 1) Support and advice to official and private-sector decision-making bodies in various sub-sectors (food, leather, textiles, wood and agro-machinery) on technical-economic

development options for strengthening the agro-industrial sector and fostering the equitable integration of small-scale agro-based enterprises into market-oriented agro-produce systems.

- 2) Capacity-building at the institutional and industry levels to enhance industrial productivity and marketing performance in the agro-industrial sector. Particular attention is given to strengthening the capacity of technical support institutions and/or professional associations, as well as the creation of design centers and demonstration units for basic and advanced technologies (tools and machinery, CAD/CAM, automation, etc.).
- 3) Support to traditional agro-industries to improve their productivity and efficiency, increase their integration into global value chains, and support rural livelihood diversity. This is achieved through upgrading of technical skills, process optimization, diffusion of appropriate agro-engineering systems, product innovation/diversification, and the introduction of working methodologies and guidelines, etc. Special attention is given to marketing support, such as participation in trade fairs and missions, as a means of exposing the target beneficiaries to market requirements.

- 4) Participation in the work of international organizations and normative bodies, the promotion of research on priority/novel commodities, the preparation of training manuals and tool kits for agro-processes/technologies, and the dissemination of agro-industrial information for decision-making.

The commodities covered include food as well as important agro-based fiber products (wood, textiles and leather). In addition, special emphasis is placed on the agro-machinery and agro-chemical sub-sectors because of their essential underlying contribution to the development of agro-based industries.

African Capacity Building Foundation (ACBF)

The ACBF is an independent capacity-building institution established in February 1991 through the collaborative efforts of three multilateral institutions (AfDB, the World Bank, and UNDP), African governments and bilateral donors. The establishment of the ACBF was a response to the severity of Africa's capacity problem and the challenge to invest in indigenous human capital and institutions in sub-Saharan Africa. The current membership comprises the three sponsoring agencies (AfDB, UNDP and the World Bank), the International Monetary Fund (IMF), which joined the Foundation in April 2002, as well as 32 African countries and non-African countries and institutions. In addition, Japan and Canada have contributed resources to the Foundation. The Foundation's principal objectives are to:

- 1) Build and strengthen sustainable indigenous capacity for macroeconomic policy analysis and development throughout sub-Saharan Africa;
- 2) Improve through co-financing and other networking arrangements, the channeling of donor support for capacity building in the area of the Foundation's mandate;
- 3) Contribute to programs for the reversal of brain drain from the continent and encourage retention as well as intensive utilization of existing capacity;
- 4) Build capacity in key areas of the public sector with emphasis on the interface between the public sector, the private sector, and civil society; and

- 5) Provide support for regional initiatives in the area of research and training by establishing systematic links between economic research and training institutions and governments to foster greater understanding and communication between such entities.

In addition, ACBF seeks to build a partnership between African governments and their development partners, which allows for effective coordination of interventions in capacity building and the strengthening of African ownership, leadership and responsibility in the capacity-building process. The focus of activities is on improving public sector capacity for macro and sector policy design and management, as well as enhancement of effectiveness of institutions, processes, systems and procedures that support policy and institutional reforms critical for improved transparency, accountability and good governance in the public sector.

Conclusions

The picture that emerges from this survey is one of rich but uncoordinated diversity in investments to improve the functioning of agricultural markets in Africa. A more systematic analysis might reveal areas of complementarity and overlap among investments, and any scope for streamlining and harmonization that might exist. Such an analysis would add significantly to the literature.

A key recognition is that many of the initiatives described above exclude the public sector, either by design or default. This is a major gap, since a central challenge facing African countries remains how to fashion productive roles of states in markets. A central lesson of the Asian Green Revolution is that sustained agricultural growth hinges in part on forms of market stabilization that only governments can assure – stabilization offered in return for desired patterns of private investment. Some of the initiatives and measures described above might serve as platforms on which government-backed stabilization efforts might be built; the impacts of most of them likely would be accentuated in this way. Viable public-private partnerships in Africa's agricultural markets are a priority.

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