

SAGA RESEARCH PROGRAM

Summary

Even though the debate on adjustment policy has been heated, few people now doubt that a sound macroeconomic environment is important for growth and poverty reduction. Nevertheless, we believe that focusing on “top-down” macroeconomic and sectoral issues alone obscures a deeper truth, which is becoming clear to an increasing number of researchers and policy makers: macroeconomic reforms, while important, are only part of the basis for growth and poverty reduction. What is missing is a “bottom-up” perspective which starts from the capabilities of individuals, households, and communities — their productivities, their vulnerabilities, their institutions, and their environment — and which considers in detail how economic and social development can and do play out at the ground level. That is the perspective that we propose to take in our research. Our aim is to understand further the economic, social, institutional, and natural constraints that keep Africa’s poor from prospering in the context of growth-oriented reforms.

*While there are many structural constraints that hold the poor back, we focus on four: **education; health and nutrition; risk, vulnerability and poverty dynamics; and empowerment and institutions.** Our selection of these four themes reflects that without access for all Africans to education and health services, growth will be low and inequitable. Africa lags behind on both counts, even compared to other countries with similar income levels, and the social indicators are not improving at a rate comparable to other developing countries (IMF et al. 2000). Similarly, even in the best of policy environments, Africans, and especially Africa’s poor, live in environments characterized by extreme risk and vulnerability (Collier and Gunning 1999). Without access to markets and institutions that help the poor protect themselves against the vagaries of nature and of the market place, adverse events will have not only the obvious immediate effects on poverty, but potentially devastating indirect effects through behavioral responses, such as pulling children out of school or degrading environmental resources, which worsen poverty far into the future. Poverty traps, the idea that one “can’t get ahead for falling behind,” are a reality of poor people’s lives in Africa (Barrett and Carter 2001). Finally, if the poor do not have access to local and national institutions that allow their voices to be heard, if the poor are not empowered to act in their own interests, then policy making will inevitably turn away from their interests (Narayan et.al. 2000a; Narayan et.al. 2000b, Stern 2000).*

A bottom-up approach naturally invites complementary research from the social sciences other than economics. While we maintain a firm foundation in economics, we will emphasize active collaborative with related social science disciplines, particularly relationships with anthropologists, geographers, political scientists, and sociologist. Our research approach promotes interaction between these scholars and the consequent benefits that multidisciplinary work will provide to our ground-level analysis of bottom-up growth.

Many of the topics relevant to our key development theme require dynamic analyses. Although economic growth and poverty reduction are inherently dynamic concepts, the existing debate on policy reform and poverty has paid scant attention to the dynamics of income, wealth, and human development. In part this reflects a lack of the necessary micro data from Africa, but this barrier is now significantly reduced as several panel datasets have become available in the past decade. Understanding these dynamics will lead to a structural foundation for growth and development at a micro level.

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1.1 Perspective and Motivation

Over the past twenty years, many sub-Saharan African countries have engaged in macroeconomic policy reform (Sahn 1994). Parallel foreign exchange markets have virtually disappeared from countries where they were a central feature of economic life only a decade ago. Governments have reduced or eliminated the most blatant biases against agriculture. Trade taxes, implicit and explicit, have been reduced in many countries where they were previously set at punitive rates. The state has begun to release its grip on commerce through privatization of loss making state enterprises and liberalization of investment codes. And despite frequent slippages, the enormous fiscal deficits of the 1980s are becoming a thing of the past.

These reforms have yielded some benefits for Africa's poor, but with rare exceptions, the achievements on growth and poverty reduction have been disappointing (Sahn, Dorosh, and Younger 1997; Sahn 1996). Some part of this is because of the descent into civil war and chaos in countries like Sierra Leone, Liberia, Angola, Sudan and Congo. The turbulence in these countries is affecting neighboring countries as well. But even in politically stable countries, growth usually has not been robust and, as has been increasingly noted, what growth there is has not been sufficiently pro-poor for it to have a greater impact on poverty reduction. Looking ahead, most forecasts are gloomy. If levels and patterns of growth continue as before, the numbers of poor people in Africa will continue to increase. The additional burden of the HIV/AIDS crisis compounds this pessimistic assessment for sub-Saharan Africa.

1.2 Research Themes

Thinking about poverty has evolved significantly in the past 20 years (Kanbur and Squire 2001). The traditional approach, which in many ways remains dominant in policy analyses, views poverty as the lack of command over material resources sufficient to meet basic needs. Sen's seminal work (1979, 1985, 1987) redefines poverty as deprivation in terms of capabilities which are intrinsically important, such as education, good health, and freedom. In this view, income remains important instrumentally, because to some extent it can buy these capabilities, but poverty should be measured in other dimensions that address capabilities directly. Practical research that attempts to take the capabilities approach seriously include the UNDP's Human Development Index (UNDP 1994) as well as more general research that considers multiple dimensions of poverty simultaneously (Sahn, Stifel, and Younger 2000; Duclos, Sahn, and Younger 2001). More recently, a large number of participatory poverty assessments, mostly conducted in Africa, have found that the poor themselves often define poverty in terms of vulnerability and powerlessness (Narayan *et.al* 2000a; Narayan *et.al.* 2000b).

The topics that are most suitable for research under this Cooperative Agreement take each of these ways of thinking about poverty into account. Increasing the poor's access to and use of education and health services, reducing their vulnerability, and increasing their voice are the keys to a bottom-up development strategy that will produce

both growth and poverty reduction. In the sections that follow, we discuss each of these topics, and potential research projects related to them, in turn.

1.2.1 Education

Improvements in education are a key element in the reduction of poverty whether it is defined in terms of incomes, capabilities, or vulnerabilities. From the perspective of income poverty, there is an enormous body of research confirming that education increases labor incomes (Psacharopoulos 1994). In Africa, this is true not only in the formal wage sector, but also in agriculture and the informal sector where Africa's poor are primarily engaged (Schultz 1975; Vijverberg 1995; Glick and Sahn 1997). Education is also a leading determinant of rural households' capacity to enter into remunerative nonfarm employment in Africa (Dercon and Krishnan 1996; Barrett, Bezuneh, and Aboud 2001; Barrett, Reardon and Webb 2001). Because there is a positive relationship between nonfarm income and household welfare indicators across most of rural Africa (Reardon 1997), greater nonfarm income diversification reduces households' vulnerability, allowing more rapid growth in earnings and consumption (Block and Webb 2001; Barrett, Bezuneh, and Aboud 2001). Improved access to education can thus help poorer populations access a positive feedback loop wherein those participating in the rural nonfarm economy enjoy faster income growth, thereby providing the resources to plow back into expanded nonfarm activity that diversifies incomes (Barrett, Reardon and Webb 2001; Barrett, Place and Aboud, forthcoming).

In terms of capabilities, education produces important capabilities such as literacy and numeracy. From the perspective of vulnerability, recent research has found that more educated households are better able to deal with income and policy shocks, and thus less vulnerable than less educated households (Grootaert, Kanbur, and Oh, 1997; Glewwe and Hall 1998; Barrett, Sherlund and Adesina 2001). More education also equips families and individuals to cope with adverse health shocks such as a sudden illness. In addition, public health education, such as teaching parents the basics of oral rehydration or explaining the risks associated with alternative infant feeding options to HIV-positive mothers, will help diminish the consequences of adverse health shocks. Finally, more educated people have greater political voice (Bardhan and Mookherjee 2000).

Given the universal importance of education, it is sobering to observe that school enrolments are lower in Africa than in other regions of the world, even after controlling for income level (Schultz 1999). Further, unlike other developing countries, enrolment rates have at best stagnated in Africa in the last two decades (UNESCO 1998). Clearly, better understanding of the constraints that keep African children out of school is a critical question for an empowering growth development strategy. This is especially true for girls, whose post-primary enrolments continue to lag those of boys in Africa, a problem that has important long-term consequences because women tend to have stronger preferences for investing in their children's education than their spouses, and also have may have stronger preferences for educating their daughters (Glick and Sahn 2000). If solutions could be found to increase enrolment rates to, say, the levels found in Viet Nam today, or the East Asian Tigers in the 1960s, the benefits would have a considerable impact on the macroeconomic performance of African economies.

1.2.1.1 Understanding Africa's Low Enrolments

Why don't more African children go to school, and why is this problem more severe for girls than for boys? There are many possible answers, any or all of which would be appropriate sub-topics for research under this Cooperative Agreement. The oldest answer to the general enrolment question comes from an institutional perspective: there are simply not enough schools in Africa, and what schools there are not close enough to the widely dispersed, mostly rural population. Particularly at the secondary school level, neither the physical infrastructure nor staffing levels are sufficient. Another oft-cited problem is the low quality of education in Africa: schools lack supplies; infrastructure is not maintained; teachers are poorly trained, poorly paid, and lack motivation. Poor quality and low returns may cause parents to think that, while education in the abstract is a good idea, education at their school is not. Econometric studies of education demand (e.g., Glick and Sahn 2000) confirm that parents respond to poor school quality by not enrolling their children. In the labor market, new research indicates that the returns to schooling, especially primary schooling, have fallen in Africa (Moll 1996; Glewwe 1996), likely reflecting declines in school quality, among other factors.

In addition to these institutional constraints on the supply side, other research has found a variety of household and individual behavioral constraints that reduce enrolments from the demand side. From the perspective of economics, parents may find that the costs of schooling, both direct (fees, books, transport, etc) and opportunity costs (loss of the child's labor input in home production, farm work, household enterprises, etc.) are too high (Assié-Lumumba 1993a; Bray and Lillis 1988). More subtly, even if parents believe that the benefits of schooling outweigh the costs, which virtually every study of the returns to education finds, the economic benefits come in the future when a child has begun to work, while the costs are incurred now. Families that are liquidity constrained may be unable to make a profitable investment in their children's education. In theory, a well-functioning capital market could ease this constraint, but in practice, it is difficult to develop a long-term capital market where no collateral is available. This lack of access to an important market is an example of a constraint that prevents poor families from making bottom-up investments in education that would lead to faster growth and poverty reduction. To address this market failure, governments may want to subsidize the current costs of education by reducing fees or even providing negative fees, cash transfers to students' households, as in the Progreso project in Mexico (Schultz 2001), or in-kind transfers such as school uniforms in Kenya (Kremer, Moulin, Myatt, and Namunyu 1997). These transfer payments provide a powerful incentive for poor families to keep their children in school because current income is more valuable to families that are liquidity constrained.

From a sociological perspective, prevailing social norms may dictate that "appropriate" activities for children are other than schooling. Such constraints are often more severe for girls than for boys, because households' demands on girls time (e.g., to do domestic chores or to care for younger siblings) are higher. In addition, social conceptions of the work that women do – trading, tending to farms, working at home, and caring for children – may lead parents to conclude that the benefits of education are less for their daughters than they are for their sons (Assié-Lumumba 1994a). In addition,

Africa's historical legacy established gender-specific patterns of schooling that are difficult to overcome (Assié-Lumumba 1997 and 1994b). Such gender-based restrictions on activities are clearly costly. A society that restricts the human capital accumulation of half its population can only grow half as fast as one that educates all its children. Therefore, special attention needs to be given to identifying creative ways to raise girls' schooling. Some such efforts, both from within and outside of Africa, warrant more careful study and experimentation. Special subsidies for families that send their girls to school may be effective (Sawada and Lokshin 2001). More flexible school schedules may allow girls to fulfill household obligations while also attending school (Assié-Lumumba 1997). Policies to encourage women's employment as teachers may raise girls' schooling, as there is some evidence that girls are more likely to stay in school if their teachers are women (King and Bellow 1991; Eddah Gachukia 1992).

An increasingly important issue in Africa concerns the norms for care of orphans. Because of the HIV/AIDS pandemic, Africa has a large and rapidly growing population of orphans. African extended families take in orphans with great flexibility (Ainsworth 1992), although there is some evidence that fostered children are less likely to attend school (Eloundou-Enyegue and daVanzo 1999). More importantly, the scale of the HIV/AIDS crisis may soon overwhelm the traditional extended family safety net for orphans, endangering not just their chances to attend school, but their very livelihoods. There is great scope for creative thinking about policies to assist families that are coping with the strains of educating orphaned children.

1.2.2 Health and Nutrition

Levels of health, measured for example by life expectancy and child survival rates, are lower in Africa than in other regions of the developing world, even controlling for differences in per capita incomes (Schultz 1999). These gaps existed before the effects of the HIV/AIDS pandemic began to be felt, and they will obviously worsen because of it. Similarly, the share of pre-school age children suffering from malnutrition remains extremely high in Africa relative to southeast Asia and Latin America, though not South Asia (Sahn and Stifel, forthcoming).

At the same time, recent research on the returns to investments in human resources finds that improvements in the health and nutrition contribute to increased productivity and higher incomes. This has been confirmed for Africa, for men and women and for the wage and non-wage sectors (Glick and Sahn 1997; Schultz and Tansel 1997; Strauss 1986). The implication is that Africa's low level of health, like its low levels of schooling, acts a major constraint on growth, and that improvements in health and nutrition will have large economic payoffs.

The benefits of investments in health and in education are mutually reinforcing, providing another example of interactions between our potential research topics. Compelling evidence has been compiled that cognitive development in children is enhanced by better nutrition, in terms of protein-energy status and intake of micronutrients such as iron (Pollitt 1993, 1997) and iodine (Oldham *et al.* 1998). Consequently, healthier children do better in school, showing less grade repetition, less

delayed enrolment, and better test scores (Glewwe and Jacoby 1994; Behrman 1996) However, much of this literature has not dealt with the important feedback effects arising from the joint determination of nutritional status and schooling outcomes (Behrman and Lavy 1994). Therefore the strength of the links remains unclear and are an important topic for further investigation, especially in the African context.

Another important example of interactions is the strong positive impact of mothers' education on children's health and nutrition outcomes, and on the use of key inputs to health such as medical care, even when controlling for the level of household income (Sahn, Younger, and Genicot 2000; Strauss and Thomas 1995). This is not because health or childcare practices are taught in school, but rather that educated mothers are better able to acquire and process information about providing for the health and nutritional needs of their children (Thomas, Strauss, and Henriques 1991; Glewwe 1999). These examples of positive education-health interactions imply that the benefits from improving access to education and health, particularly in a dynamic sense, are likely to be greater than the short-term and one-dimensional returns we measure using traditional rate of return calculations.

Research in recent years for Africa has begun to analyze the individual, household, and community determinants of health and nutrition, especially of children, but important gaps remain. We require a better understanding of demand behavior: why do the poor not make greater use of health services, even public services that are free or heavily subsidized? Distance or availability is one reason, but not the only one. Simply making health care, or specific treatment programs, locally available will not insure uptake and a successful course of treatment — “availability” does not mean “access” in the broader sense of the term. Low quality reduces the attractiveness of health services even where they are close at hand (Sahn, Younger, and Genicot 2000; Castro-Leal *et al.* 1999). In addition, education, income, social attitudes, and the possibility of learning from others (or more broadly, social capital) are each also likely to be important.

The importance of understanding individual health behavior seems most obvious for the HIV/AIDS pandemic. Public efforts to prevent the spread of HIV will fail unless they incorporate such information. Research in the U.S. (Ahituv, Hotz and Philipson 1996) indicates that condom use among young adults responds strongly to the local prevalence of HIV/AIDS. In Africa, behavior can change as well. For example, HIV prevalence among young people and pregnant women has declined in Uganda (Ainsworth and Teokul 2000). Research is needed on how individuals' behavior will respond to public information campaigns promoting awareness of HIV transmission and safe sex practices, and especially, how individuals in targeted, high-risk populations respond.

Another key area where we need to learn more is the dynamics of health and nutrition, and their interactions with poverty and vulnerability — how individuals and families respond to health shocks such as illness or shortages of calories. For young children, there is some resilience to isolated health shocks. If a period of inadequate caloric intake or a bout of infectious illness is not prolonged, children can catch up in their growth. However, repeated health shocks in young children (those under 3 years)

can have irreversible effects on growth, leading to chronic malnutrition or stunting that persists to adulthood. This in turn has negative implications for future adult productivity and incomes. What this suggests is that vulnerability to illness and food insecurity have potentially strong intergenerational impacts on poverty. In this and other ways our suggested research topics of vulnerability and health are tightly linked.

The effects on families of health shocks to adults are potentially permanent and devastating as well. For Africa, Schultz and Tansel (1997) show that morbidity reduces labor earnings in Ghana and Côte d'Ivoire. What is not yet understood are the longer-term effects of illness at the household level. Like a crop failure, a temporarily disabling bout of illness for an income-earner in a family near the poverty line could push that family below the line, and through distress sales of assets result in permanent impoverishment. Evidence from several cross-section surveys in Africa indicates that households do sell assets when hit by a major illness (Evans 1989; Chambers 1982). With panel data sets becoming available for many African countries we can begin to address the dynamic implications of this coping response to illness.

Among illnesses with potentially devastating consequences for households (and macroeconomies) in Africa, HIV/AIDS obviously looms large. Because there is no recovery from the disease, we might expect that the chances that a household can recover economically from having a prime-age adult fall ill with HIV/AIDS are poor. But the very limited evidence emerging from Africa provides a mixed picture (Over et al, forthcoming; Ainsworth and Semali 1999). A longitudinal study of the Kagera region in Tanzania found that consumption per person of basic needs first fell but then recovered after a breadwinner died of AIDS. The recovery in basic needs consumption was funded in part by sacrificing other consumption (and presumably also investment), in part by selling assets, and in part through increased private transfers. However, a great deal more research is needed on the household-level impacts of HIV/AIDS, and on public policies to offset these impacts. As the prevalence of HIV/AIDS increases within a village or wider area, social networks that provide transfers to smooth consumption may cease to function well or at all as the health shocks become less individual and more covarying within the area. Even temporary shortfalls in consumption related to AIDS deaths may lead to irreversible effects on the health of young children along the lines noted above. Beyond the primary concern with avoiding catastrophic reductions in consumption, the implications for rural development and poverty reduction of illness and death from AIDS among working age adults are almost certainly very significant, but have yet to be assessed at the micro level.

On the supply side, health delivery systems in Africa are under-funded and suffer from well known misallocations. Primary care, preventative services, and rural areas receive too little funding relative to tertiary services and urban areas. In many countries in Africa decentralization of the health sector has been implemented, or is planning to be implemented, as a way to redirect resources to rural areas and primary care, where the returns are highest. (We discuss decentralization further in section 1.2.4.1.) Increasing the role of the private sector in health service delivery is another potential route to improving quality and utilization rates of health care services. While relatively undeveloped in Africa — accounting for about 30 percent of all care (Castro-Leal *et al.* 1999) — the

private sector is thought to provide better quality services. To some extent, of course, this is consistent with higher costs charged to consumers. However, through contracting with the public sector, private providers (and concomitant incentives for quality) can be used to provide subsidized care that reaches the poor. There is a great deal of scope for research and policy on health care strategies that link public and private sectors.

1.2.3 Risk, Vulnerability and Poverty Dynamics

Perhaps the most interesting finding of the recent surge in qualitative poverty analysis is the emphasis that poor people place on vulnerability when they define their own poverty or food insecurity (Kanbur and Squire 2001; Narayan *et.al.* 2000a, 2000b; Barrett, forthcoming (a)). Time and again, the risk of falling into poverty (measured in many possible dimensions) receives as much attention as deprivation itself in conversations with the poor.¹ Given the importance that poor people place on vulnerability and the relative scarcity of research on it, we see this as an important area for potential research topics in the Cooperative Agreement.

People everywhere face risks, but these risks are larger for poor, agrarian economies, and in tropical ecologies (Sachs 2000). In addition, the poor have fewer means for dealing with the risks that they face. African economies remain mostly agrarian, and its soils, meteorology, and hydrology, including low rates of irrigation, make agricultural yields especially unstable. There is also an important gender dimension to vulnerability. Women's risk assessments differ systematically from men's, emphasizing issues of health and violence far more frequently (Narayan *et.al.* 2000a; Smith, Barrett and Box 2001). Women typically bear greater risk with respect to policy-related productivity shocks (Assié-Lumumba 1995; Due 1991; Gladwin 1991; Doss 1996; Barrett, Sherlund, and Adesina 2001) and have more difficult access to livelihood strategies that limit downside risk exposure (Barrett, Bezuneh, Clay and Reardon 2000, Newman and Canagarajah 2000). There is thus a particular need for policy-oriented research that identifies vulnerability in a gender-sensitive fashion.

Focus group interviews in Africa make clear that there are two important differences between Africans' conception of vulnerability and the definition of risk as variability in outcomes found in the economics literature. First, while uncertainty clearly matters, it is not overall variability that defines vulnerability, but downside risk (Smith, Barrett, and Box 2001). Research on poverty dynamics shows much movement in and out of poverty over time (Hoddinott and Baulch 2000), a phenomenon of which Africans are clearly cognizant. Even those who are not currently poor face a non-trivial risk of becoming poor, and they define that risk as vulnerability.

¹ In retrospect, and given the huge literature on the economics of uncertainty, it is surprising that economists, the main practitioners of more traditional quantitative poverty analysis, have not appreciated the importance of vulnerability. This is a good example of the benefits that could come from combining qualitative and quantitative methods (and practitioners). See section 1.3.1.

1.2.3.1 Food Security

One clear and compelling example of vulnerability in Africa is food insecurity – not having access to the quality, quantity, and diversity of food necessary for an active and healthy life (Barrett and Sahn 2001). In Africa, food insecurity, both chronic and transitory, is a problem that is afflicting more people each year. This suggests that an important aspect of our research agenda be focused on the three pillars of food security: availability, ensuring an adequate food supply to provide for the nutritional needs of the population; access, ensuring that incomes and food prices together maintain real purchasing power sufficient to ensure the ability to obtain a nutritionally satisfactory diet; and utilization, ensuring that food within the household is used effectively to maintain the health of all members.

One implication of our bottom-up approach is the importance of considering food security at the individual level. The notion of vulnerability to food insecurity becomes more complex the more disaggregated our analysis is (Kanbur and Haddad 1994). Likewise, a gender and age disaggregated approach to food insecurity implies that we consider food insecurity in a broader context than just calories, including micronutrient deficiencies (e.g., Vitamin A, iodine and iron), which can have serious functional consequences for pregnant and lactating women and young children. When household resources are only just adequate, intra-household allocation decisions may protect some members of the household, those that have a more powerful voice or contribute more to earnings, at the expense of others (Barrett and Sahn 2001). The analytical requirements for researching intra-household arrangements are great (Alderman, Haddad, and Hoddinott 1997), and so too are the challenges of intra-household policy interventions. Thus, one of the research issues that arises is the need to explore modalities of improved targeting to food insecure individuals, without disrupting valuable intra-household reciprocity arrangements.

While individual level food security is our ultimate concern, the broader issues of how exchange entitlement failures at the household level lead to food insecurity is also relevant to our concern with the poor's constraints. While the nature of these entitlement failures differ for urban and rural areas, there seems little doubt that the threat of covariate shocks due to crop failure, drought, pest infestations, livestock disease, etc., are particularly acute for farmers and rural households. This again focuses our attention on the role of the state in addressing these food security risks through a wide variety of actions, such as infrastructure development and policies that lower transaction costs in financial and input markets, as well as informal social insurance's capacity to cope with covariate food security risks. We also need to explore the particular vulnerabilities of urban households to food security risks, for example, that result from their limited access to social insurance networks (Maxwell et al 2000).

1.2.3.2 Poverty Traps

Vulnerability is linked to poverty dynamics through the idea of poverty traps. A poverty trap exists when one is not expected to climb out of poverty naturally through asset accumulation over time. Rather, one is caught in a recurring cycle of crisis and

partial recovery (Barrett and Carter 2001). The possibility that a negative shock to one's welfare could be so severe as to make it impossible to recover makes the consequences of such downside risks overwhelmingly important, and helps to explain the importance that Africa's poor place on vulnerability. The existence of poverty traps is most commonly explained as arising due to capital market failures and insufficient investment in human capital through education, health and nutrition. Evidence of such poverty traps has been uncovered in Côte d'Ivoire, Ethiopia, Kenya, South Africa, Tanzania, and Madagascar (Carter and May 1999; McPeak and Barrett 2001; Dercon and Krishnan 1998; Barrett, Bezuneh and Aboud 2001; Razafindravonona, Stifel, and Paternostro 2001).

While poverty traps are usually defined in terms of assets or incomes, it is equally valid to consider poverty traps in other welfare dimensions such as health – one becomes so sick that recovery is impossible – or nutrition – children who are chronically undernourished suffer stunting from which they can never recover. In addition, there are obvious interactions between various dimensions of welfare. Adverse circumstances that lead to poor health or low education could cause unrecoverable income poverty, and vice-versa. Identifying and understanding the many dimensions poverty traps is an important area for research on vulnerability in Africa.

Because vulnerability is so important, societies have developed a variety of strategies to deal with the risks that poor people face. As Collier and Gunning (1999) point out, the best solutions to vulnerability allow people to smooth their consumption even as their income varies. Insurance markets achieve this, as do well-functioning capital markets in which people can borrow and save to smooth consumption. Unfortunately, Africa's poor rarely have access to such markets, especially in rural areas where most of the poor live. In the absence of these markets, Africans can try to accumulate physical assets on their own, but the possibilities for this are limited by the menu of physical assets available for accumulation and by the risk of theft in environments with little security (Greif and Bates 1995). Of course, this lack of security does more than prevent the rural poor in Africa from using assets to self-insure: it directly reduces their incentives to accumulate wealth and hence, to grow out of poverty. In many arid and semi-arid areas, Africans commonly accumulate wealth in the form of livestock. But as herd sizes increase, overgrazing can set in and supervision of individual animals declines, leading to increased livestock mortality and enormous, cyclical losses of wealth (Fafchamps 1998; Lybbert, Barrett, Desta, and Coppock 2001; McPeak and Barrett 2001).

In the absence of insurance or asset-based solutions to income risk that work by smoothing consumption, Africans must deal with vulnerability by trying to stabilize their incomes directly, a strategy known as risk avoidance. In an uncertain environment, this is difficult to achieve, and it can lead to a type of poverty trap that is particularly relevant for research under this Cooperative Agreement: poverty that is caused by vulnerability. People who are vulnerable are understandably averse to risk. Yet a variety of studies show that risky activities are also high return activities in Africa, so that a strategy that is perfectly sensible from the point of view of risk avoidance condemns one to low return activities and perpetual poverty (Binswanger and Rosenzweig 1993; Dercon and Krishnan 1998). In such an environment, finding ways to reduce Africans' vulnerability

could unleash substantial economic growth potential by allowing people to invest in riskier high return activities.

Vulnerability and poverty dynamics are often closely linked with our other research topics of health and education. Faced with an income shock, poor families may find themselves forced to pull children out of school (Davies 1996; Jacoby and Skoufias 1997; Basu 1999). Hence, child labor acts as a coping mechanism against vulnerability, albeit one that imposes severe costs by reducing future productivity and insuring that poverty is transmitted across generations. Education policies that do not consider how poor households respond to risk may therefore fail to encourage greater school participation. On the other hand, policies that reduce agricultural risks, such as developing rural credit markets, may have large indirect benefits for children's schooling. For health, we have already noted the cumulative poverty impacts of health shocks that may arise when households sell productive assets as a coping strategy for illness.

1.2.3.3 Possibilities for Public Policy

Even though there are many traditional and modern strategies for dealing with risks, it is clear that they are far from adequate in Africa. After all, the highly variable welfare measures observed in Africa are inclusive of all the existing strategies to stabilize welfare. The fact that they remain so volatile is an indication of the limits of what is available to the poor in Africa. Clearly, there is a need for public policy to reduce the vulnerability of the poor, and by so doing, to increase the prospects for investment and accumulation that are necessary to reduce poverty. Here, as in education and health, the record in Africa is sobering. Extensive food aid distribution to the continent has largely failed to stabilize food availability (Barrett 2001), and often misses the needy (Barrett 1998; Clay, Molla and Habtewold 1999; Jayne *et al.* 2001; Barrett and Clay 2000). Donors and governments have been working hard at innovations to reduce vulnerability, but little has taken hold sustainably in Africa thus far. For example, the World Development Report (2001) considers seven specific public policy tools for dealing with vulnerability: health insurance, old age assistance and pensions, unemployment insurance and assistance, workfare programs, social funds, microfinance programs, and cash transfers. Of these, none is a common feature of African economies. Health insurance, old age pensions, and unemployment insurance are limited to the tiny formal sector and even there, inflation has made their real value uncertain. While there are scattered experiments with workfare and microfinance, none have taken hold generally. Social funds have become quite popular, but despite their origin as an attempt to mitigate the negative impacts of adjustment policies, they are almost exclusively a mechanism for locally-controlled investment decisions, not a social safety net. Cash transfers are almost non-existent.

Understanding why these public policy options do not work in Africa, and whether they can work in Africa, is an important area for research, as is thinking about the possibilities for alternative policies or institutions that might be effective in Africa. Our consortium is already exploring innovative responses such as the use of rainfall-contingent workfare schemes to absorb episodically surplus labor and protect vital natural resources (Barrett and Arcese 1998; Barrett 1999), wealth-conditional cattle restocking

among drought-stricken pastoralists (McPeak 2001; McPeak and Barrett 2001), food-for-school schemes (Barrett, Holden and Clay 2001), and alternatives to quarantines for animal disease control in Kenya (Barrett *et al.* 2001). But there remains very little research available to guide policy makers on the trade-offs for different public policy interventions aimed at reducing vulnerability.

One area for policy-oriented research is the possibility for more effective insurance and capital markets, especially micro insurance and safe banking. Insurance markets can work only if participants face risks that are not highly correlated with one another. Prevailing wisdom holds that risk in rural areas is covariate, but recent research finds that much risk is household-specific (Townsend 1994; Lybbert, Barrett, Desta, and Coppock 2001). This raises the possibility that locally run micro insurance schemes could actually reduce individual vulnerability significantly and thereby stimulate investment and growth. Safe banking, especially in rural areas, may be another way to break out of the vulnerability poverty trap. If people can save in a secure, liquid financial institution, they can self-insure by accumulating assets. Bank Rakyat Indonesia's unit desa are an example of a successful implementation of such a strategy, having reached millions of small depositors and borrowers in a cost-efficient manner (Patten and Rosengard 1991; Chaves and Gonzalez-Vega 1996).

1.2.4 Empowerment and Institutions

In addition to vulnerability, the Voices of the Poor exercise also uncovered a persistent concern about the poor's lack of voice.² Faced with social and economic institutions that do not serve them well, Africa's poor frequently express a sense of powerlessness to do anything about their plight. While much of the research on voice is rightly found in political science, we believe that there are two important areas where multidisciplinary research on empowerment is relevant for this Cooperative Agreement: decentralization of public services and the use of social funds to allocate public investments.

1.2.4.1 Decentralization

Decentralization of public expenditures is an idea in vogue, though its actual application remains patchy in Africa. Too much of Africa's education and health budgets are spent on central administration, too little on local services. In one celebrated study, Ablo and Reinikka (1998) found that local schools received only 20 percent of the non-wage education spending that was budgeted for them in Uganda in 1995.³ If this is true more generally in Africa (a question worth studying), then there is great scope for improving quality by reappportioning funds from central bureaucracies to local institutions themselves. This is the goal of decentralization. Advocates argue that if the control of

² Using the term "voice" for political or social empowerment apparently comes from Albert Hirschman's *Exit, Voice, and Loyalty*. Faced with a problem, one can either avoid it (exit), complain about it in a socially effective forum (voice), or grin and bear it (loyalty).

³ The funds were not misappropriated. They simply disappeared in administration costs.

funds is closer to the end users, it is more likely that they will be used to provide quality services because it is easier to hold local officials accountable (Fuller and Rivarola 1999).

In practice, the record on decentralization has been mixed so far, in part because central governments have been more willing to devolve responsibilities (buy your own drugs; pay your teacher) than the corresponding budget (through revenue sharing, for example). Even if central governments permit the necessary budgetary reallocations, administrative capacity at the local level may be lacking. For example, weak local administration has seriously hampered the implementation of Madagascar's ambitious plan to administer health services through 111 local health districts. But there are interesting successes. For example, in response to the Ablo and Reinikka study showing low share of resources that actually reached local schools, the government began to disseminate information both through the media and by posting public spending information at schools and district offices. In 1999/2000, the share of resources reaching local schools had risen to over 90 percent (although with delays), a remarkable improvement (Reinikka and Collier 2001).

1.2.4.2 Social Funds

Another way to increase local participation and control is the use of social funds, which has greatly expanded since their inception by the World Bank in 1987. These funds generally are used for education, health, and health-related projects (water and sanitation) that are chosen directly by communities. Social fund projects devolve significant responsibility and budgetary control to communities, thus directly increasing the poor's power over their own lives. Schools and health posts are by far the most popular projects that communities select, suggesting that there is pent up demand for education and basic health services in poor communities. Because social funds are relatively new, studies of their effectiveness are limited (Newman *et al.* 2000; Chase and Sherburne-Benz 2000; Sahn and Younger 2000). Given the growing enthusiasm of donors, governments, and stakeholders for social funds, expanding such research would be an appropriate activity under this Agreement. Many questions arise: do local elites capture these efforts and turn them to their own advantage? Is the infrastructure built to reasonable standards, and through a competitive process that ensures cost accountability? Are communities willing and able to finance recurrent costs associated with the social fund projects (that is, will the projects be sustainable)? And to what extent does the newly constructed infrastructure substitute for existing public (or even private) schools, health facilities, etc? The last question points to an additional concern: the potential conflict between local control through social funds, which involves direct relations between communities and donors, and nationally directed efforts at decentralization of the institutions of government. The very aspect of social funds that make them attractive — their direct responsiveness to community demands — may weaken efforts to develop strong and responsible local (but supra-community) governments (Parker and Serrano 2000).

Finally, there may be significant interactions between access to social fund finance and the existing levels of education and health (as well as wealth) in the community. More educated people may be more able to articulate their needs and desires,

and to participate more effectively in the implementation of projects. It is important to understand the dynamics of this interaction since they could lead to a situation where a social fund strategy helps better-off communities pull ahead while poorer ones stagnate.

1.3 Methods

Our bottom-up strategy to the research under this Cooperative Agreement implies a focus on individuals, households, or communities and the socioeconomic, natural, and institutional environments that condition their behavior and their welfare. Most of the topics that we are likely to pursue are of interest to researchers in many different fields, using a variety of methods. While we cannot lay out all of the possibilities here, three broad approaches will characterize our methodological choices: innovative mixing of quantitative and qualitative methods; use of new methods that address the multidimensional nature of poverty; and use of new methods to explore poverty dynamics and vulnerability. Each of these three approaches extends the traditional approach to poverty analysis in an important way.

1.3.1 Qualitative and Quantitative Methods

We are particularly interested in research strategies that combine quantitative and qualitative methods, an area where Cornell faculty have taken a leading role both in theory and in practice (Assié-Lumumba 2000; Assié-Lumumba 1994c; Assié-Lumumba 1993b; Barrett forthcoming (b); Kanbur 2001). A March, 2001, conference at Cornell brought together leading global practitioners of both qualitative and quantitative methods for the study of poverty. (See <http://www.people.cornell.edu/pages/sk145/papers/QQZ.pdf> for the proceedings.) Participants identified three ways in which researchers might benefit from working together: triangulation, sequential mixing, and simultaneous mixing.

Triangulation is the simplest of the three approaches. To paraphrase Robert Chambers (2001), this is simply sending one team each of qualitative and quantitative researchers off to do their best, on their own, and then bringing them together to discuss and compare results. Triangulation checks for similar findings from the different methods. While we anticipate some use of this approach in the Cooperative Agreement, particularly where we use data already collected by others, we will do better than mere triangulation in most of our research.

Martin Ravallion (2001) suggests the idea of **sequential mixing**. In this approach, a project might begin with qualitative methods – focus groups, unstructured interview, or ethnographies – that bring out interesting ideas and perspectives on a particular research theme. A quantitative analyst could then devise hypotheses consistent with these ideas to be tested with data from representative samples. That work, in turn, might suggest interesting issues for future, more focused, qualitative investigations, etc. We expect to use this type of sequential mixing extensively in our project. In fact, the methods that we will use to identify specific research topics and to ensure the policy impact of our work rely heavily on this type of iterative interaction between stakeholders, researchers, data, and policy makers.

Simultaneous mixing is the more difficult of the three alternatives. The idea here is to insert qualitative methods directly into a quantitative study, and vice-versa. Our consortium has practiced this successfully in Africa already (Assié-Lumumba 1994b; Barrett forthcoming(b); Smith, Barrett and Box 2001; Little *et al.* 2001). We see several further concrete possibilities for simultaneous mixing of research strategies. For example, one of the most cited, and most accepted, weaknesses of qualitative methods is that the ideas and perspectives expressed by individual interviewees or focus group participants are not representative of a larger population. To respond somewhat to this limitation, qualitative researchers could choose to site their study in the same place where a representative quantitative survey takes (or took) place. This, at least, would allow the qualitative researchers to put their conversations in perspective by comparing (quantitatively) the sample from that place with the entire sample.

Another example is contingent valuation, a method in which the researchers conduct a quantitative-type survey, but with questions more familiar to psychologists than economists. In particular, researchers explore the value of public services (e.g., police protection; see Pradhan and Ravallion 2000) or institutions to recipients by asking a carefully phrased equivalent of “how much is this worth to you?” A similar effort at contingent valuation was made in the context of a survey in Tanzania designed to examine health and education status and service delivery in Tanzania. One of the objectives of the survey was to understand the factors that influence the demand for health and education services, particularly the influence of school and clinic quality (Sahn, Younger, and Genicot 2000). We are interested in exploring the use of such methods in our research, particularly when evaluating public goods.

1.3.2 Multidimensional Poverty Measures

Our interest in multidimensional poverty measures is motivated by the evolution of thinking on poverty toward functionings and capabilities, as discussed in the introduction. As we extend the dimensions across which we measure poverty, empirical methods become more complex. We know that health, educational attainment, social exclusion, and insecurity are often only weakly correlated with incomes or expenditures (Sahn, Stifel and Younger 1999; Appleton and Song 1999). To help understand and reconcile these weak relationships, Cornell researchers are showing that it is theoretically and empirically attractive to make multidimensional poverty comparisons, and that we can do so statistically, in ways that are robust to the specification of poverty lines and to the choice of poverty indices (Duclos, Sahn and Younger 2001). These methods are applicable to many potential research topics in health, education, vulnerability, and voice.

The focus on multidimensional poverty is consistent with the mixing of qualitative and quantitative methods introduced above. Specifically, one important source of weakness in traditional quantitative methods has been in the valuation of non-market goods, especially public goods provided by government, but also household public goods such as the health environment of the domicile. By their very nature, the value of public goods to either households or individuals is impossible to measure directly in monetary terms. Here, once again, drawing upon methods that are typically associated with qualitative assessment may be useful. For example, one of the most important roles of

government is to provide public goods in the form of security and a judiciary. It is difficult or impossible to assess in monetary terms who benefits from the existence of the police and the courts. However, the integration of questions into household surveys on issues such as a person's sense of security and safety, and notions of social justice – again, questions normally associated with qualitative analysis – is another example of the useful bridging of methods.

Another interesting aspect of multidimensional poverty analysis is its focus on individuals, where it is natural to measure functionings and capabilities, rather than households, where we usually measure incomes and expenditures. Thus, a multidimensional perspective begins to yield insight into intra-household issues that are often neglected with traditional quantitative poverty assessments. For example, discrimination against females may be manifested in less education, worse health, and a more limited sense of participating in the life of the community and in the decision making of the household. Moving toward capabilities and functionings also implicitly incorporates the value of many forms of public goods. For example, certain household public goods, such as the health environment of the domicile, will be reflected in the health status of individuals. Likewise, a person's sense of security and his or her degree of social exclusion in part reflect public goods provided by the state.

1.3.3 Dynamic Analysis

Our focus on notions of vulnerability and on non-monetary dimensions of poverty strongly suggest that our research employ methods that allow us to focus on dynamics of behaviors and outcomes. Climbing out of poverty – or falling into poverty – is inherently a dynamic process. Households that are lucky or more adept begin to accumulate assets that eventually are sufficient to lift them above the poverty threshold permanently. Other less fortunate households suffer shocks with long-term repercussions that send them spiraling downward into greater poverty. Understanding these processes is key to understanding how policies might help the poor to rise out of poverty, and requires data on households' events and circumstances over time.

The most obvious form of such data are longitudinal and panel surveys, which only very recently have become available for Africa. In such surveys households are interviewed at different points in time. Analysis of poverty dynamics using such data for developing countries is new, but rapid progress is being made on methodologies and treatment of specific statistical issues such as measurement error in income or consumption variables and attrition bias (Hoddinott and Baulch 2000; Deaton 1997). Panel data of sufficient length allow researchers to make a crucial distinction between chronic and transitory poverty. The latter appears to be prevalent in developing countries, with households frequently crossing the poverty threshold in one or the other direction. While important, our greater concern is with the determinants of chronic poverty: what keeps poor households in Africa consistently poor, or below the poverty line on average? That is, we are concerned with long-term economic mobility, upward or downward.

Key determinants of long-term changes in poverty status are likely to include accumulation or disaccumulation of assets; policy-induced changes in returns on those

assets; and shocks. In principle, these factors are identifiable from household surveys. In addition, initial conditions are likely to be important and can also be measured to varying degrees in surveys. These include levels of human, social, and physical capital, presence of infrastructure, and access to markets, all of which can facilitate potentially risky investments. The role of shocks in determining long-term poverty (as opposed to the more obvious effects on transitory poverty) is not well understood but potentially very important. Transitory income shocks (due, e.g., to weather or policy) may lead to a fall into permanent poverty, through, for example, distress sales of assets; indeed this possibility is essentially what defines economic vulnerability. Positive shocks may have the opposite effect, lifting households above the poverty threshold permanently. Panel data now offer the possibility of investigating these ‘irreversibilities’ empirically for Africa.

Our other methodological approaches, mixing qualitative and quantitative methods and multidimensional poverty analyses, offer alternative ways of exploring poverty dynamics. Retrospective interviews can elicit detailed information on events that have influenced the respondents income trajectories over a long period. While limited in terms of sample size, these qualitative approaches can explore subtle dynamic processes that large-scale formal household surveys would overlook. A model for this type of work is the research by Scott (2000) on Chile or the 17-year herd histories reconstructed in southern Ethiopia (Lybbert, Barrett, Desta and Coppock 2001). A focus on capabilities and functionings leads to a consideration of dynamics in dimensions other than income. In addition to the broader perspective, considering the dynamics of health, nutritional status, or education avoids many of the measurement problems that plague intertemporal income or expenditure comparisons, especially price deflation and comparability of survey questionnaires.

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